# Guide to Honey Locust: A Perennial Staple Crop for People and Livestock

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*Guide to Honey Locust: A Perennial Staple Crop for People and Livestock* by Eric Toensmeier was last updated in June 2026.

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*A mature 'Millwood' honey locust with a heavy yield of pods ripening at Virginia Tech. Image by Eric Toensmeier.*

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# Introduction

Honey locust (*Gleditsia triacanthos*) is a native North American tree whose pods have been used as food by people for millennia, and by livestock for centuries. In most of the northeastern U.S., our honey locusts have thin, papery pods that are of little value as food. Yet in Pennsylvania, West Virginia, and across the South, the pods are thick and filled with sweet pulp. A century ago, honey locust breeders distinguished these forms using two types of hogs as the model. Like well–fed domesticated pigs, "fatback" honey locusts have plump, sugary pods—and these are the focus on this publication. "Razorback" honey locusts are named for the lean feral hogs that their thin pods are reminiscent of.

***Figure 1:*** *The sweet pulp of fatback honey locust pods. Image courtesy Jesse Marksohn.*

***Figure 2:*** *Fatback-type pods are thick and full of sugary pulp. Image courtesy Jesse Marksohn.*

This publication provides an overview of honey locust: its history, its ability to feed people and livestock, its uses and functions on the farm, and the production systems in which it can be grown. We'll also review its many drawbacks, including its terrible thorns, and its tendency for weediness where native and invasiveness elsewhere. This guide focuses on honey locust's potential in the northeastern United States, but should be of use to those working elsewhere.

With increasing interest in agroforestry, it is time to look more closely at this long-neglected tree that produces staple protein and carbohydrates. Fortunately, the latest in a series of waves of "crop champions" has risen to the challenge, and in many ways there has never been a better time in the last century for those who wish to help realize honey locust's potential.

# Overview and Potential

"The honey locust is a tree with so many useful qualities that it is hard to understand why we have neglected it for so long . . . Orchards of honey locust may be developed . . . It is possible that thousands of hills and mountainsides in the Tennessee Valley and many other parts of the United States may, within a few decades, become orchards of honey locust trees producing beans that cattle, sheep, and horses can eat from the ground. The pods may also be picked up and crushed to make a commercial feed for cows . . . or the pods may be hauled to the mill to be made into the nation's sugar supply . . . The refuse from the sugar mill may become a part of the nation's cow-feed supply . . . The honey locust bean (not pod) is rich in protein, so that bean and pod when ground together make an excellent stock food . . . "[1]

—J. Russell Smith, writing in 1937 in *Men and Resources: A Study of North America and Its Place in World Geography*

## Names

The scientific name of honey locust is *Gleditsia triacanthos.* The genus name honors eighteenth-century German botanist Johann Gleditsch. There are 11 species of *Gleditsia*, and all but two produce large pods, though none as large as honey locust.[2] Our other native species is water locust (*G. aquatica*), which has small, papery pods. The species name *triacanthos* means "three-spined", referring to the branching spines. The subspecies *inermis* refers to the thornless types, though this may or may not be a proper botanical subspecies.[3] [4]

The most widely used English name, honey locust, describes the pods, referring to its cousin the carob (sometimes called locust), and featuring in the Old Testament as survival food in the desert. It is not to be confused with black locust (*Robinia pseudoacacia*), another relative native to the eastern U.S. that somewhat resembles a carob tree.[5] [6]

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[1] Smith (1937) *Men and Resources: A Study of North America and Its Place in World Geography*

[2] Barlow (2008) *The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and Other Ecological Anarchronisms.*

[3] USDA NRCS (nd) *Plant Guide: Honey Locust*

[4] Santamour (1983) "Checklist of cultivars of honey locust (*Gleditsia triacanthos* L.)"

[5] Santamour (1983) "Checklist of cultivars of honey locust (*Gleditsia triacanthos* L.)"

[6] USDA Plants Database

Other English names include honey shucks (shuck in this case meaning "pod"), sweetbean, sweet locust, three-thorned acacia, thorn tree, and thorny locust.[7] All of the English names refer to the sweet pods or the terrible thorns.

Spanish names are *acacia de tres espinas* ("three-spined acacia") and *algarrobo de miel* ("honey carob"). In French it is *févier d'Amérique*. Févier refers to the genus *Gleditsia,* and thus the French name means the American *Gleditsia.*

Honey locust has names in many Indigenous languages of its home region. In Lenape the tree is called *pitelais*.[8] In Muskogee it is *kutókwu* and *kvtohwv*.[9] The Cherokee name is ᎾᏞᏎᏂ (*kahlsetsi*). Tellingly, the word also means "sugar" or "candy" in contemporary Cherokee.[10]

## Parallel Species

Livestock producers in many parts of the world value the pods of legume trees to feed their livestock, and such trees are cultivated, semi-cultivated, and wild-curated for that reason in many countries, especially in the tropics, subtropics, and Mediterranean climates. The one hundred or so species are different and highly diverse, but the patterns of use are somewhat universal. These trees include members of over a dozen genera including *Acaciella, Albizia, Bauhinia, Cassia, Ceratonia, Enterolobium, Faidherbia, Neltuma, Parkia, Prosopis, Samanea, Senegalia,* and *Vachellia.*[11] [12] [13] In the Spanish-speaking world, these trees, regardless of genus, are often called *algarrobo,* because they reminded the Spanish colonizers of the livestock pod species they had grown for millennia: carob.[14]

These diverse species share a common suite of partners: For millions of years their pods were made to be eaten by large herbivores, which dispersed the seeds (and still do, where giant herbivores persist). They also share a family of seed-eating pests, the bruchid beetles. Humans

[7] Shadow (nd) *NRCS Plant Fact Sheet: Honey Locust*
[8] DePaul (nd) *Ethnobotany of the Lenape Indians and Other Eastern Tribes*
[9] Martin (2004) *A Dictionary of Creek/Muskogee*
[10] Cherokeedictionary.net
[11] Bryan (1996) *Leguminous Trees with Edible Beans, with Indications of a Rhizobial Symbiosis in Non-Nodulating Legumes*
[12] Hamlet (2001) *Mansfeld's Encyclopedia of Agricultural and Horticultural Crops*
[13] Toensmeier (2016) *The Carbon Farming Solution*
[14] Hamlet (2001) *Mansfeld's Encyclopedia of Agricultural and Horticultural Crops*

have eaten most, though only a handful are favorite foods these days. More commonly, today these trees team up with humans and livestock to provide shade and sweet pods for fodder, while seed-dispersing livestock in turn have made many of them invasive weeds. Something else these species have in common: They tend to be neglected by agricultural science and industry, serving as a "people's fodder" in traditional systems, though some are being incorporated in sophisticated new agroforestry systems in Colombia and elsewhere.[15]

In this context, honey locust can be seen as a fairly typical but more cold-hardy member of this much larger group, some of which have come considerably farther down the road of cultivation (and sometimes even domestication), and thus can offer a vision of what our native representative of this international club could become. Of these, carob and mesquite serve as particularly relevant and valuable models.

## Carob

Carob (*Ceratonia siliqua*) was domesticated about 3,000 years ago in the Mediterranean region.[16] A minor crop, it is cultivated today on some 40,000 acres, which doesn't seem like a lot until compared with honey locust, which probably has a few hundred acres planted at best. Global trade of the ground pods in 2024 was about 57,000 tons. These numbers have sadly declined in recent decades.[17] Though production is modest and shrinking, carob appears to be the most commercial of the dozen or more genera of pod-bearing fodder legume trees.

Carob is suited to dry, degraded, and even salty soils. Like honey locust, it does not form nitrogen-fixing nodules.[18]

[15] Calle Díaz (2020) *Árboles Nativos para Predios Ganaderos*

[16] Batlle & Tous (1997) *The Carob Tree.* Ceratonia siliqua L. *Promoting the Conservation and Use of Underutilized and Neglected Crops.*

[17] FAO Statistical Service online

[18] Batlle & Tous (1997) *The Carob Tree.* Ceratonia siliqua L. *Promoting the Conservation and Use of Underutilized and Neglected Crops.*

The sweet pods are used for molasses, sugar, as a base for fermentation, as medicine, and as an (inferior) substitute for chocolate. They can be eaten raw, and the texture is not unlike a good honey locust pod.[19] Ground pods (kibble) are used for animal feed.[20]

Most production today is for locust bean gum (made from the seeds), which is widely used in the food industry for many purposes including as a thickener, dietary fiber additive, to prevent freezer burn in frozen foods, and to provide texture in ice cream treats.[21] The seeds are also used for dietary fiber, in pharmaceuticals, in cosmetics, in the leather tanning industry, and even in explosives.[22]

You can order kibbled carob (for pet and livestock food), powdered carob (for human consumption), and locust bean gum (made from the seeds) by the ton on Alibaba. You can also order quite a bit of machinery for processing carob pods there as well, which might be worth trialing for honey locust.[23]

Like honey locust, carob is also widely used as an ornamental, including in parts of California.[24]

## Mesquite

Mesquites are a group of dryland nitrogen-fixing woody legumes. What was once the global genus *Prosopis* has been split into *Neltuma* and *Strombocarpa* from the Americas and *Prosopis,* which now only refers to African and Asian species.[25] Here we are discussing *Neltuma,* a group which includes the North American native honeypod mesquite (*Neltuma glandulosa*).

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[19] Batlle & Tous (1997) *The Carob Tree.* Ceratonia siliqua L. *Promoting the Conservation and Use of Underutilized and Neglected Crops.*

[20] Batlle & Tous (1997) *The Carob Tree.* Ceratonia siliqua L. *Promoting the Conservation and Use of Underutilized and Neglected Crops.*

[21] Batlle & Tous (1997) *The Carob Tree.* Ceratonia siliqua L. *Promoting the Conservation and Use of Underutilized and Neglected Crops.*

[22] Batlle & Tous (1997) *The Carob Tree.* Ceratonia siliqua L. *Promoting the Conservation and Use of Underutilized and Neglected Crops.*

[23] Alibaba.com

[24] Batlle & Tous (1997) *The Carob Tree.* Ceratonia siliqua L. *Promoting the Conservation and Use of Underutilized and Neglected Crops.*

[25] World Flora Online

Mesquite has been eaten as a staple food for at least 8,500 years in North American drylands.[26] I have loved mesquite flour for decades and have cooked mesquite cornbread dozens of times. In fact, I found it very easy to substitute honey locust flour for mesquite in my recipe, and it seems worth substituting for mesquite in any number of the recipes found in the cookbooks mentioned below. Mesquite flour is now an award-winning product, selling for as much as $40 per pound.[27] The pods are also used to produce syrup, molasses, alcoholic beverages, and much more.[28] Mesquite is a source of high-value wood, liquid smoke, and boutique charcoal.[29]

Production systems include open savanna silvopasture, orchards for harvest and grinding of pods for human food and livestock feed, managed natural stands, and alley cropping and multistrata agroforestry systems.[30] [31] Like honey locust, though they are greatly enjoyed by livestock grazing under the trees, the ground pods of mesquite have higher digestible protein content than whole pods, because the beans inside are tough and not digested by cattle.[32]

Another unfortunate similarity: The American mesquites are global invasive species. They are also reviled as weeds by many ranchers where they are native.[33]

Desert Harvesters is a community project in Arizona that has done fantastic work organizing their community around mesquite. They've published two cookbooks loaded with recipes, including *Eat Mesquite! A Cookbook.*[34] Certainly they have set the bar for what could be done with honey locust if we were to work hard at it for a few decades. Desert Harvesters and other nonprofits and community co-ops in Texas and Arizona have made hammermills available for community members to grind their own mesquite meal. They recommend the Meadow Mill No. Five Model GX39OU1QNE2. In Argentina producers use smaller tabletop hammermills.[35]

The recent book *Mesquite: Training Manual for Growers, Harvesters & Artisans* lays out a program for development of mesquite culture that could be a great blueprint for honey locust. It grew out

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[26] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[27] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[28] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[29] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[30] Pasiecznik (2001) *The* Prosopis juliflora-Prosopis pallida *Complex: A Monograph*
[31] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[32] Ruiz-Nieto (2020) "Mesquite (*Prosopis* spp.) tree as a feed resource for animal growth"
[33] Toensmeier (2016) *The Carbon Farming Solution*
[34] Desert Harvesters (2011) *Eat Mesquite! A Cookbook*
[35] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*

of decades of work in the U.S. and Mexico to bring this plant, widely considered a spiny weed, closer to its potential for people, livestock, and ecosystems.[36]

## Uses and Functions

Honey locust provides many products of direct use to humanity and our livestock, and ecosystem functions that benefit the farm and surrounding ecosystems. However, as of 2018 honey locust has no real markets outside of on-farm livestock feed.[37]

### For Livestock

Honey locust pods are highly palatable to livestock. They are a suitable feed for cattle, sheep, goats and hogs, and apparently some poultry enjoy them as well.[38]

Livestock strip the pods from the branches, eat them when they drop to the ground, and consume both whole and ground pods in feeding troughs. One value of the pods is that they drop in late fall and winter, offering a valuable feedstuff when most forages are dormant or at least not growing rapidly.[39] Most of the protein is in the seeds, and there is some dispute as to how digestible the seeds are to ruminants in the raw pods—though digestible protein in ground pods is high (see Digestibility under Composition below). The pods provide more than protein of course: All livestock can benefit from their sugar and starch for energy, and for ruminants their fiber is a source of food energy as well.

***Figure 3**: Goats enjoying unripe honey locust pods at Sovereign Hill Farm in Chester, MA. Image courtesy Kathrin Bateman.*

[36] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[37] Wilson (2018) *Perennial Pathways: Planting Tree Crops*
[38] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[39] Detweiler (1947) *Notes on Honeylocust*

Greg Judy of Green Pastures Farm, Missouri, grazier, and author of multiple books including *How to Think Like a Grazier,* is a fan of honey locust pods for his cattle. Walking beneath a heavily-bearing tree, he notes: "There's a lot of feed here. All those beans will end up on the ground . . ." He notes that the pods can ferment into alcohol, which he says is a high-energy feed for cattle. "I don't like the thorns but I'll take them in exchange for the shade and the pods . . ."[40]

The leaves are also quite palatable and nutritious for ruminants, with 20% protein.[41] They are made into silage in some places. However honey locust does not resprout quickly enough to serve as a cultivated leaf fodder tree.[42]

Any tree is valuable for shade in pastures. Honey locust is particularly useful because it provides minimal competition to the pasture below.

One study found the pods have high enteric methane reduction potential.[43]

## For Human Food

If honey locust is forgotten as livestock feed, it is doubly forgotten as human food. Yet we know it was historically eaten by Indigenous people, and one thing I have learned again and again is that every time I read that Indigenous people "used to" eat something, sooner or later I will learn that some still do. Certainly the pods were eaten by many rural children, Indigenous and non-Indigenous alike, well into the early-twentieth century.[44] How were they eaten, and what was made from them? Most of the recorded food uses for honey locust are similar to those of carob and mesquite. Both of those are in much wider use and we can look to them for inspiration.

Feeding honey locust pods to people instead of livestock produces about ten times as much human food per acre and would be a far more efficient use of land.[45] However you have to

[40] Judy (2025) "Greg Judy loves honey locust pods for natural economical high sugar livestock forage" youtube

[41] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[42] World Agroforestry Centre (2006) Agroforestree database

[43] Atalay (2018) "Chemical composition, nutritive value and rumen methane potential of some legume tree pods"

[44] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*

[45] Toensmeier (2016) *The Carbon Farming Solution*

convince people to eat it, which can be challenging. Permaculture luminary Geoff Lawton once told me that once people are about two years old it becomes very difficult to get them to change their daily staple carbohydrate food.[46] Thus a strategic place to begin perennializing food production is to replace annual staples with perennials in the diets of livestock, and move on to human food later.[47] Some of us, however, love to try new foods.

For most of these uses you want fatback pods only. But there is another key issue, one that livestock don't seem to care about: Many trees produce astringent pods, with a bad taste. Some can even leave a bit of a burning feeling at the back of my throat. Others are sweet and totally non-astringent. 'Calhoun' is the best of the non-astringent cultivars, though few seem to have been taste-tested.[48] The food uses described below should probably be limited to non-astringent pods, except for those that only use the seed. It's not clear if the astringency comes from tannins, saponins, or something else.

Some people quite enjoy eating the raw, ripe pods, myself included. Their texture is unfamiliar to many of us, but their flavor is quite good. Some taste like banana ('Big Fatty'), and others apparently like melon ('Ashworth'). They can be dried and ground into flour. The pods used to be made into sugar.[49] [50] They are mildly sweet, but I think perhaps people are accustomed to higher sugar content these days. It may be that saponins and other compounds in the pods make it harder to extract the sugar commercially.[51]

Pennsylvania baker Richard Schofer was introduced to honey locust in the 1940s. He liked the flavor so much that he planted out a 5-acre orchard. He found the wild tree which became the cultivar 'Schofer', the first cold-hardy fatback honey locust of the twentieth century.[52]

The cooked seeds were historically eaten by Indigenous people, and perhaps they still are.[53] A recent video from wild edibles authority Alexis Nikole Nelson (@blackforager) reports her successful experiment cooking honey locust seeds like any other dry beans.[54] Nelson is an

[46] Geoff Lawton, Zaytuna Farm, personal communication
[47] Toensmeier (2016) *The Carbon Farming Solution*
[48] Zach Elfers, Future Forest Plants, personal communication
[49] Facciola (1998) *Cornucopia II: A Source Book of Edible Plants*
[50] Detweiler (1947) *Notes on Honeylocust*
[51] Alex Tanke, Dispersion Farms, personal communication
[52] Detweiler (1947) *Notes on Honeylocust*
[53] Couplan (1998) *The Encyclopedia of Edible Plants of North America*
[54] Nelson (2025) "Free beans"

expert, but for the rest of us this kind of use should be undertaken cautiously for now, as much knowledge has been lost. I don't recommend switching to eating pounds of honey locust seeds instead of black beans just yet, for example. Rural children in North Carolina used to roast and eat the seeds.[55] The roasted seeds have also been used to make an (uncaffeinated) coffee-like beverage.[56] This is the only food use I know of for razorback pods.

The pods have been brewed into beer, sometimes mixed with persimmon.[57] [58] The young pods can be cooked like green beans, and the unripe seeds inside used like peas or shell beans.[59] Pods of non-astringent fatback types make a delicious tea.[60] I find they make a great soup stock as well.

I remember the first few times I collected honey locust pods to try eating them. I had read *Permaculture One* and *Tree Crops* and various wild edibles books starting back in 1990, extolling their thick sweet pulp. Yet every pod I sampled was thin and papery, with no pulp to speak of. After a few tries I gave up, not realizing that here in Massachusetts where I live, virtually all of the female honey locusts are ornamental razorback types. Two decades later I went another round, and tried simmering pods in a slow cooker. It smelled wonderful but was bitter. Once again I gave up. It was only a few years ago that Dale Hendriks of Green Light Plants and Eric Cornell and Jesse Marksohn of Yellowbud Nursery provided me with pods of grafted, fatback, non-astringent varieties (the first was 'Big Fatty'). I could not believe what I had been missing for the 35 years before—the pods were full of sweet pulp that tasted remarkably like banana! I dried and ground whole pods (seed included) and made a delightful flour that tasted like cinnamon toast. Since then I have had the opportunity to make perhaps 10 pounds of flour and have enjoyed it in several recipes. In particular, I like to use it to replace half the cornmeal in quick-rising cornbread. Not finding a whole lot to work with in terms of recipes, I have used recipes and techniques used for mesquite and carob. None have yet steered me wrong, though I have not yet dialed in how to make molasses from honey locust.

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[55] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[56] USDA NRCS (nd) *Plant Guide: Honey Locust*
[57] Detweiler (1947) *Notes on Honeylocust*
[58] Facciola (1998) *Cornucopia II: A Source Book of Edible Plants*
[59] Facciola (1998) *Cornucopia II: A Source Book of Edible Plants*
[60] USDA NRCS (nd) *Plant Guide: Honey Locust*

I'm not aware of any reports of honey locust pods being poisonous, but there are several potential concerns. One is allergies—many people are allergic to legumes like peanuts and soy, and honey locust is in that family. The second is potential contamination with aflatoxin, a poisonous fungus that infects many legumes like beans and peanuts. There is no evidence yet that honey locust pods are a host to these fungi, but they are definitely a problem on mesquite pods (see Aflatoxin below).

We've lost much, maybe almost all, of the knowledge and culture of eating honey locust. Often such traditional knowledge, passed on from generation to generation, is what makes eating a plant with potential toxicity safe. This is particularly true for Indigenous knowledge from the place where a plant is native. Abenaki farmer and writer Amyrose Foll says the following about black nightshade (*Solanum ptychanthum*), but it seems very applicable to honey locust as well: "For centuries, Indigenous communities developed detailed, place-based knowledge about which parts of the plant were edible, when they were safe, and how they must be prepared. This knowledge was never casual: it was precise, transmitted through experience, and reinforced through cultural instruction and caution . . ."[61]

***Figure 4:*** *Cornbread with half of cornmeal replaced with ground 'Calhoun' honey locust pod flour. Delicious! Image by Eric Toensmeier.*

Chef Kyra Kristof of Forest Kitchen has experimented with pods of diverse cultivars. "When they are fresh and juicy, I don't eat the more fibrous pod, I just take the goop out which has the flavor and consistency of fresh banana, with caramel and cinnamon tones", she says.

Mostly Kristof has worked with flour from the dried pods, which she says ". . . can be used in both sweet or savory recipes . . . Very distinctive and very delicious. Definitely one of the signature flavors of this bioregion . . . I use its flour as a flavoring to go in a spicecake or gingerbread direction. It has a slightly sweet, deep distinctive flavor . . . It provides a lot of the

[61] Foll (2026) *Ancestral Gardens - Millennia of Indigenous Agricultural Genius: Nightshades*

warmth we are accustomed to finding in imported baking spices like cloves, cinnamon, and allspice. Honey locust flour provides a local version that sings in the same key as they do." She usually adds ⅛–¼ cup to baked goods rather than relying solely on honey locust flour.

Kristof has sampled many cultivars. "The flavor variation is so wide. I taste for astringency, bitterness, or burning at the back of the throat. Some are sweet . . . and mild [non-astringent] . . . The range of flavor profiles is pretty broad, it's worth being selective." She adds that ". . . In the years to come there are things that should be learned about medicinal properties before adopting on a wide scale, including for each cultivar . . . I'm more cautious . . . with honey locust than any of the other agroforestry tree foods like chestnuts or hickory oil."

It should also be noted that honey locust is not Generally Recognized as Safe (GRAS), meaning it can not legally be sold as food in the U.S. This is a major obstacle to commercialization for human consumption. Acorns were just recently approved as GRAS.[62]

## Agroforestry Uses

Honey locust is profiled in the forthcoming USDA National Agroforestry Center *Agroforestry Tree and Shrub Species Selection Manual* as a recommended species.[63] Its versatility, resilience, and high compatibility with most other plants make it a strong candidate.

R.M. Smith, quoted in Detweiler in 1947, wrote: "For every region there should be a theoretical 'ideal pasture tree' that would provide a maximum net benefit to the pastures." He goes on to list the following desirable traits: late leaf-out, early leaf drop, open canopy casting light shade only, and deep roots, among others.[64] Honey locust, Smith notes, provides all five of these characteristics. These are not only useful traits for silvopasture, but for all kinds of agroforestry. Zach Elfers of Future Forest Plants points out that at his nursery, young honey locusts leaf out fairly early though larger trees do not.[65]

[62] Toensmeier (2023) *The Status of Oak Breeding and Domestication as Food for People and Livestock*
[63] Matthew Smith, National Agroforestry Center, personal communication
[64] Detweiler (1947) *Notes on Honeylocust*
[65] Zach Elfers, Future Forest Plants, personal communication

## Multistrata Systems

Multistrata agroforests have multiple layers of vegetation modeled on forest structure. They include commercial production of shade commodities (mostly limited to tropical crops like cacao and coffee at present) as well as home and community-scale food forests, which are spreading rapidly in the U.S.[66]

Honey locust is mentioned as a candidate for food forest overstory but is not prominent in that regard.[67] [68] Stefan Sobkowiak of Miracle Farms in St-Anicet, Quebec, grows honey locust as an overstory tree in a diversified 5-acre pick your own fruit operation.[69]

I've been growing a small nursery under a large male honey locust for five years now. Several shade crops that are promising for production in the understory of multistrata systems are thriving in the light shade of this tree, including: caffeinated tea (*Camellia sinensis* var. *sinensis*), a hardy subspecies of one of the world's most widely-grown shade crops; toothwort (*Cardamine diphylla*), a native relative of wasabi worth of cultivation; hosta 'Sagae' (*Hosta* spp.) a cultivar commercially grown for its edible shoots in Japan; ostrich fern (*Matteuccia struthiopteris*), a native species commercially grown for its shoots on a small scale in the U.S. and Canada; black currants (*Ribes nigrum*), one of our best temperate commercial crops for shade; and mioga ginger (*Zingiber mioga*), grown commercially for its shoots and flowerbuds in Japan. While this is anecdotal it seems a promising start.

## Alley Cropping

Alley cropping systems combine rows of trees or shrubs with strips of annual or perennial crops. The high suitability of honey locust for agroforestry in general means that they are theoretically appropriate for alley cropping. However I am not aware of anyone doing so, as the woody crops selected for alley cropping systems are usually high-value products, and markets for honey locust are very limited at present.

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[66] Toensmeier (2016) *The Carbon Farming Solution*

[67] Jacke and Toensmeier (2007) *Edible Forest Gardens Volume II*

[68] Crawford (2015) *Trees for Gardens, Orchards and Permaculture*

[69] Miracle.farm

### Forested Riparian Buffers

Forested riparian buffers are strips of woody vegetation bordering streams, rivers, and other bodies of water. The goals of these systems are to protect water quality by filtering out contaminants from farm runoff, to provide some flood damage mitigation, and to shade and cool water for aquatic organisms.

Honey locust is recommended for riparian buffers in Maine and elsewhere.[70] This is not surprising, as the species is mostly found in floodplain habitats in the wild.[71]

### Windbreak

Windbreaks are plantings designed to protect crops from wind damage, and to shelter livestock as well. Honey locust has been widely used in windbreaks for over a century.[72] It was an important part of the windbreak response to the Dust Bowl crisis of the 1920s.[73] In fact, despite all the enthusiasm from J. Russell Smith and others all down the decades for the potential of the pods, it is windbreaks that have been by far the most common agroforestry use of honey locust.

### Silvopasture

Silvopasture systems combine trees, forages, and grazing livestock.[74] Goals, density, spacing, and tree species selection vary widely around the world, and within the U.S. honey locust has been rated a top 20 species for mid-Atlantic silvopastures.[75] On the other hand, Steve Gabriel writes in *Silvopasture* that honey locust shows promise, but he believes it is not yet ready for widescape adoption in silvopasture.[76] Certainly silvopasture is where most of the attention has been for honey locust's potential over the last century, including in its current renaissance. See History below for a number of examples of honey locust in silvopasture systems. The light shade of

[70] Kuhns (2009) *The Buffer Handbook Plant List*
[71] USDA NRCS (nd) *Plant Guide: Honey Locust*
[72] Honkale & Burns (1990) *Silvics of North America*
[73] Detweiler (1947) *Notes on Honeylocust*
[74] Gabriel (2018) *Silvopasture: A Guide to Managing Grazing Animals, Forage Crops, and Trees in a Temperate Farm Ecosystem*
[75] Beegle (2018) *Tree Selection Guide for Mid-Atlantic Silvopastures*
[76] Gabriel (2018) *Silvopasture: A Guide to Managing Grazing Animals, Forage Crops, and Trees in a Temperate Farm Ecosystem*

honey locust plantings, if not too dense, has a minimal impact on forage yields, and can increase livestock productivity by reducing heat stress.[77] [78]

### Hedgerows and Living Fences

In the time before wide adoption of barbed wire, thorny hedgerows were in wide use as living fences to control livestock and wild animals. Osage orange was the most popular species farther south (through roughly USDA zone 6), but honey locust, being much more cold hardy, was popular farther north.[79] Honey locusts were coppiced for these hedgerows, creating an intensely spiny, densely multistemmed barrier to livestock and wild animals.[80] A writer at the time noted that these heavily pruned, thorny hedgerows made ". . . An impenetrable fence against cattle and small boys. Because of its rapid growth, however, it requires constant attention by pruning, to keep it under control."[81]

## Does Honey Locust Fix Nitrogen?

There has been a debate about whether honey locust fixes nitrogen. It is a member of the legume family, but not all woody legumes fix nitrogen (just as not all nitrogen-fixers are legumes).[82] Nitrogen fixation is common in agricultural crops and pasture species, and worldwide (though not yet here), it is a very desirable trait in agroforestry species as well.[83]

What we can say confidently is that honey locust does not produce the nodules where classical symbiotic nitrogen fixation takes place. Nodules are special organs in the roots of most nitrogen-fixing plants, where nitrogen-fixing bacteria or actinomycetes can live in shelter from predation, and trade the nitrogen they fix for sugars that the plant obtains from photosynthesis. In the case of legumes, it is some form of *Rhizobium* or related bacteria residing in the nodules as a "beneficial infection". As early as 1891 it was learned that honey locust does not produce nodules on its roots. However, there is a kind of *Rhizobium* infection of the root hairs of honey

[77] Higgins et al (2024) "Shade options for grazing cattle"
[78] DeBruyne (2009) *Effects of Black Walnut and Honey Locust on Forage Growth, Soil Water, and Soil Quality Indicators*
[79] Detweiler (1947) *Notes on Honeylocust*
[80] Detweiler (1947) *Notes on Honeylocust*
[81] Detweiler (1947) *Notes on Honeylocust*
[82] Crawford (1998) *Nitrogen-Fixing Plants for Temperate Climates*
[83] Toensmeier (2016) *The Carbon Farming Solution*

locust. Unlike nodules, this infection only takes place on the surface. It seems that honey locust and others in its genus produce a chemical that keeps *Rhizobium* from entering inside its root hairs, but which does not leach into the soil or prevent infection on the surface of root hairs. Successful infection has been found with *Rhizobium* strains from coral bean, soybean, leucaena, lupine, pea, and cowpea. In other words, there appears to be at least some nitrogen fixation taking place around the root hairs.[84]

A number of scientists think that *Gleditsia* represents a "primitive" legume, showing us what the early stages of the coevolution of *Rhizobium* and legumes looked like, before nodules evolved.[85] This would position honey locust-*Rhizobium* connections as an "early draft" of what would much later become a masterpiece. Perhaps *Gleditsia* is somewhere between the general interaction any plant might have with free–living nitrogen-fixing bacteria, and the highly sophisticated symbiosis of nodulation.

One remarkable study found evidence that there is in fact some nitrogen-fixing activity happening in or around those interesting *Gleditsia* root hairs. Rhizobia were found growing on the root hairs, and several chemical tests showed the presence of nitrogen fixation. Some rhizobia were found in the swollen root hairs as well. The author proposed that this represents an earlier, simpler form of symbiosis that eventually, in legumes that evolved later, became nodulation as we know it today. This evidence points to this being a less powerful form of nitrogen fixation (likely much less, and certainly not yet measured), that develops more slowly in the young plants and fixes less nitrogen overall.[86]

A number of non-nodulating legumes have since been found to fix some nitrogen, and it seems that perhaps they do represent the early beginnings of what led to the evolution of nodulation.[87] More recent work suggests a whole range of types of legume-*Rhizobium* interactions, with those of honey locust at the more basic end but not necessarily the original form of the relationship.[88]

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[84] Allen & Allen (1981) *The Leguminosae: A Source Book of Characteristics, Uses and Nodulation*

[85] Hirsch (2008) "Understanding the origins of nodulation by studying rhizobia-root interactions in basal legumes"

[86] Bryan (1995) *Leguminous Trees with Edible Beans, with Indications of a Rhizobial Symbiosis in Non-Nodulating Legumes*

[87] Bryan (1996) "Toward a new concept of the evolution of symbiotic nitrogen fixation in the Leguminosae"

[88] Sprent (2007) "Evolving ideas of legume evolution and diversity: A taxonomic perspective on the occurrence of nodulation"

What does all of this mean for honey locust agroforestry today? Honey locust seems to fix some nitrogen, but until and unless someone actually measures the amount of nitrogen fixed per acre, it would be prudent to think that its "primitive" approach means it is much less efficient at doing so than other legumes like clover or black locust. Keep in mind that the low end for nodulated legumes is between 1 and 85 pounds Nitrogen per acre per year, so the amount fixed by honey locust may be low indeed.[89] Yet even a small amount could help account for honey locust's impressive success at growing in difficult environments.[90]

## Ecosystem Functions

Honey locust was surely a very valuable species during the days of the megafauna, when mammoths, mastodons, ground sloths, and camels would have enjoyed it and spread its seeds widely. Today it is not a particularly valuable food for most kinds of wildlife, though a "medium" browse species for deer.[91] The pods are eaten by deer, bison, opossums, squirrels, rabbits, quail, and crows.[92] In fact, it is occasionally planted in wildlife plots.[93] Honey locust branches are favored as nesting sites by ruby-throated hummingbirds. The foliage is a host to eight native specialist moth species (which prefer or are limited to honey locust), and to an additional 13 which have broad tastes but find honey locust perfectly acceptable.[94]

Thorny thickets of young plants, like those that sprout from manure, provide excellent cover for wildlife.[95] The flowers are highly valued by pollinators, though it flowers for a brief time only.[96]

Honey locusts are widely used for erosion control.[97] They have proven effective in stripmine reclamation as well.[98]

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[89] USDA Plants advanced search page

[90] Bryan (1995) *Leguminous Trees with Edible Beans, with Indications of a Rhizobial Symbiosis in Non-Nodulating Legumes*

[91] Hightshoe (1988) *Native Trees, Shrubs and Vines for Urban and Rural America*

[92] USDA Fire Effects Information System online

[93] USDA NRCS (nd) *Plant Guide: Honey Locust*

[94] McCormac (2023) *Gardening for Moths: A Regional Guide*

[95] USDA NRCS (nd) *Plant Fact Sheet: Honey Locust*

[96] Detweiler (1947) *Notes on Honeylocust*

[97] USDA Fire Effects Information System online

[98] USDA Forest Service (2017) *The Forestry Reclamation Approach: Guide to Successful Reforestation of Mined Lands*

## Raw Materials for Industry

### Wood Products

Honey locust wood is quite useful but rarely available.[99] It is of good quality for furniture, cabinetry, and veneers, and woodworkers wish it was more common.[100] [101] It has been used for tool handles, bows, interior finish, pallets, railroad ties, rough construction, charcoal, and mine timbers. It is used for posts but is not up to modern standards of rot-resistance.[102] [103] [104] Honey locust coppices well and is a high-quality firewood, it has been recommended for coppiced firewood block production systems.[105] The wood can also be used to grow shiitake and other mushrooms.[106]

### Industrial Sugar

Sugar is not only useful for food and feed—it can be used to produce a range of industrial products.

In the late 1970s and early 1980s, there was interest in honey locust pods as feedstock (raw material) for ethanol production.[107] [108] As it happened, corn ended up dominating that market. Regardless, most scientists agree today that ethanol is not climate-friendly and can actually be worse than gasoline.[109] To make matters worse, most of the world's land could produce one hundred times more energy per acre with solar panels than with biofuels.[110]

However, fuel is far from the only industrial product sugar can be used for. It is an important feedstock for chemicals and even materials production. And while energy can come from solar,

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[99] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[100] Meier (2020) *Wood! Identifying and Using Hundreds of Woods Worldwide*
[101] Detweiler (1947) *Notes on Honeylocust*
[102] USDA NRCS (nd) *Plant Guide: Honey Locust*
[103] Shadow (nd) *Plant Fact Sheet: Honey Locust*
[104] Detweiler (1947) *Notes on Honeylocust*
[105] National Academy of Sciences (1980) *Firewood Crops: Shrub and Tree Species for Energy Production Vol. I*
[106] Field and Forest Products (2026) "Citizen science: Mushroom cultivation on honey locust"
[107] Duke (1983) *Handbook of Energy Crops*
[108] Toensmeier (2016) *The Carbon Farming Solution*
[109] Cassidy (2026) "Use corn ethanol"
[110] Lorenz and Lal (2018) *Carbon Sequestration in Agricultural Ecosystems*

chemicals and materials need to come from matter.[111] Sugars and starches are currently the most widely used biobased feedstocks in the chemicals industry. Through fermentation and chemical processing they are converted into "platform chemicals" which can be used to make a great many chemical products.[112] [113]

One challenge to overcome: It is harder to ferment the pods than one might think. This may be a matter of finding the right bacteria.[114]

### Chemicals from Honey Locust Seeds

Honey locust seeds are rich in interesting chemicals. Some are already in use, and others have promising potential uses.

Some extracts from honey locust seeds and wood are currently in use in cosmetics and hair and skin conditioners in Europe.[115] In the 1940s, some seed was sold to mucilage producers (mucilage is a thickener used in sauces and processed foods including ice cream, and in tanning and printing).[116]

Galactomannans, already commercially extracted from carob seeds and other legumes, are also present in honey locust seeds. They are used to make biodegradable plastics for food packaging, and for edible films and coatings.[117] Development of this market could provide a valuable additional product for honey locust plantings.

## Ornamental and Street Tree

At the same time that fodder honey locust enthusiasm was at its peak in the 1940s, work was underway to develop thornless male honey locusts as ornamentals. Honey locust has become an extremely popular street tree and ornamental, initially to replace American elms after they were lost to Dutch elm disease.[118] It is well suited to the job as it is very tolerant of urban conditions

[111] Toensmeier (2016) *The Carbon Farming Solution*
[112] Farac (2026) "Deploy low-emissions chemical feedstocks"
[113] Toensmeier (2016) *The Carbon Farming Solution*
[114] Wilson (2006) *Honeylocust Research Newsletter No. 3*
[115] Coslng Cosmetics Ingredients database online https://ec.europa.eu/growth/tools-databases/cosing/
[116] Detweiler (1947) *Notes on Honeylocust*
[117] Araujo (2025) "Galactomannans: A suitable biopolymer to produce advanced food packaging"
[118] Duke (1983) *Handbook of Energy Crops*

like soil compaction and road salt.[119] Now the great horticulturalist Michael Dirr says honey locust is "so widely used in the Midwest as to be disgusting."[120] These razorback types have become ubiquitous urban weeds, and were all I had ever experienced firsthand of honey locust until just a few years ago.[121]

## Disadvantages

Honey locust has no shortage of disadvantages, some of which have played a role in slowing or blocking its adoption as a new feed, food, and agroforestry multipurpose tree. These include its weediness where native, and its invasiveness elsewhere.[122] Its terrible thorns are a major challenge (though there are many successful workarounds for this, as discussed in Growing Honey Locust below). Honey locust can sucker where its roots are damaged. It is a significant weed of perennial crops, nursery crops, and no-till annual crops.[123] [124]

[119] Del Tredici (2010) *Wild Urban Plants of the Northeast: A Field Guide*
[120] Dirr (2006) *The Reference Manual of Woody Plant Propagation*
[121] Del Tredici (2010) *Wild Urban Plants of the Northeast: A Field Guide*
[122] Bryson (2010) *Weeds of the Midwestern United States and Central Canada*
[123] Uva (1997) *Weeds of the Northeast*
[124] Whitson (2012) *Weeds of the West*

# History

## Before Human Beings Were Here

The woody legumes with fodder pods we discussed above, which are found in so many parts of the world, did not arise randomly. Their large, sweet pods are targeted at large herbivorous mammals that were present tens of millions of years ago when these tree genera came to be. That is to say, their fruits are optimized to be eaten by their megaherbivore partners, which consume the whole fruit, and deposit the stomach acid-scratched seeds in an enormous pile of manure. Some woody legume trees, living in places where very large wild herbivores like elephants and rhinos persist, are still dispersed by these animals today. For many others, ruminant livestock have taken over this role, and for a few, human partners now cultivate them as food.[125]

***Figure 5:*** *An image of late Miocene Europe, ten million years ago, with megafauna and an extremely spiny* Gleditsia *in right foreground. At the time the genus* Gleditsia *was present in Europe. The northeastern United States would have looked very similar at the time. Image Hemiauchenia, CC BY 4.0.*

[125] Barlow (2008) *The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and Other Ecological Anarchronisms*.

The oldest North American fossils of the genus *Gleditsia* are between 23 and 35 million years old. These trees have been here for a long, long time. Their dispersal agents at that time were not cattle or mammoths—those were not here yet. Who was here? Enormous rhinos and rhino-like brontotheres, chalicotheres (think of a cross between a horse and a gorilla), and giraffe-like *Aepycamelus* are candidates. By 15 million years ago the first mastodons had arrived, and 8 million years ago came the giant ground sloths.[126] Between 100,000 and 200,000 years ago came bison, which still eat honey locust pods and may have been an important disperser of the seeds when their populations were larger.[127] [128] Note that bison were present through much of the Northeast before colonization, not just in the prairies as we may think today.[129]

A set of traits have been identified that together imply that honey locust pods are targeted at very large herbivores for dispersal. Some of these traits further show they are targeted at mammals, including brown color and strong odor. Other traits show that they are intended for herbivores of very large size—like producing such large pods, and full of seeds which are not destroyed by chewing. But it is a final set that shows that the originally "intended" dispersal partners are no longer present (in this case, missing for over 10,000 years). These include: The fruit is often rotting in large piles directly under the tree (one certainly sees this with urban honey locusts); they are more common today where cows or horses are present (again, very true of honey locust); their native range is patchy and interrupted in ways that are hard to explain (certainly true here); and few native dispersal agents are very effective (deer spit out the seeds under the tree rather than swallowing the pods, and squirrels eat the seeds).[130]

There are two other dimensions of megafaunal dispersal syndrome that we'll discuss elsewhere. First, the infamous spines of honey locust, covered in the Thorns section below. In the discussion of Bruchid Beetles we'll talk about some of the ways that megafaunal partners (including ruminant livestock) help to prevent damage to honey locust seeds from these pesky insects.

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[126] Barlow (2008) *The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and Other Ecological Anarchronisms*.

[127] Flannery (2001) *The Eternal Frontier: An Ecological History of North America and Its Peoples*

[128] USDA NRCS (nd) *Plant Guide: Honey Locust*

[129] National Park Service (2016) "Bison Bellows: Back home on the range"

[130] Barlow (2008) *The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and Other Ecological Anarchronisms*.

## Indigenous History

Honey locust has a long relationship with North America's Indigenous people, which probably goes back as long as people have been here. The pods were eaten in its native range over the course of thousands of years.[131] The species was probably transported from its homeland to other areas by Indigenous people millennia ago—one of the reasons that nailing down its precise native distribution is so difficult.[132] [133]

Honey locust is mentioned as a minor food in a handful of ethnobotanical works, but more frequently as a medicinal plant.[134] A deeper dive shows a more important, if largely forgotten, role for this tree bean as food. In particular it has a strong relationship with Cherokee culture.

Honey locusts (along with other tree crops like persimmon, mulberry, plum, hickory, and black walnut) are described as a "'husbanded forest community' comprising quasidomesticated tree species preserved by Indian farmers during field clearance."[135] Renowned botanist William Bartram, writing of passing through abandoned Creek settlements near Wrightsboro, Georgia, in 1773–1777: "I observed, in the ancient cultivated fields, [persimmon, honey locust, Chickasaw plum . . . red mulberry, shellbark hickory, black walnut], which informs us, that these trees were cultivated by the ancients, on account of their fruit, as being wholesome and nourishing food. Tho' these are natives of the forest, yet they thrive better, and are more fruitful, in cultivated plantations, and the fruit is in great estimation with the present generation of Indians . . ."[136] Later, writing about the Cherokee and Creeks, he again notes honey locust as an important tree food along with persimmon, plum, mulberry, hickory, and acorns.[137]

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[131] For one example, see Gremillion (1993) "New perspectives on the paleoethnobotany of the Newt Kash Shelter"

[132] Smith (2025) "Shaping the natural world: Patterns of human niche construction by small-scale societies in North America"

[133] USDA NRCS (nd) *Plant Guide: Honey Locust*

[134] Moerman (1998) *Native American Ethnobotany*

[135] Waselkov & Braund (1995) *William Bartram on the Southeastern Indians*

[136] Bartram (1791) *The Travels of William Bartram*

[137] Waselkov & Braund (1995) *William Bartram on the Southeastern Indians*

Honey locust was used as a sweetener by the historic Cherokee for beverages and cornmeal dishes.[138] Bartram noted: "The Indians use the fruit as food and make good beer of it."[139]

It seems very likely that honey locusts were grown in orchards by Cherokee people. Today in former Cherokee lands honey locust is primarily found near old settlements.[140] Dr. Robert Warren studies the dispersal of plants. Speaking of his research in southern Appalachia he notes: ". . . One day it just hit me that . . . they're not a common tree in the mountains, they're a plains tree . . . Every time I saw a honey locust I could throw a rock and hit an archaeological site."

Warren continues: "Three major honey locust orchards were known, one in what's now Franklin, North Carolina, one in South Carolina, and one in Georgia . . . A lot of places where there were honey locusts are now called Sugar Cove, Sugar Lane, and things like that."[141] These orchards are believed to have been used to produce sugar. Several of these towns were named *kulsetsi'yi* ("honey locust place"). Today the towns of Cullasaja and the Cullasaja River are named for the sugar town near Franklin, North Carolina.[142] It's easy to imagine that Cherokee people identified wild "plus trees" with desirable traits like fatback pods, low or no astringency, high yielding, annual bearing, and thornlessness (many of the same traits breeders seek today), propagated them by seed or root cuttings, and brought them into cultivation or semi-cultivation around their settlements (as Indigenous people did for many other fruit and nut species). Whether grown in orchards as we think of them today, integrated in agroforestry systems in cornfields, or in carefully curated populations of "wild" sweet trees growing in rings around towns, honey locust had a close relationship with Indigenous people. Such sweet-podded populations may have represented thousands of years of selection for desirable traits.

Elfers agrees: "I will absolutely confirm the relationship between honey locust and archaeological sites . . . Some of these are thornless with fleshy pods. Everywhere I've seen honey locust in older stands integrated with native forest . . . it is in association with [former

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[138] Munson (1984) *Experiments and Observations on Aboriginal Wild Plant Food utilization in Eastern North America*

[139] Waselkov & Braund (1995) *William Bartram on the Southeastern Indians*

[140] Warren (2016) "Ghosts of cultivation past - Native American dispersal legacy persists in tree distribution"

[141] Ciccone (2024) "Honey locusts: Unraveling ecological and cultural connections with Dr. Robert Warren" podcast interview.

[142] Currahee & Currahee (2011) *Cherokee Place Names*

Indigenous] settlements and archaeological sites. I could probably name dozens of sites where there was a settlement [or important archaeological site], and the contemporary presence of honey locust."[143]

Could some of today's cultivars be legacies of these Indigenous orchards or curated populations? The trees tend to stop bearing by the time they are one hundred years old.[144] With the Indian Removal Act of 1830 followed by the Trail of Tears peaking in 1838, many orchards would have been abandoned for a century before the collection of early cultivars in the 1930s.[145] However, some orchards may have persisted much longer, as some Cherokee people stayed in North Carolina, and of course many remain today including citizens of the Eastern Band of Cherokee Indians.

The two standout cultivars of the last century both hail from historic Indigenous territory within the areas Bartram visited: 'Millwood' from Cherokee land in Lake Junaluska, North Carolina, and 'Calhoun' from Muskogee (Creek) territory in Gadsden, Alabama.[146] Whether these and similar cultivars were grafted from original Indigenous orchard trees, their offspring, or from curated sweet populations, it seems that these were far from random wild trees. Elfers states unequivocally: "There is no question in my mind that 'Calhoun' and 'Millwood' are legacies of Native American agroforestry management."[147]

Forced migration, loss of land, boarding schools, government-issued foods, and a host of other policies broke many Indigenous food, farming, and ecosystem curation traditions.[148] Honey locust consumption appears to be one of the more heavily impacted cultural practices.

Today Indigenous people seem to use honey locust more as medicine than as food. Many medicinal uses are listed in Lenape Nation Clan Mother Shelly DePaul's recent *Ethnobotany of the Lenape Indians and Other Eastern Tribes.*[149] The most recent written reference I've found to Indigenous food use is the 1951 cookbook *Cherokee Cooklore,* which contains William Crowe and

[143] Zach Elfers, Future Forest Plants, personal communication
[144] USDA Fire Effects Information System online
[145] Dunbar-Ortiz (2014) *An Indigenous People's History of the United States*
[146] Detweiler (1947) *Notes on Honeylocust*
[147] Zach Elfers, Future Forest Plants, personal communication
[148] See, for example, Wahpepah (2026) *A Feather and a Fork*
[149] DePaul (nd) *Ethnobotany of the Lenape Indians and Other Eastern Tribes*

Goingback Chiltowskey's recipe to make a drink from honey locust.[150] They write: "Gather honey locust beans when they are ripe, strip them in half lengthwise, soak in hot (not boiling) water for a while, strain this through a cloth. Sweeten the strained juice and reheat or let get cold to drink".[151] Surely Indigenous people still eat honey locust in some places—I have lost count of the number of times I've read that they "used to" eat something, only later to run into Indigenous people who very much still do. But today eating honey locust seems as far from common in Indigenous communities as it is for the rest of us.

## Colonization through the Early-Twentieth Century

Throughout this period many farmers fed pods to their livestock, and rural children commonly ate the pods. Of course Indigenous people continued to eat them in this period.[152] We have few written records to work with, however.

Enslaved people in the American South, and their free descendents who lived in rural areas, ate honey locust pods.[153] In fact, honey locust was the most commonly collected of any food plant remains from an archaeological site excavating enslaved people's quarters at a site in Virginia—over a third of all plant remains found were honey locust.[154] Freedman Peter Randolph, writing in 1855 in his book *Sketches of Slave Life,* wrote about making persimmon–honey locust beer: "They get a barrel and put the 'simmons' into it, and put water there too, and something else that grow on trees, that they call 'locusses', which are about ten inches long, and two across. They put the 'locusses' and 'simmons' into the water together, and let them stand for two or three days".[155] It was quite common that enslaved African people made use of American plants with similar uses to those in West Africa (e.g. American sweet potato replacing African yams).[156] West Africa features at least 16 species of native legume trees in ten genera, all with pods used similarly to honey locust. Most notable of these is the tamarind (*Tamarindus indica*) but many

[150] Ulmer (1951) *Cherokee Cooklore*
[151] Ulmer (1951) *Cherokee Cooklore*
[152] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[153] Smith (1950) *Tree Crops: A Permanent Agriculture*
[154] Mrozowski (2008) "Archaeobotanical analysis and interpretations of enslaved Virginian plant use at Rich Neck Plantation"
[155] Randolph (1855) *Sketches of Slave Life*
[156] Carney & Rosomoff (2009) *In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World*

others remain important foods today, like African locust bean (*Parkia biglobosa*).[157] West Africa also has a number of native persimmon species, so perhaps tree legume–persimmon beverages are a very old tradition indeed.

George Washington was a fan and promoter of honey locust. In a 1787 letter he wrote: ". . . The other purpose mentioned in your letter, and a valuable one too, of subserving stock [feeding livestock], is alone sufficient to induce cultivation of the tree." He caused many to be planted on his farm.[158]

Lamartine Hardman (1856–1937) was a farmer and, for a time, governor of Georgia. He planted many honey locusts on his farm to feed his livestock, both in the pasture and as winter feed in the barn.[159]

Miss Ellen Williams, Georgia dairy farmer, had hundreds of trees on her 400-acre farm by the 1930s. Her cattle ate pods that fell into pastures, and she collected the pods from the trees that were not in pastures and ground them for concentrates. Williams reported that "very often young stock is left out all winter to feed on the honey locust, and . . . such animals are in excellent condition in the spring."[160] Williams submitted the prize-winning cultivar 'Goldsworth' in the first honey locust pod contest, and selected the cultivar 'Cluster' which produced pods in tight clusters.[161]

# The Twentieth and Twenty-First Centuries

## The Golden Age of Honey Locust

The golden age of honey locust, which ran roughly from 1927–1946, was driven by one of the key figures of twentieth-century tree crops and agroforestry: J. Russell Smith. In 1927 Smith held the first contest for best honey locust pods through the *Journal of Heredity*. Pods were submitted from 36 states, with most of the best pods from the South.[162] Smith's book *Tree Crops: A*

[157] Bryan (1995) *Leguminous Trees with Edible Beans, with Indications of a Rhizobial Symbiosis in Non-Nodulating Legumes*
[158] Detweiler (1947) *Notes on Honeylocust*
[159] Smith (1950) *Tree Crops: A Permanent Agriculture*
[160] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[161] Santamour and McArdle (1983) "Checklist of cultivars of honeylocust (*Gleditsia triacanthos* L.)"
[162] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"

*Permanent Agriculture* was first published 1929, though he had been writing on the subject for some time already at that point. "Permanent agriculture" was a forerunner to today's regenerative agriculture movement, and the big environmental crisis it arose in response to was soil erosion, especially on the sloping lands of Appalachia (today's permaculture movement was deeply inspired by Smith, and even took its name from a portmanteau of "permanent agriculture").[163] Smith laid out an agroforestry vision of tree crops planted on the United States' highly eroded agricultural hillsides. One focus was trees that produce feed for livestock, and he highlighted honey locust as an extremely promising tree for that purpose.[164] Smith's work continues to inspire the tree crops and agroforestry movements in the U.S. to this day.

Smith worked with the Tennessee Valley Authority (TVA) to develop this agroforestry vision. He recommended John Hershey to run their tree crops division.[165] The TVA was funded through FDR's New Deal.[166] Hershey brought honey locust in as a part of the TVA tree crop program in 1934.[167] He held a honey locust pod contest in 1934 with 17 entries, which introduced the world to 'Calhoun' and 'Millwood', which remain the best known and most widely-grown sweet fatback honey locust cultivars today.[168] Between Smith and the TVA there were a series of contests through 1939, but no new cultivars came along to beat 'Millwood' and 'Calhoun'.[169] However, some showed interesting traits like clusters of pods or very thick pods and were collected for breeding.[170] Hershey's run at the TVA was legendary, but he retired to his farm in Downingtown, Pennsylvania, after only four years.[171] [172] Elfers, who has a collection of original documents from Hershey, clarifies: "Ostensibly it was about his health, but in actuality it was due to the [1937] firing of [Hershey's boss] Arthur Morgan after a coup by the other board members . . . With Morgan gone, any interest in tree crops and even basic conservation practices

[163] Ciccone (2023) "The 20th century permanent agriculture revolution"
[164] Smith (1950) *Tree Crops: A Permanent Agriculture*
[165] Smith (1950) *Tree Crops: A Permanent Agriculture*
[166] Hingston (2018) "The (very gentle) fight to save a Downingtown "food forest"
[167] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[168] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[169] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[170] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[171] Smith (1950) *Tree Crops: A Permanent Agriculture*
[172] Hingston (2018) "The (very gentle) fight to save a Downingtown "food forest"

like erosion control became met with lukewarm interest at best. Hershey was essentially bureaucratically hamstringed, so he took the opportunity to resign."[173]

There was quite a lot of buzz about honey locust during this period, and a number of test orchards were planted. There were many orchard and livestock feeding trials at Agricultural Experiment Stations in Alabama, Iowa, Maryland, North Carolina, Ohio, Tennessee, and Virginia.[174] An orchard of 'Millwood' was planted at Virginia Tech in 1940, to which we will return later.[175] Honey locust was grown in fodder plantings, at least at some scale, in Spain in this period.[176] At the time it was not clear that fatback types would even grow in the northern U.S., and a search was underway for sweet honey locusts for the North.[177] The movement to develop honey locust as a new fodder crop had strong momentum, and its future looked bright, though it was not yet actually a commercial crop. The USDA Soil Conservation Service (the SCS, now known as the NRCS), under the leadership of Henry Wallace, began honey locust research.[178] Research from this "golden age" was collected by SCS researcher S.B. Detweiler in his 1947 publication *Notes on Honeylocust.*[179] Though it was never properly published, Detweiler's book has been highly influential and is available online through the National Agriculture Library.[180]

It was during this period that development of thornless ornamental honey locust cultivars began. There was a substantial overlap between the people working on the species for pods and those working on ornamentals, with techniques for creating thornless grafted trees being a common ground.[181] Ornamental honey locust has gone on to become a massive success. Perhaps pod-producing honey locusts can follow the same trajectory—even a tiny fraction of the same adoption would constitute a major success.

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[173] Zach Elfers, Future Forest Plants, personal communication

[174] Detweiler (1947) *Notes on Honeylocust*

[175] Wilson (1994) *Honeylocust Research Newsletter No. 1*

[176] Rodrigañez (1949) *Prados Arbóreos: Apuntes y Datos Para Aprovechar el Follaje de los Arboles y Arbustos en la Alimentación del Ganado*

[177] Detweiler (1947) *Notes on Honeylocust*

[178] Smith (1950) *Tree Crops: A Permanent Agriculture*

[179] Detweiler (1947) *Notes on Honeylocust*

[180] Smith (1950) *Tree Crops: A Permanent Agriculture*

[181] Detweiler (1947) *Notes on Honeylocust*

## The Post-WWII Dark Ages

World War II led to a sea change in U.S. agriculture, with an all-in shift to agrichemicals and industrial annual crop production.[182] Honey locust work crashed and burned almost everywhere. I couldn't put it better than to quote at length the words of Eliot Tozer, writing in 1980: "Then, catastrophe. For a variety of reasons—wartime urgencies, changing agricultural practices—the cries of the Hersheys and the Smiths were ignored. After World War II, scientists of the TVA went so far as to destroy most of the selected specimens in their arboretum and plant peaches in their place. Prime honey locust cultivars were abandoned . . ."[183] The TVA focus shifted more to timber and erosion control, with food for people and livestock deprioritized.[184]

Honey locust trees in trials in Alabama were cut down, while others in Iowa and Ohio were lost to neglect and even fire.[185] The SCS abandoned its honey locust work in 1947.[186]

This "dark age" of honey locust was to last for several decades. But not all was lost. Thankfully honey locust trees are long-lived, and tough enough to survive periods of neglect. Many honey locust champions did not give in to discouragement and kept the torch burning. Hershey and Smith never stopped promoting honey locust as long as they lived. Both of them sold hundreds of grafted trees through their respective nurseries.[187] Some of these trees are still alive and producing today.[188]

One person who received 'Millwood' and other grafted trees from Smith's nursery was Ralph Kreider of Hammond, Illinois, who also selected improved forms of persimmon and many nut crops.[189] He not only grew out his grafts but also engaged in selection and breeding work, raising seedlings of 'Millwood' and selecting improved pod cultivars.[190] His writings provide much valuable insight from hard-won experience. Later, seeds from his grafted trees would be sent

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[182] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[183] Tozer (1908) "The honey locust"
[184] Hay (2025) *Feed Us With Trees*
[185] Smith (1950) *Tree Crops: A Permanent Agriculture*
[186] Smith (1950) *Tree Crops: A Permanent Agriculture*
[187] Smith (1950) *Tree Crops: A Permanent Agriculture*
[188] Zach Elfers, Future Forest Plants, personal communication
[189] Kreider (nd) "My experiences with honey locust"
[190] J.C. McDaniel (1980) "A plant breeder looks at some American tree crops: *Morus, Gleditsia* and *Diospyros*"

around the world through the National Arboretum and International Tree Crops Institute.[191] Seeds of some of Kreider's plants apparently went to Ken Asmus of Oikos Tree Crops.[192]

This period saw plantings in Algeria and Australia.[193] P.E. LeRoux carried out fodder honey locust research and promotion in South Africa in the 1950s.[194]

A sad coda to this period: Hershey passed away in 1967. His nursery, including his extensive collection of honey locust cultivars and promising seedlings, was sold and turned into a subdivision. However this is not the last we will hear of these trees . . .[195]

## Renewed Interest: 1970–1980

The environmental crises of the 1970s brought global attention to agroforestry and tree crops.[196] This helped stimulate new interest in honey locust. Honey locust crop champion and TVA employee David H. Scanlon wrote in 1980: "A resurgence of interest in the species was stimulated by requests from foreign countries for seed and information . . . and demands from young farmers attempting to develop tree crops for submarginal farmland."[197] Tozer, also writing in 1980, said: ". . . Just as geopolitical events and economic reality conspired to deny the promise of the honey locust 30 years ago, so have they now combined to revive interest in it . . . Many young people went back to the land. Of economic necessity, they moved onto the old farms, mostly marginal land that had long since been abandoned. One of them was Gregory Williams . . . director of the Appalachian Regional Office of the International Tree Crops Institute USA."[198]

The TVA still held a dozen or so honey locust cultivars in plantings at this time. Scanlon propagated and distributed 'Millwood', 'Calhoun', 'Smith', and 'Diden' to preserve them. He provided grafts and seeds to the next generation of honey locust crop champions like Greg Williams.[199]

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[191] Kreider (nd) "My experiences with honey locust"
[192] Zach Elfers, Future Forest Plants, personal communication
[193] Detweiler (1947) *Notes on Honeylocust*
[194] For example see his four articles in *Farming in South Africa* Volume 35 in 1959.
[195] Paschall (2018) "Exploring North America's oldest food forest"
[196] Nair (2021) *Introduction to Agroforestry; Four Decades of Scientific Developments*
[197] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[198] Tozer (1908) "The honey locust"
[199] Tozer (1908) "The honey locust"

Williams, at the time with the International Tree Crops Institute, became an important repository of cultivars and promoter of tree crop systems. He fielded many requests from young back-to-the-land farmers who read Smith and were planting out orchards of 'Calhoun' and 'Millwood'.[200] In the early 1980s, Greg Williams, then with International Tree Crops Institute in Kentucky, distributed honey locust seed, scionwood, and grafted trees to over one hundred organizations and amateur researchers worldwide.[201]

Meanwhile at the National Arboretum, Frank Santamour was at work breeding honey locusts, both ornamental and fatback types.[202] Several grafted trees remain there from his tenure. Both Santamour and Williams sent seeds of improved honey locust around the world.[203] Unfortunately some of the introductions that resulted in invasive populations may be traceable to this period.

James Hanover of Michigan State undertook a monumental collection of honey locust seeds from 250 locations across their range in 1979.[204] We will return to the plantings that resulted in the decades to come.

There was a burst of interest in honey locust as a source of ethanol during the energy crisis of the 1970s. Several presentations addressed its potential at a 1980 conference called *Tree Crops for Energy Co-Production,* sponsored by the U.S. Department of Energy.[205] The book which resulted remains one of the most important writings on honey locust development and potential. Honey locust research began to resume by the late 1970s.[206]

Honey locust was promoted as a livestock feed and human staple food tree in Bill Mollison and David Holmgren's *Permaculture One*, the foundational book of permaculture.[207] It would be hard to overstate how influential *Tree Crops: A Permanent Agriculture* was on Mollison and Holmgren, and Mollison went on to highlight Hershey's farm as a case study in *Permaculture: A Designers Manual.*[208]

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[200] Tozer (1980) "The honey locust"
[201] Wilson (1994) *Honeylocust Research Newsletter No. 1*
[202] Tozer (1980) "The honey locust"
[203] Kreider (nd) "My experiences with honey locust"
[204] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[205] Solar Energy Research Institute (1980) *Tree Crops for Energy Co-Production on Farms*
[206] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[207] Mollison & Holmgren (1978) *Permaculture One: A Perennial Agricultural System for Human Settlements*
[208] Mollison (1988) *Permaculture: A Designer's Manual*

## Active Work Below the Surface: 1981–2015

At first I was going to call this the second dark age, but in fact as I've learned there was quite a lot going on, much of it central to making today's renaissance possible. In 1994, 30 researchers in eight temperate-climate countries were at work on sweet honey locust. At that time 42 cultivars were being trialed in fodder silvopasture studies around the world.[209] However these projects were very far from the public eye. I was interested at the time and considered myself pretty tuned in, but in that era before the internet we have today, most of these projects flew below my radar (though I visited Springtree in 1997 and ordered from Hidden Springs in 2005). Honey locust's crop champions from this period are every bit as important as Smith and Hershey, though less well known.

One of the most important players in this period is Andy Wilson. He founded Springtree Agroforestry Project, a 123-acre farm in central Virginia. Sheep and cattle were raised there in adaptive multipaddock grazing systems (then quite a new idea) with rows of improved honey locusts protected by fencing in between the paddocks.[210] By the time I visited in 1997, Wilson had switched to only raising sheep, as they digest honey locust seeds more effectively. Wilson founded the Honeylocust Research Group in 1990, reaching out to people who had ordered plant material from Greg Williams and to researchers around the world. He released three newsletters with research updates, and served as an international communications hub.[211] The third and final issue of their newsletter came out in 2006.[212] Around that time he ceased raising livestock and more or less let his plantings go feral due to lack of interest from the public.[213]

The TVA once again looked into honey locust, as an ethanol source. But when oil prices dropped again, they lost their funding. One of those TVA project orchards was Hidden Springs Nursery.[214] Hidden Springs continued to be a source for grafted honey locust for decades to come, and was where I ordered my first cultivars in 2005 (which were to be killed by goats). Bass Pecan Nursery of Mississippi was another one of very few nurseries to offer grafted fatback honey locust during this period.

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[209] Wilson (1994) *Honeylocust Research Newsletter No. 1*
[210] Wilson (1991) "Browse agroforestry using honey locust"
[211] Wilson (1994) *Honeylocust Research Newsletter No. 1*
[212] Wilson (2006) *Honeylocust Research Newsletter No. 3*
[213] Andy Wilson, Springtree Agroforestry, personal communication
[214] Wilson (1994) *Honeylocust Research Newsletter No. 1*

Meanwhile Hanover's extremely diverse Michigan State plantings in Battle Creek and several other sites were part of a long-term effort there to research and improve honey locust for agroforestry.[215] The research effort, with Hanover and Michael Gold at the helm, began in 1983 to test the hypotheses of the golden age, which they knew were "based on a very limited research and germplasm data base." The goals of their selection and breeding included feeding livestock. Their trees did not begin to bear for 12 years, which slowed their progress.[216]

One of Europe's great champions of honey locust is agroforestry researcher Christian Dupraz. Between 1987 and 1992 he and his team selected a dozen cultivars from trees across France—mostly from feral trees growing near gas stations and other classic spontaneous urban vegetation sites.[217] They planted five orchards of grafted trees in France and Greece.[218] These orchards are among the best-documented in the world.

Virginia Tech had planted an orchard back in 1940 which seems to have been largely forgotten. Wilson writes: "In 1990 I located the remnants of the orchard at Virginia Tech. Thirty-four of the original 160 grafted 'Millwood' cultivar trees remained. This orchard of 50-year old trees occupied by grazing animals was an inspiring sight. The trees, spaced too closely at 20 feet by 30 feet, had not been maintained and were not in good shape."[219] In 1995 Virginia Tech set out two new plantings, one of seedlings and another of grafts.[220] This plan for this planting was made while Gold was spending a year there on sabbatical, and Wilson was part of the grant writing and system design and establishment.[221] [222] These were to play a key role in the honey locust renaissance that was to begin a decade or so later.

Another key development in this period: Jerry Cottingham of Medina, Texas, appears to have been the first person to cross named cultivars with each other (using the male flowers of

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[215] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[216] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[217] Zach Elfers, Future Forest Plants, personal communication

[218] Wilson (2006) *Honeylocust Research Newsletter No. 3*

[219] Wilson (1994) *Honeylocust Research Newsletter No. 1*

[220] Wilson (2006) *Honeylocust Research Newsletter No. 3*

[221] John Fike, Virginia Tech, personal communication

[222] Andy Wilson, Springtree Agroforestry, personal communication

'Ashworth', see Breeding below). By 1996 the seedlings from these crosses were fruiting and he was evaluating their yield and pods.[223]

## Renaissance: 2016–Today

The last decade has seen a wave of enthusiasm and new honey locust crop champions. The focus of this latest resurgence of honey locust is largely driven by its potential use as fodder in silvopasture systems.[224] Several things happened at once that seem to have driven this change, notably the legacy of Hershey's former plantings. These were the main initial driver of honey locust enthusiasm for almost all of the crop champions interviewed for this publication—though Smith's *Tree Crops* book was cited as a key influence by most interviewees as well.[225]

The most crucial part of this renaissance was the rediscovery of the remnants of Hershey's old nursery in Downingtown, Pennsylvania. Not all was lost when the subdivision was built over the farm—hundreds of trees survived, now living as yard and street trees and occupying undeveloped lots. Among them were a number of grafted and seedling honey locusts with exceptionally sweet pods. Some trees continue to be cut down for parking lots and new development, though many are not in danger. These trees have survived –16°F and years of neglect and continue to bear fruit.[226] [227]

A small group of nursery operators, ecologists, and organic farmers began to explore these legacy trees in 2016, inspired by an article about Hershey by Max Paschall of Shelterwood Forest Farm in *Permaculture Design* magazine.[228] To me, those visits mark the beginning of the current renaissance in honey locust work.

This group included Dale Hendricks of Green Light Plants, Taylor Malone of The Fruit Explorers, Buzz Ferver of Perfect Circle Farm, Elfers, and Paschall, among others.[229] They collected seed and grafting wood from many of the old Hershey trees, including honey locusts

[223] Wilson (1996) *Honeylocust Research Newsletter No. 2*
[224] Wilson (2018) *Perennial Pathways: Planting Tree Crops*
[225] Elodie Eid, personal communication
[226] Paschall (2018) "Exploring North America's oldest food forest"
[227] Hingston (2018) "The (very gentle) fight to save a Downingtown "food forest"
[228] Hay (2025) *Feed Us With Trees*
[229] Hingston (2018) "The (very gentle) fight to save a Downingtown "food forest"

along with persimmons, black walnuts, sweet acorn, oaks, and more.[230] The trees, unfortunately unlabeled, are probably mostly just the same cultivars we already knew about, like 'Millwood' and 'Calhoun'. Honey locust champions like Elfers and others are working to identify what the original cultivars were. Grafting wood was collected from some of the mystery Downingtown trees, and the cultivars were named 'Big Fatty', 'Methodist Church', and 'Parking Lot'. Elfers and others are convinced that 'Big Fatty', for example, is actually 'Calhoun', based on close observation of both cultivars. Hershey's own records show that he mostly planted 'Calhoun' and 'Millwood', though Elfers suspects there may be a few trees of other cultivars like 'Schofer' and 'Strickler' as well.[231] Dr. Richard Tegtmeier at the Rodale Institute is doing genetic studies on honey locust cultivars which will be very helpful in identifying old unlabeled grafted trees—and in future breeding work.[232] Downingtown honey locust trees in yards are currently being cut at an alarming rate.[233]

This rediscovery of Hershey's trees, some 50 years after his passing, could be an echo of golden age cultivars like 'Millwood' and 'Calhoun', themselves perhaps the legacy of Cherokee and Muskogee orchards. One of the advantages of trees is that they outlive us, and this, on occasion, makes it possible to pass on the best ones to future generations even after we are gone.

The 1995 Virginia Tech plantings were coming of age. They became the site for several key studies, and Professor John Fike has provided the continuity and connective tissue between these projects. Jakob Johnson's 2011 thesis focused on this planting, and from 2009–2013 he published several papers that revived interest in honey locust.[234] [235] [236] [237] One of the key outcomes was, for the first time, an actual measured yield from an orchard in good soil, as opposed to an extrapolated one.[238] Several of our interviewees mentioned Johnson's work as a key inspiration.[239] Gabriel Pent would go on to publish an important paper on the productivity

[230] Paschall (2018) "Exploring North America's oldest food forest"
[231] Zach Elfers, personal communication
[232] Zach Elfers, Future Forest Plants, personal communication
[233] Buzz Ferver, Perfect Circle Farm, personal communication
[234] Johnson (2009) "Optimum nutritive value of honey locust seed pods within temperate silvopasture"
[235] Johnson (2011) *Honeylocust and Black Walnut Tree Products within a Temperate Appalachian Silvopasture*
[236] Johnson (2012) "Millwood and wild-type honey locust seedpod nutritive value changes over winter"
[237] Johnson (2013) "Millwood honey locust trees: seedpod nutritive value and yield characteristics"
[238] Johnson (2013) "Millwood honey locust trees: seedpod nutritive value and yield characteristics"
[239] Jesse Marksohn, personal communication

of lambs raised in the same Virginia Tech honey locust silvopasture.[240] One of their next priorities is to test the pods for ability to reduce enteric methane from ruminants.[241]

Michigan State had established several plantings in the early 1980s. Of these, only the one at Kellogg Station, in Battle Creek, Michigan, remains. Of 2,800 trees planted, about 2,000 survive today. They are planted very densely, with the whole planting on only 3.1 acres. Some perished due to overcrowding, some were winter-killed, and some were deliberately thinned out. Today the site is of immense value for cultivar selection, especially for identifying cold-hardy individuals.[242]

So far our new generation of honey locust champions have evaluated about 1,000 of these trees. These trees were grown from seed collected at 250 locations in 26 states, throughout the native range of honey locust, and they are extremely diverse, demonstrating the full range of thorns to thornlessness, fleshy to papery pods, and every other variable imaginable. Seedings from the Northern Plains and Great Lakes have generally done well there. Interestingly, a few seedlings from far southern sources like Georgia and Louisiana have also done quite well.[243]

Work continues at Springtree Agroforestry as well. Elfers and others began to visit Wilson in this period. Though his trees had been neglected, they were still growing and had produced many seedlings. Together Elfers and Wilson have selected 11 promising cultivars from seedlings of Springtree's many grafted trees. The first four of these were released in 2026 for the first time.

Austin Unruh of Trees for Graziers started planting silvopastures in 2019. He learned that throughout the eastern part of the country, winter feed is a major expense for livestock producers, and that honey locust, which drops pods into pastures all winter, can play a major role in addressing that challenge. The goal of Unruh's organization is to make it as easy as possible for farmers to plant trees in their pastures. They provide a full range of services including consulting, help getting cost-share, planting, management, and nursery. As of fall 2025 Trees for Graziers had planted 7,500 honey locusts (out of 30,000 trees) on 780 acres.[244]

[240] Pent (2018) "Lamb productivity on stockpiled fescue in honey locust and black walnut silvopastures"
[241] John Fike, Virginia Tech, personal communication
[242] Alex Tanke, Dispersion Farms, personal communication
[243] Alex Tanke, Dispersion Farms, personal communication
[244] Austin Unruh, Trees for Graziers, personal communication

The Rodale Institute has very recently embarked on an effort to support honey locust breeding and nursery development. Details are provided in the Breeding section below. The Savanna Institute, an agroforestry non-profit based in Wisconsin, held a pod contest a few years ago, echoing the contests from the golden age. They received pods from three individuals, but none were superior to 'Millwood' and 'Calhoun'.[245] Elfers contributed some Downingtown pods, which he now believes, ironically, to be 'Millwood' and 'Calhoun' themselves—no wonder they were not superior![246]

Alex Tanke of Dispersion Farms has planted out hundreds of seedlings with good genetics in Wisconsin, culling for thorniness and other traits. In another decade this should be a valuable planting for selecting cold-hardy cultivars.[247]

Today 26 cultivars of fatback honey locust are available through U.S. nurseries, far more than ever before. The dedicated work of champions from the last century, and before, has preserved and passed along some excellent cultivars. The plantings made by champions, especially at Battle Creek, Virginia Tech, Springtree, and INRA in France, have made possible critical research and selection of additional cultivars, including much-needed trees for colder climates. With the rise of interest in agroforestry in general and silvopasture in particular, honey locust is being planted out on many farms. While far from ready to be planted on all U.S. grazing land, it is beginning to have its moment in the sun. The long relay race that is tree breeding, passing on from generation to generation, is getting ready to bear fruit on the century-old vision of J. Russell Smith. We are all indebted to the crop champions who refused to abandon honey locust through the challenges of the last one hundred years.

[245] Kaitie Adams, Savanna Institute, personal communication

[246] Zach Elfers, Future Forest Plants, personal communication

[247] Alex Tanke, Dispersion Farms, personal communication

# Characteristics

## Form and Habit

Honey locust is generally a medium-sized tree of height from 40–50 feet, though it does on occasion reach 100 feet.[248] [249] Grafted trees with heavy yields don't grow as tall or as quickly as wild seedlings.[250] Generally it is single-stemmed, though it can produce suckers if roots are damaged.

Growth rate is moderate to fast.[251] Honey locust typically grows 1–2 feet per year for the first 15 years, depending on the quality of soils, available water, and length of growing season.[252] Crown width is variable at 30–75 feet.[253] However a large male at my farm is fully 90 feet wide.

Foliage is fernlike and reminiscent of many related tree legumes like black locust, mimosa, carob, and mesquite (bipinnate on most branches, and pinnate on the spurs).[254] [255]

Honey locusts live to about 125 years of age, occasionally up to 200 years.[256] [257]

## Roots

Honey locust roots can be very deep, though they are flexible depending on soils. In more fertile soils they tend to be shallower.[258] They are deeper-rooted in sandy soils.[259] They are often deeply taprooted but also with many shallow laterals.[260] The roots sucker if damaged by machinery or

[248] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[249] USDA NRCS (nd) *Plant Fact Sheet: Honey Locust*
[250] John Fike, Virginia Tech, personal communication
[251] Hightshoe (1988) *Native Trees, Shrubs and Vines for Urban and Rural America*
[252] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[253] Hightshoe (1988) *Native Trees, Shrubs and Vines for Urban and Rural America*
[254] Hightshoe (1988) *Native Trees, Shrubs and Vines for Urban and Rural America*
[255] Haines (2011) *Flora Novae Angliae*
[256] O'Bar (2013) *Alternative Crops for Drylands: Proactively Adapting to Climate Change and Water Shortages*
[257] Hightshoe (1988) *Native Trees, Shrubs and Vines for Urban and Rural America*
[258] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[259] Detweiler (1947) *Notes on Honeylocust*
[260] Detweiler (1947) *Notes on Honeylocust*

other disturbance—for example by plows or low-set mowers. Recall that suckers of rootstocks can be thorny even if the grafted portion is thornless.[261]

## Flowers and Pollination

Honey locust flowers are yellow-green to green, and somewhat inconspicuous as a result. They grow in spikelike racemes. They have 3–5 petals and sepals, and 6–10 stamens.[262] The flowers appear in May or June.[263] This is usually, but not always, late enough to avoid frost damage to the flowers.[264]


***Figure 6:*** *At left: the spikelike raceme of the inflorescence (flower cluster). Above right: the individual male flowers. Center and below right: the female flowers and early stages of pod development. Image Gmilhail, CC BY-SA 3.0 RS.*

The reproductive system of honey locust is somewhat complex, and is known as polygamo-dioecious. Most trees produce mostly male (staminate) or female (pistillate) flowers, but many produce modest numbers of the opposite type.[265] The technical term for trees that produce mostly female flowers along with a few male flowers is subgynoecious, but here we'll call them "female" or "mostly female". For individuals that produce predominately male flowers with some female flowers, a botanist would call them subandroecious, but again here we'll use "male" or "mostly male" for ease of reading.

Honey locusts also occasionally produce perfect flowers with both male and female parts. Elfers and others assume that all male flowers produce viable pollen, including those on "mostly female" trees. Some have reported that the

[261] Detweiler (1947) *Notes on Honeylocust*
[262] Bailey (1976) *Hortus Third*
[263] Lamb (1915) *A Calendar of the Leafing, Flowering, and Seeding of the Common Trees of the Eastern United States*
[264] Detweiler (1947) *Notes on Honeylocust*
[265] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"

pollen of such trees is not viable, but it has certainly been used to successfully pollinate females in some cases.[266] [267] Elfers suspects that these reports may indicate a misalignment of flowering times and pollen maturity rather than actual sterile pollen.[268]

Honey locust is mostly outcrossing, meaning that female flowers need to be pollinated by male flowers from a genetically different tree (a tree grown from seed or a graft of a different cultivar) in order to set viable seed. Honey locust does do a bit of self-pollination as well.[269] [270] Plant breeders call this system facultative outbreeding. Based on his observations, Elfers suspects that honey locust is parthenocarpic, meaning female trees will produce seedless or mostly seedless pods in the absence of pollination.[271]

The flowers are pollinated by insects. They are outrageously popular with honeybees.[272]

These are not the only complexities in honey locust reproduction. Cloned 'Millwood' female trees sometimes came out male.[273] Certain branches will produce only male or only female flowers, despite what the rest of the tree produces.[274] There are also multiple reports of honey locust trees changing sex. One tree was observed to produce a high yield of pods in 1985, then produced only male flowers until 1992, when it again began to produce pods for several years.[275]

## Thorns

Honey locust thorns are incredibly vicious, and can not only injure people and livestock but even puncture tractor tires. They can be up to 18 inches long and branched, like something out of a horror movie. This trait has been useful in creating dense animal-proof hedgerows but is considered extremely undesirable by almost everyone working with honey locust today, and has

[266] Gold (nd) "Honeylocust (*Gleditsia triacanthos* L.): Genetic variation and potential use as an agroforestry species."
[267] Detweiler (1947) *Notes on Honeylocust*
[268] Zach Elfers, Future Forest Plants, personal communication
[269] Ruiz (2022) "Reproductive biology of the invasive *Gleditsia triacanthos* L. (Fabaceae)"
[270] Detweiler (1947) *Notes on Honeylocust*
[271] Zach Elfers, Future Forest Plants, personal communication
[272] Pellett (1976) *American Honey Plants*
[273] Moore (1948) "The present outlook for honey locust in the South."
[274] USDA NRCS (nd) *Plant Guide: Honey Locust*
[275] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."

been at least since the early cultivar selection work in the 1920s.[276] Injuries to livestock are not only scratching and stabbing, but the thorns can even puncture cattle hooves.[277] Given this, it's not hard to imagine that they could easily penetrate heavy boot soles as well. Honey locusts are truly hated and a sworn enemy of many farmers because of the thorns.[278] While not technically toxic, wounds from the thorns can be slow to heal.[279] In the hot humid South, puncture wounds on cattle from the thorns can get infected.[280] On the other hand, grazier and author Greg Judy reports that the thorns look bad but he has "never had to pull one out of a cow hoof."[281]

***Figure 7:*** *The terrifying thorns of honey locust. Greg Hume, CC BY-SA 3.0.*

The nightmarish thorns of honey locust are another clue as to their relationship with long-extinct megaherbivores. The thorns are present on younger trees, and less present once above the reach of a mastodon's trunk or a ground sloth's claws. And when bark is injured (sometimes through pruning), thorns can sprout out to protect the damaged area. These traits may reflect that honey locust "wanted" large animals to eat its fruit and spread its seeds, but not to eat its foliage or bark.[282]

There is a naturally spineless botanical variety *inermis.* This is distinct from the thornless grafts that can be made from thorny trees, as the seedlings of such grafted trees will still be thorny.[283] Within thorny trees, degree of thorniness is highly variable as well.[284] Generally speaking, once

[276] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[277] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[278] Detweiler (1947) *Notes on Honeylocust*
[279] USDA NRCS (nd) *Plant Fact Sheet: Honey Locust*
[280] Kreider (nd) "My experiences with honey locust"
[281] Judy (2025) "Greg Judy loves honey locust pods for natural economical high sugar livestock forage" youtube
[282] Barlow (2008) *The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and Other Ecological Anarchronisms.*
[283] Detweiler (1947) *Notes on Honeylocust*
[284] Zach Elfers, Future Forest Plants, personal communication

trees reach a certain height they become thornless in their upper branches, even while they may stay thorny in the bottom 10–20 feet throughout their life.[285] Elfers thinks of honey locust thorniness as a spectrum rather than a binary: "If 1 is entirely thornless and 10 is horribly thorned, most trees in a mixed population will express somewhere in the center."[286]

There are some accounts that pruning can cause thornless trees to revert to thorny.[287] 'Millwood', in contrast, is reported to be thornless even after heavy pruning.[288] Stress can also cause honey locust to produce thorns.[289]

## Pods

Honey locust pods are indehiscent legumes, meaning they are shaped like a pea pod and do not split open when ripe.[290] It cannot be stressed enough that the pods of razorback and fatback forms are completely different, and one is useful for fodder (and food) while the other is not. Fatback types, with their thick sweet pulp, are mostly from the southern part of the species' range, while paper-thin razorbacks hail primarily from the northern and western parts.[291] The great botanist C.F. Swingle actually proposed that these two types should be considered different botanical varieties.[292]

***Figure 8:*** *Ripening pods of honey locust. Image AnnRo0002, CCO 1.0*

As mentioned, fatback types are filled with sweet pulp and razorback types have little or no pulp. Generally razorback types have more seeds than

[285] Chase (1947) "Propagation of Thornless Honeylocust."
[286] Zach Elfers, Future Forest Plants, personal communication
[287] Detweiler (1947) *Notes on Honeylocust*
[288] Kreider (nd) "My experiences with honey locust"
[289] Buzz Ferver, Perfect Circle Farm, personal communication
[290] Harris & Harris (2001) *Plant Identification Terminology*
[291] Detweiler (1947) *Notes on Honeylocust*
[292] Detweiler (1947) *Notes on Honeylocust*

fatback types.[293] Length ranges from 2–24 inches, and form can be straight or twisted.[294] They are variable in sugar content, pulp, flavor, and astringency.[295]

See Composition for more in-depth nutritional analysis.

# Origin and Tolerances

## Native and Naturalized Range

Figure 9 shows one version of the native range of honey locust. Every expert seems to have a slightly different opinion though, as to where, outside the central U.S., it is actually native.[296] It is likely native in the southernmost tip of Ontario in Canada.[297] Honey locust is listed as native in the Mexican border states of Sonora, Coahuila, Nuevo León, and Tamaulipas—though some Mexican botanists have told me that they consider the source article somewhat questionable.[298]

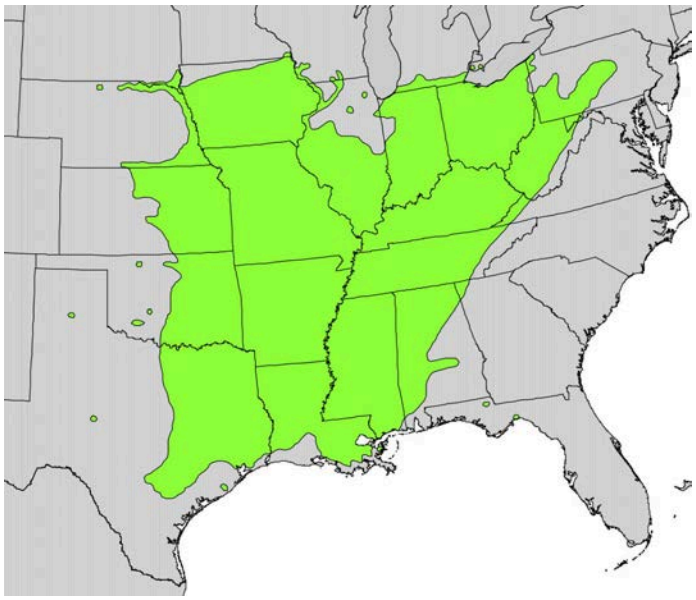

***Figure 9:*** *The most conservative version of the native range of honey locust. Image public domain, originally from "Atlas of United States Trees", U.S. Geological Survey.*

I compared the native ranges reported for honey locust by four respected sources.[299] [300] [301] [302] They had consensus on

[293] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[294] Hershey (nd) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[295] Detweiler (1947) *Notes on Honeylocust*
[296] World Flora Online
[297] World Flora Online
[298] Villaseñor (2016) "Checklist of the native vascular plants of Mexico"
[299] Little (1971) *Atlas of United States Trees*
[300] World Flora Online
[301] The Biota of North America Program
[302] Go Botany online

24 U.S. states in the heart of honey locust country. All 24 are represented in the map in Figure 9, which is the most conservative of the four. There was disagreement about honey locust's native status in 16 additional states. Within the U.S., honey locust is state-listed as invasive in South Carolina (though actually listed as native there by three of our four sources).[303] Honey locust has also naturalized in Alaska.[304] In my experience, this is a rather unusual amount of disagreement for range maps, though I have seen it from time to time with species that were used and transported to new locations by Indigenous people before colonization, as honey locust likely was. Table 1 shows the native status of honey locust in northeastern states for these four sources. Honey locust is not listed as a noxious weed in any U.S. state.[305]

***Table 1****. Native status of honey locust in northeastern states according to four sources.*

| | ***Atlas of United States Trees*** | **Biota of North America Program** | **World Flora online** | **GoBotany** |
|---|---|---|---|---|
| **CT** | Not Native | Not Native | Native | Not Native |
| **DE** | Not Native | Not Native | Native | Not Native |
| **MD** | Not Native | Native | Native | Native |
| **ME** | Not Native | Not Native | Native | Not Native |
| **MA** | Not Native | Not Native | Native | Not Native |
| **NH** | Not Native | Not Native | Native | Not Native |
| **NJ** | Not Native | Not Native | Native | Not Native |
| **NY** | Not Native | Not Native | Native | Not Native |
| **PA** | Native | Native | Native | Native |
| **RI** | Not Native | Not Native | Native | Not Native |
| **VT** | Not Native | Not Native | Native | Not Native |
| **WV** | Native | Native | Native | Native |

[303] Invasive Plant Atlas online.

[304] World Flora Online

[305] National Plant Board (nd) "State regulated noxious weeds"

Honey locust's toughness, adaptability, and dispersal via cattle, sheep and goats has helped it naturalize in suitable climates around the world. It has naturalized in every continent except Antarctica.[306]

## Habitat

Wild honey locusts are rarely a dominant forest species, instead they are found scattered here and there.[307] They establish in full sun in floodplains, bottomlands, upland forests and edges, and near bodies of water.[308] Honey locust is a pioneer tree of bottomlands, but also often seeds into upland old fields.[309] In the wild, honey locust is associated with many other trees, including agroforestry species like bur oak, black locust, persimmon, black walnut, and hickories.[310] [311] Wild honey locusts prefer rich fertile soils near bodies of water.[312] They need full sun, and thus are found in open places, forest gaps, and edges.[313] Honey locust did not grow in historic prairies due to frequency of fire.[314]

### Wetlands and Flooding

In most of its native and naturalized range in the U.S., honey locust is rated as facultative, meaning "occurs in wetlands and non-wetlands." However in the Great Plains and Midwest regions it is rated facultative upland, meaning "usually occurs in non-wetlands, but may occur in wetlands."[315] Honey locust has intermediate flood tolerance, which makes sense in a species native to floodplains.[316]

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[306] World Flora Online
[307] Detweiler (1947) *Notes on Honeylocust*
[308] USDA NRCS (nd) *Plant Guide: Honey Locust*
[309] USDA NRCS (nd) *Plant Guide: Honey Locust*
[310] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[311] Detweiler (1947) *Notes on Honeylocust*
[312] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[313] USDA NRCS (nd) *Plant Guide: Honey Locust*
[314] USDA NRCS (nd) *Plant Guide: Honey Locust*
[315] US Army Corps of Engineers (2022) *National Wetland Plant List*
[316] Hightshoe (1988) *Native Trees, Shrubs, and Vines for Urban and Rural America*

## Tolerances and Vulnerabilities

Honey locust demands full sun.[317] It also won't germinate in shade.[318] Also apparently even fatback types won't produce sweet pods in the shade. Elfers shares this observation: "If a tree is shaded out or overcrowded by other trees, its pods will be the same physical dimensions in terms of length, width, pericarp dimensions, and pod shape, but they won't fill fully. I have seen verified pods of Millwood and Calhoun as thin as wild [razorback] honey locust because they were growing in the shade."

Due to its thin bark, honey locust is killed by fire, though it may resprout.[319] Honey locust is resistant to ice damage.[320] It is generally considered wind-resistant but not in all cases.[321]

Honey locust is also resistant to the natural herbicide (juglone) produced by black walnuts (and to a lesser degree by other walnut species), meaning they can be intercropped or grown in proximity without trouble.[322] Indeed black walnut and honey locust are growing well together at Virginia Tech, in a planting now 20 years old, and black walnut usually begins to impact neighboring plants at ten years of age.[323] [324]

## Thermal Climate: Heat, Cold, and Growing Season

A handful of fatback cultivars are suitable for USDA zone 5. At least some forms of honey locust are hardy to USDA zone 4b (–35°F), though not all are, and not all will ripen pods in short seasons.[325] Some ornamental cultivars are even hardy in zone 3b (–45°F) once mature, but experience in the Northern Plains has shown that younger trees, under 3-inch caliper, can

[317] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[318] Detweiler (1947) *Notes on Honeylocust*
[319] USDA Fire Effects Information System online
[320] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[321] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[322] Jose (2008) "Black walnut allelopathy: Implications for intercropping"
[323] Johnson (2011) *Honeylocust and Black Walnut Tree Products within a Temperate Appalachian Silvopasture*
[324] Jose (2008) "Black walnut allelopathy: Implications for intercropping".
[325] Hightshoe (1988) *Native Trees, Shrubs, and Vines for Urban and Rural America*

experience dieback in extreme cold snaps.[326] See Table 9 under Cultivars for the hardiness of fatback cultivars.

Many southern cultivars and genotypes certainly experience significant winter damage when planted farther north.[327] There are multiple reports of trees failing to bear due to unusually cold or late frosts.[328] Ralph Kreider reported: "'Millwood' will lose its previous season's growth if the temperature drops to –20°F, and then will bear a crop on the older wood. In Minnesota, 'Millwood' and 'Calhoun' froze to death. 'Schofer', which originated 500 miles north of 'Millwood', lived."[329] Cultivars recommended for colder parts of honey locust's range, with short seasons, include 'Ashworth', 'Gap', 'Heather', 'Piat', 'Lancaster North', 'Lancaster South', and 'Monroe'.

How does honey locust perform elsewhere? Acceptable growing seasons range from 150 to over 300 days.[330] Honey locust grows well in tropical highlands, such as where it is native in northern Mexico and also where it has naturalized around the world.[331] It will grow in Sunset zones 1–16, 18–20, and 32–43 (and, though not mentioned in the *Sunset National Gardening Book,* clearly in zones 31 and 28 as well).[332] That means honey locust will grow in almost any climate zone in the lower 48 states of the U.S. (though it may require irrigation), with the following exceptions: the coasts of central and southern California and central and southern Florida, and the coldest parts of the North, like the northern half of Minnesota.[333] Apparently it even grows as far south as New Orleans and the Florida Panhandle, so it can handle heat and humidity as long as it gets some winter chilling.[334] [335]At the other extreme, honey locust may not set pods in maritime climates where it never gets very warm (like Britain and perhaps the coastal zones of the Pacific Northwest).[336]

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[326] Ball (2013) *Trees! An Illustrated Field Guide to Fruit, Nut, Ornamental, and Windbreak Trees for the Northern Plains*

[327] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*

[328] Detweiler (1947) *Notes on Honeylocust*

[329] Kreider (nd) "My experiences with honey locust"

[330] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*

[331] World Agroforestry Centre (2006) Agroforestree database

[332] Eyre (1997) *Sunset National Gardening Book*

[333] Eyre (1997) *Sunset National Gardening Book*

[334] Plants of Louisiana online

[335] Godfrey (1988) *Trees, Shrubs, And Woody Vines of Northern Florida and Adjacent Georgia and Alabama*

[336] Useful Temperate Plants database

## Rainfall

Honey locust requires irrigation if grown with less than 20 inches of precipitation.[337] It grows well with up to 60 inches of annual rainfall.[338]

## Elevation

Honey locust is listed as suitable up to 6,500-foot elevation in Colorado.[339] Trees in a test planting at 6,900 feet in Colorado grew but were very stunted even after many years.[340]

## Soils

Honey locust is quite adaptable as to soil texture, but does have a few extremes it cannot tolerate. It is reported to dislike heavy clay and gravel.[341] It also grows poorly in extremely sandy soils (though it is growing very nicely in my extremely sandy soil with irrigation).[342]

Soils can be wet or dry, but drainage should be neither excessive nor poor (here again, with irrigation my excessively drained soil has been acceptable).[343] There are many reports of honey locust growing well in soils that would be too wet for most tree crops, and also that it is impressively drought tolerant.[344]

Ideally honey locust would like to find itself planted on rich floodplain soils, though it tolerates infertile soils.[345] It can survive where road salt contaminates soils, and on former strip mines, and on compacted soils.[346] Honey locust is also a successful weed of urban soils, and often thriving in parking lots and sidewalks.[347]

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[337] O'Bar (2013) *Alternative Crops for Drylands: Proactively Adapting to Climate Change and Water Shortages*
[338] Duke (1983) *Handbook of Energy Crops*
[339] WaterWisePlants.org
[340] USDA Fire Effects Information System online
[341] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[342] Hightshoe (1988) *Native Trees, Shrubs, and Vines for Urban and Rural America*
[343] Hightshoe (1988) *Native Trees, Shrubs, and Vines for Urban and Rural America*
[344] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[345] Detweiler (1947) *Notes on Honeylocust*
[346] Hightshoe (1988) *Native Trees, Shrubs, and Vines for Urban and Rural America*
[347] Del Tredici (2010) *Wild Urban Plants of the Northeast*

Honey locust tolerates a wide range of soil pH, as low as 4.8 and as high as 8.0.[348] However for best growth pH should be between 6.0 and 7.0.[349] [350]

[348] USDA Plants Database

[349] Detweiler (1947) *Notes on Honeylocust*

[350] Duke (1983) *Handbook of Energy Crops*

# Field Layouts

What can honey locust system layouts look like? Here we provide some examples and some guidelines, though we are still far from having hard and fast rules. Because most interest these days is in food for livestock, I've focused primarily on those systems here.

Keep in mind your needs for haying and grazing management. Straight tree rows make it easier to work in between, and setting spacings based on the width of your haying equipment and/or paddock size will save you a lot of trouble later.[351]

Note that to be eligible for EQUIP funds for silvopasture, tree density must be at least 10%, which for mature honey locusts at 30-foot canopy would be 10 trees per acre (e.g., at 65′ × 65′).[352]

Many producers plant close together initially, like 10′ × 10′, to provide higher yields and better shade in earlier phases. These can be thinned for small posts at 5–10 years in, or excellent posts at 20–25 years.[353] Thinning is eventually required to avoid competition between trees (resulting in lower pod yields) and shading out of forages below (reducing forage yields). Thinning can also cull thorny trees, excess males, and those with inferior fruit.

## Field Edges

Honey locust can be planted at the outside edges of livestock paddocks. Once the trees are large enough, their branches reach over the fence and drop pods into the paddock for animals to consume. Fencing that is already needed for the paddock border does double duty protecting the trees from livestock while they establish. This system has the additional advantage of not interfering with haying or restricting grazing management inside the paddock. Field edge plantings are used by Wilson at Springtree Agroforestry Project, with trees 20–25 feet apart in-row.[354] In 1940s Spain, honey locust trees in this kind of edge planting were spaced at 33 feet within the rows.[355] One variation: Katherin Bateman of Sovereign Hill Farm in Massachusetts

[351] Gold (2024) *Training Manual for Applied Agroforestry Practices*
[352] USDA NRCS (2016) "Conservation Practice Standard: Silvopasture, Code 381"
[353] Detweiler (1947) *Notes on Honeylocust*
[354] Wilson (1991) "Browse agroforestry using honey locust"
[355] Rodrigañez (1949) *Prados Arbóreos: Apuntes y datos para aprovechar el follaje de los árboles y arbustos en la alimentación del ganado*

planted trees in the corners of her fenced pastures, and used cattle panels to protect them there.[356]

***Figure 10:*** *A field edge planting of grafted honey locust at Springtree Agroforestry, with trees 20–25 feet apart within the row. Larger trees planted in 1980s. Image courtesy Zach Elfers.*

## Fodder Silvopasture

These are trees planted in wide-spaced rows in grazing units, with the goal of maintaining high forage yields below even when the trees are mature. Let's look at some examples of this system. Honey locust systems in Spain in the 1940s used 49′ × 49′ (18 trees per acre).[357] You probably want straight rows here, for ease of haying, and if you wish to be able to rotate livestock through ergonomically.

If you want to maintain full pasture productivity in the humid temperate eastern U.S. (where forests would naturally grow), you want no more than 35% tree cover. That would be 21 trees per acre (e.g., at 45′ × 45′). For temperate grasslands (like our prairie and savanna regions), no more than 26% cover.[358] That would be 16 trees per acre (which could be 52′ × 52′). The lower levels for grasslands are probably because prairies have more warm-season grasses, which are less shade-tolerant as a group than the cool-season grasses often used in the humid east, or because limited rainfall means more competition for water between the trees and the pasture. You might

[356] Katherin Bateman, Sovereign Hill Farm, personal communication

[357] Rodrigañez (1949) *Prados Arbóreos: Apuntes y datos para aprovechar el follaje de los árboles y arbustos en la alimentación del ganado*

[358] Sprenkle-Hyppolite (2024) "Maximizing tree carbon in grasslands and grazing lands while sustaining yields"

***Figure 11**: Fodder silvopasture with grafted honey locust at Sovereign Hill Farm in Chester, MA. Density is less than 35% tree cover. Trees about 15 years old. Image courtesy Kathrin Bateman.*

begin at much higher densities and thin as the trees mature to maintain no more than your maximum canopy cover. Because of the low competition offered by honey locust to forages, you might be able to squeeze a few more in.

A 40% tree density will provide plenty of light and only a slight reduction of forage yields for most forages.[359] Assuming a 30-foot diameter at maturity, that's 24 trees per acre, which could be spaced 43′ × 43′. Interestingly, the latest recommendation for mesquite silvopasture at 30-foot tree width is also 24 trees per acre.[360]

## Fodder Orchards

These are denser orchard plantings for human or livestock consumption. They are often to be harvested and processed elsewhere, though of course you can run animals below to consume the pods in place as well. Maximizing forage productivity below the trees is not the priority, so you can space trees densely, more like an orchard. These are analogous to carob orchards, mesquite orchards, and other systems where the emphasis is on pod production. It's probably best to plant in rows, in case someone ever figures out how to mechanically harvest honey locust pods off the ground (and for ease of mowing).

[359] Dupraz (2018) "Temperate agroforestry: The European way"

[360] Nabhan et al (2022) *Mesquite: Training manual for growers, harvesters, and artisans*

Pods are to be consumed by livestock as they drop, or harvested for processing and feeding later. The Virginia Tech plantings use this system, and have thinned to 40′ × 40′, 27 trees per acre.[361] For an orchard-type density, trees could be planted at 30′ × 30′, which is 48 trees per acre (or thinned eventually to such a density as they mature). Gold recommends 40 trees per acre (e.g., 33′ × 33′).[362]

***Figure 12**: The Virginia Tech planting is an example of a fodder orchard, now thinned to 40′ × 40′ spacing. Grafted 'Millwood' trees were 22 years old in 2017 when photo was taken. Image Eric Toensmeier.*

## Grazier-Managed Natural Regeneration

USDA NRCS recommends another strategy: You can feed pods (hopefully of good cultivars) to livestock and then let them wander around the grazing unit depositing seeds.[363] These will be naturally scarified and planted in a nice pile of manure, but would later need much thinning to achieve your desired density and ratio of males to females, or based on fruiting, thornlessness, and other traits. Later you could try to field-graft the seedlings to desired varieties.

Your livestock are extremely unlikely to plant your new trees in straight rows that can be easily fenced, mowed, or hayed. Perhaps some very clever temporary placement of fencing, shade structures, or water troughs might help guide where they deposit seeds in manure. The trees may also need pruning to form a straight upright trunk.[364] Indeed Detweiler noted that in the

[361] Johnson (2013) "Millwood honey locust trees: Seedpod nutritive value and yield characteristics"
[362] Gold (1993) "Honeylocust (*Gleditsia triacanthos*), a multipurpose tree for the temperate zone"
[363] USDA NRCS (2000) "Plant guide: Honey locust *Gleditsia triacanthos* L."
[364] Nangu (2016) "Pastoralist managed natural regeneration"

absence of thinning and pruning, each manure pile tends to produce multiple seedlings, which grow in an impenetrable, thorny, shrublike form not at all like planted honey locust.[365]

I have seen this very system used in Mexico with the fodder pod legume tree *huisache* (*Vachellia farnesiana*). Producers there will allow the animals to consume a lot of pods, and then keep them in a paddock and highly overgraze it. This creates perfect conditions for new trees to sprout from fresh manure. Over time the trees are thinned to the desired density.[366] This system is also used retroactively in overgrazed mesquite rangeland that has become a dense mesquite thicket. When thinning ruminant-planted mesquite thickets to savanna for good forage production, the recommendation is to go down to 10–40 trees per acre.[367] This density corresponds to 33′–66′ by 33′ × 66′ spacing, though again the trees are unlikely to be in uniform rows and spacings. In the semi-arid African Sahel, pastoralist-managed natural regeneration with legume fodder pod trees is taking off, and similar practices of overgrazing with seed deposition, followed by rest, are used.[368] [369]

The tremendous advantage of this approach is establishment cost and labor, which boils down to what you have to pay to obtain pods of good cultivars and then the labor of thinning and protecting trees. There are strong downsides however: Many seedlings are likely to be thorny, too many will be male, pod quality and yield will vary, etc. Their irregular spacing will make mowing and haying harder or impossible, and it may be harder to protect young trees. You might instead choose to defer grazing for a few years as trees establish.

## Complex Silvopastures

Here the sky is the limit—honey locust can be mixed with other fodder species in diverse and even multilayered systems. Keep in mind that each layer of complexity makes management more challenging, even as they may increase productivity.

Missouri farmer Robert Marsh has planted an overstory of honey locust, with dense strips of nitrogen-fixing false indigo bushes (*Amorpha fruticosa*) planted beneath them within the 14-foot

[365] Detweiler (1947) *Notes on Honeylocust*
[366] Ricardo Romero, Las Cañadas agroecology center, personal communication
[367] Pasiecznik (2001) *The* Prosopis juliflora-Prosopis pallida *complex: A monograph*
[368] Nangu (2016) "Pastoralist managed natural regeneration"
[369] Rinaudo (2019) *Farmer-Managed Natural Regeneration (FMNR) Manual*

wide rows as shrub fodder to be directly browsed by his cattle and sheep (he now recommends 18-foot wide rows). Between these long, thin rows are broad strips of open pasture. He was first inspired by his observation that the grass is green under honey locusts even when all other grass has dried up in drought—but he wanted the pods as fodder as well. The tree and shrub rows are fenced in and he allows the livestock access a few times a year to browse down the false indigo (his honey locusts are now too tall to be damaged). In some rows he also includes some pecans. Because the trees and shrubs are all in rows, he has had no interference with haying.[370]

The nation of Columbia is leading the world in silvopasture these days, thanks in large part to the remarkable work of the nonprofit organization CIPAV. They have worked to integrate their own native fodder pod-producing legume trees into their complex silvopasture systems. Here are a few examples, from which we can draw some inspiration even if the species won't grow here and our spacings surely need to be wider as our sunlight is much less intense. The native legume fodder pod trees used include multiple species of *Albizia* and *Enterolobium.* They are planted at 62 trees per acre (mature density) as shade and pod fodder overstory above dense intensive silvopasture plantings of 4,100 *Leucaena* trees per acre (which function like enormous clovers in rotational grazing systems). Also, echoing Marsh's system, their fodder pod legume trees are grown at wide spacings within hedgerows of fodder shrubs, between wide strips of pasture. Finally, *Albizia* and *Enterolobium* trees are grown in productive riparian areas, managed natural regeneration in pastures, and diverse windbreaks.[371]

[370] Mizzou Agroforestry (2021) "NRCS Agroforestry Assistance: Implementing Silvopasture Techniques" video

[371] Calle & Murgueitio (2020) *Árboles Nativos para Predios Ganaderos*

# Growing Honey Locust

## Selecting Trees

A growing number of specialty nurseries offer honey locust cultivars. Currently they offer seedlings, grafted trees, and scionwood to use in grafting your own trees. Seedlings are much more affordable, but will take more than twice as long to fruit. Many seedlings will be nonfruiting males, pod quality will vary, and some may be thorny as well (see Propagation). Grafted trees are more expensive, but will be clones of highly productive cultivars and will also fruit at a much younger age than seedlings. Scionwood is more affordable, and if you are comfortable with grafting, can be an economical way to start a planting.

## Establishment

Establishment techniques for honey locust depend on the production system you have in mind. The grazier-managed natural regeneration approach is already described above. For the other systems, honey locust is generally planted like other fruit and nut trees. In plantings that will be grazed (or with high deer pressure), you can follow recommendations for planting in silvopasture like those in *Silvopasture* and the *Training Manual for Agroforestry Practices* (written, among others, by Michael Gold, who played such an important role in the Battle Creek planting). [372] [373]

Wilson recommends a set of best practices for successful establishment and early production: Keep pH at 6.5–7.5, and definitely over 6.0; use tree tubes or other protection, as honey locust is even more vulnerable than most young trees; water, fertilize, and weed; keep an eye out for pests and diseases, and spray Bt for webworm if it shows up; prune to a central leader form.[374]

Tree tubes and wire cages have proven very effective at establishing honey locust in multiple studies.[375] Robert Marsh uses tree tubes until the trees are tall enough to come out of the tube, and then provides each tree with a t-post and protects them with a loop of hot wire from his

[372] Gabriel (2018) *Silvopasture*
[373] Gold et al (2024) *Training Manual for Agroforestry Practices*
[374] Wilson (1994) *Honeylocust Research Newsletter No. 1*
[375] Wilson (2006) *Honeylocust Research Newsletter No. 3*

existing electrified fence system.[376] The Trees for Graziers team has developed some very interesting approaches as described in their book *The Graziers Guide to Trees.* These days they are planting trees that are at least 6 feet tall, and putting more energy into fewer trees per acre with good results.[377]

***Figure 13:*** *A new planting of honey locust at Springwood Dairy. Tree tubes (with extra barbed wire) protect the young trees from browsing, rubbing, and trampling by livestock. Image courtesy Costa Boutsikaris.*

## Age to Bearing and Productive Lifespan

Grafted trees begin bearing in 3–4 years.[378] Seedlings begin to bear at about 10 years of age, with heaviest production from ages 25–75 in wild trees. They stop producing seed around age 100.[379] Age to bearing is variable: Some 'Millwood' seedlings are very precocious and bear when only

[376] Mizzou Agroforestry (2021) "NRCS Agroforestry Assistance: Implementing Silvopasture Techniques" video

[377] Austin Unruh, Trees for Graziers, personal communication

[378] Dupraz (1997) "Temperate agroforestry for Europe"

[379] USDA Fire Effects Information System online

1.5 inches in diameter, while others don't bear until 10 inches thick.[380] Trees generally live to about 120 years, though sometimes longer, and occasionally to 200 years.[381] [382]

## Pollination

Everything written about honey locust pod production says it is important to include some male trees to provide pollen. Gold recommends 10% males, and Wilson one male per 10–30 female trees.[383] [384] However, Elfers and Ferver, who have spent a lot of time in Downingtown and other plantings of mixed female cultivars with no male trees nearby, both are confident that pod-bearing cultivars like 'Calhoun' and 'Millwood' will pollinate each other and set a full load of pods.[385] [386] Elfers goes further and reports that female trees will produce heavy yields of seedless or nearly seedless pods with no other cultivar present to pollinate them at all.[387] Ferver says that a large area of what appear to be only 'Millwood' trees in Downingtown sets fruit very well without any other cultivar nearby.[388] Some pollination studies seem to be called for. For now cautious growers may wish to plant a male here and there to be sure. Ironically, Gleditsch, the botanist for whom the genus *Gleditsia* was named, was one of the first to propose that insects play a role in pollination.[389] We could use his help now!

Apparently poor weather while fruit is setting can be very damaging. Bateman says that a heavy rain when pods on her trees are about 1 inch long will knock most of them off.[390]

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[380] Kreider (nd) "My experiences with honey locust"
[381] Detweiler (1947) *Notes on Honeylocust*
[382] Hightshoe (1988) *Native Trees, Shrubs, and Vines for Urban and Rural America*
[383] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[384] Wilson (1991) "Browse agroforestry using honey locust"
[385] Zach Elfers, Future Forest Plants, personal communication
[386] Buzz Ferver, Perfect Circle Farm, personal communication
[387] Zach Elfers, Future Forest Plants, personal communication
[388] Buzz Ferver, Perfect Circle Farm, personal communication
[389] German Biography (2026) "Gleditsch, Johann Gottleib"
[390] Kathrin Bateman, Sovereign Hill Farm, personal communication

## Ripening Season

Ripening time in the South is mid-September to mid-October, and farther north is mid-October to December 31.[391] [392] They may not drop for months after ripening, and then slowly over a period of 3–4 months.[393] [394] [395] Irregular drop is inconvenient for mechanized harvest.[396] Perhaps tree shakers or chemicals could be used to induce simultaneous drop.[397]

## Biennial Bearing

Most honey locust trees alternate a heavy bearing year with a very light one. This phenomenon is called "biennial bearing". This may be an attempt to disrupt populations of bruchid beetles. (For more see the section Bruchid Beetles below.)

J.C. Moore put it well during the golden age of honey locust: "It usually holds true that a heavy crop of pods draws heavily on the reserve food of the tree, thus creating a poor condition for fruit bud formation the following year. Some trees bear a heavy crop one year and some the next, thus giving assurance of feed every year when several trees are growing in an area."[398]

The Virginia Tech planting provides an example. In 2008, when the grafted 'Millwood' trees were 13 years old, 85% of trees bore a crop. In 2009, only 18% did, and in 2010, 93% bore pods. Even then there was variation within the 'Millwoods', with 28% of the trees producing in only one of the three years, and 4% yielding annually but poorly.[399]

Data from the 1940s, shown in Figure 14, clearly demonstrates the variation in yield of 'Millwood' from year to year. It also shows that 'Calhoun' was on the opposite pattern, yielding

[391] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[392] Detweiler (1947) *Notes on Honeylocust*
[393] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[394] Detweiler (1947) *Notes on Honeylocust*
[395] Williams (1980) "Tree crops for energy production in Appalachia"
[396] Williams (1980) "Tree crops for energy production in Appalachia"
[397] Williams (1980) "Tree crops for energy production in Appalachia"
[398] Detweiler (1947) *Notes on Honeylocust*
[399] Johnson (2013) Millwood honey locust trees: Seedpod nutritive value and yield characteristics"

better in years that 'Millwood' did poorly. However this still was not enough to produce steady annual yields, because 'Calhoun' yields were so much lower.[400]

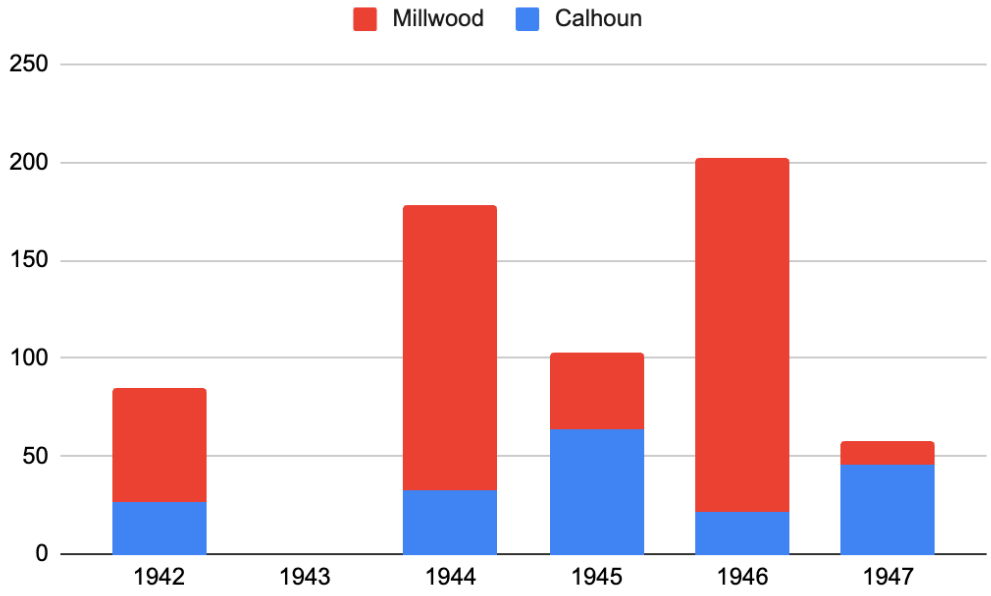


***Figure 14**: This figure shows the yields of sampled trees in pounds per tree of 'Calhoun' and 'Millwood', starting at age five in 1942. It can be seen that both showed alternate bearing (even though 'Calhoun' is reputed to be an annual bearer). However their yields are offset, with 'Millwood' high in even years and the reverse pattern for 'Calhoun'. Overall 'Calhoun' yields are much lower, so the total yield still goes up and down with 'Millwood' productivity. Note that both cultivars failed to yield in 1943 due to a very severe late frost which destroyed the flowers. Data from Scanlon 1980.*

Scanlon proposes that the more cultivars are planted together, the more steady yields are likely to be year to year.[401] In the Christian Dupraz INRA French test orchard, all trees are alternate bearing but they are not on the same cycle. Based on their experience with a dozen-cultivar orchard, a mixed-cultivar planting should produce at least some pods every year.[402]

The classic alternate bearing cultivar is 'Millwood'. Other cultivars that bear biennially include 'Ashworth', 'Methodist Church', 'Monroe', 'Parking Lot', and 'Piatt'.

A unique study in France has monitored the yields of both the grafted trees in the trial orchard and the promising wild trees they were grafted from (the ortets). Nine out of the 12 cultivars in the orchard fruit in sync with their ortet—that is, the grafted tree fruits (and rests) on the same

[400] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[401] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[402] Dupraz (2019) "Long-term monitoring of grafted honey locust trees for the production of fodder pods"

year as the tree from which their grafting wood was harvested, many of which were located in another part of town.[403] This is somewhat reminiscent of bamboo cultivars end-of-life flowering in sync even if planted on another continent.

Not all honey locusts are alternate bearing. There are cases of trees that have borne well for five years in a row.[404] Detweiler records many examples of trees that bear well every year, though they seem to be somewhat rare.[405] Two out of the top five prize winning trees in 1929 were annual bearers.[406]

The best-known annual bearer is 'Calhoun', though the figure shown above demonstrates a slight pattern of biennial bearing. Other annual bearers include 'Andy', 'Cooper', 'Leisczs Bridge', 'Poole Forge', 'Springtree H', 'Springtree K', and 'Voie-Ferré-Marchandise'. It's probably best to assume that even "annual bearing" cultivars will show a slight tendency to alternate heavier with somewhat lighter years, as seen in the 'Calhoun' yields in the figure above.

When it comes to bearing patterns in honey locust, there remains much that is not understood, and much that is unpredictable. Some trees only bear well every 3–5 years.[407] Some trees seem to bear unpredictably, showing no clear pattern at all.[408]

## Fertilization

There seems to be very little if anything written about fertilizing fatback honey locust for good pod production. In 1942 the Alabama Agricultural Experiment Station recommended that honey locust should be ". . . fertilized annually with a 6–8–4 fertilizer at the rate of 1 pound per tree for each year of the tree's age."[409] Wilson recommends fertilizing young trees for best establishment based on his experience at Springtree Agroforestry.[410]

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[403] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."
[404] Detweiler (1947) *Notes on Honeylocust*
[405] Detweiler (1947) *Notes on Honeylocust*
[406] Detweiler (1947) *Notes on Honeylocust*
[407] Detweiler (1947) *Notes on Honeylocust*
[408] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."
[409] Atkins (1942) "Yield and Sugar Content of Selected Thornless Honey Locusts."
[410] Wilson (1994) *Honeylocust Research Newsletter No. 1*

Based on the levels of nitrogen (N), phosphorus (P), and potassium (K) found in the whole pods (see Composition Table), one U.S. ton of pods contains 14 pounds of N, 42 pounds of P, and 295 pounds of K. So for your nutrient budgeting, at the very least, if you are removing those pods from the field (like to grind and feed in a barn), you should replace that much NPK for every ton of pods harvested.

## Pruning

Little or no pruning is needed for good pod production, but there may be a role for pruning to even out alternate bearing.[411] Lower branches should be removed from thorny trees to prevent injury to tractor and mower operators.[412] Indeed one source cited by Detweiler recommends pruning all branches to 12 feet or higher to allow good light for pasture below, and to prevent cattle from reaching up to strip the unripe pods.[413] Pruning can cause thorny sprouts from trees with thorny genes, even if they are grafted from thornless branches.[414]

## Weediness

Honey locust can become a weed on your farm or in your neighborhood, and especially the thorny types are considered a terrible nuisance by many.[415] For example, if livestock are eating whole, unground pods (whether dropped into pasture under the trees, or collected and fed), seedlings will grow from their manure and can become weedy. Both grazing and mowing can be used to control these seedlings.[416] They can also travel some distance in windstorms, and be carried by wildlife. Cutting back weedy honey locusts just makes things worse, as they not only resprout from the stump but also send up large numbers of suckers from the roots. Stump grinders or herbicides are needed to eradicate a tree.[417] Weedy honey locusts can be eliminated with a series of controlled burns or with herbicide.[418]

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[411] Williams (1980) "Tree crops for energy production in Appalachia"
[412] Detweiler (1947) *Notes on Honeylocust*
[413] Detweiler (1947) *Notes on Honeylocust*
[414] Buzz Ferver, Perfect Circle Farm, personal communication
[415] USDA NRCS (nd) *Plant Fact Sheet: Honey Locust*
[416] Unruh (2022) *The Graziers Guide to Trees: Taking Grazing to New Heights*
[417] USDA NRCS (nd) *Plant Fact Sheet: Honey Locust*
[418] USDA NRCS (nd) *Plant Fact Sheet: Honey Locust*

In our interview Wilson described this as the most important issue for farmers to think through before planting. He wants to make sure that people know that they will have to put in the work to remove seedlings as they come, or they will end up with a dense forest of thorny honey locust instead of a pasture.[419]

Livestock can be used to help keep honey locust populations in check. Fortunately, for the earlier part of their first year, the thorns on seedlings are soft and fully edible by livestock.[420] Adaptive grazing rotations can prevent seedlings from establishing due to the combination of heavy bursts of grazing with trampling followed by rest which lets grass grow rapidly and choke out honey locust seedlings.[421] Weediness is another reason Wilson recommends sheep rather than cattle, because sheep digest 80% of seeds, and this reduces the problem of honey locust seedlings coming up everywhere in the pasture.[422] In contrast, Robert Marsh has observed that in his pastures, suckers and seedlings are kept managed, but not killed, by his livestock.[423]

[419] Andy Wilson, Springtree Agroforestry, personal communication

[420] Wilson (1996) *Honeylocust Research Newsletter No. 2*

[421] Busk (2025) "A global-change winner? Global expansion potential, ecological drivers and hybridization risk of the disturbance-promoted honey locust (*Gleditsia*)

[422] Wilson (1996) *Honeylocust Research Newsletter No. 2*

[423] Mizzou Agroforestry (2021) "NRCS Agroforestry Assistance: Implementing Silvopasture Techniques" video

# Yields

Here we are one hundred years after the dawn of the golden age of honey locust, and we still have no complete data on yields of fully mature plantings in good soils. In the absence of published data on yields, many have extrapolated from the yields of individual trees, often those with particularly high production. This has led to some likely overoptimistic estimates, often of many tons per acre.[424] Yields in the golden age were not only extrapolated, but also sometimes did not distinguish between dry and fresh weight—and dry weight is the standard method for calculating yields of fodder crops.

The French researcher Christian Dupraz established a test orchard of grafted trees in 1988 and has measured yields in the over 30 years since. However, the trees have remained fairly stunted due to very dry, infertile site conditions and absence of fertilization and irrigation. In fact the trees barely grew from 1999–2019. They continue to produce rather low pod yields per tree.[425] However the low yields from this planting are not representative of what an orchard in good soils would produce.

***Figure 15:*** *High-yielding trees. Image courtesy Austin Unruh.*

Thankfully, Johnson published yields from the Virginia Tech 'Millwood' planting, when the trees were 13–15 years old. Though the trees were not fully mature, these are the best published yields I am aware of. Johnson calculated the yields for both 16′ × 40′ and 40′ × 40′ spacings.[426] Here I've converted from metric and presented in U.S. tons per acre on a dry weight basis.

For the 16′ × 40′ spacing, the highest yield was 0.8 tons, the lowest was 0.1, and the three-year average was 0.6 tons. For the 40′ × 40′ spacing, the highest yield was 0.3 tons dry weight, the

[424] Dupraz (2019) "Long-term monitoring of grafted honey locust trees for the production of fodder pods"
[425] Dupraz (2019) "Long-term monitoring of grafted honey locust trees for the production of fodder pods"
[426] Johnson (2013) Millwood honey locust trees: Seedpod nutritive value and yield characteristics"

lowest was 0.0, and the three-year average was 0.2 tons.[427] (See figure 16 for data visualization.) It would be very interesting to replicate this study now that the trees are over a decade older.

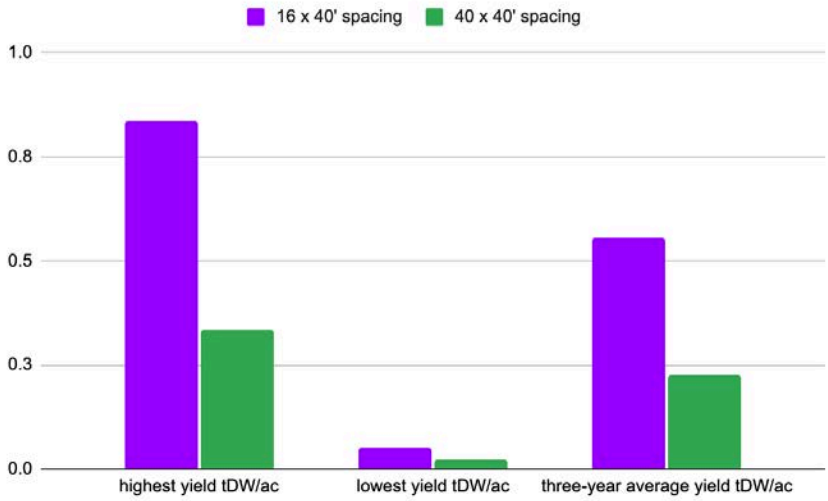


***Figure 16**: 'Millwood' yields in U.S. tons per acre dry matter, showing highest year, lowest year, and three-year average at two spacings.*

These yields compare poorly to annual staple crops like wheat, corn, and oats, to which honey locust is nutritionally comparable.[428] For example, the average yield of oats in the U.S. is 1.2 tons (2,500 pounds) per acre.[429] However we're not talking about growing honey locust on prime cropland where annual crops like oats yield well, and are fertilized and cared for. On grazing land, slopes, and other marginal areas for annual crops, honey locust can represent significant bonus food, feed, or feedstock.[430] [431] Keep in mind as well that these are not yields from trees in their prime production years, which do not arrive until 25 years in seedling trees (younger in grafted trees which get an early start).[432]

How does honey locust compare to perennial grains, which are another alternative staple crop for sloping and marginal land? The recently commercialized perennial wheat analog kernza (*Thinopyrum intermedium*) yielded an average of 0.15 tons (310 pounds) per acre in 2024.[433] The three-year honey locust average from Virginia Tech quadruples that. The Land Institute's target for perennial grain yields, based on yield of specialty grains like quinoa, is 0.07 tons (147 pounds)

[427] Johnson (2013) Millwood honey locust trees: Seedpod nutritive value and yield characteristics"
[428] Freedman (1980) "Preliminary analysis of the potential for ethanol production from honey locust pods"
[429] FAO Statistical service
[430] Freedman (1980) "Preliminary analysis of the potential for ethanol production from honey locust pods"
[431] Kreitzman (2020) "Perennial staple crops: Yields, distribution, and nutrition in the global food system"
[432] USDA Fire Effects Information System online
[433] Land Institute (2025) *Kernza Perennial Grain 2024 Annual Supply Report*

per acre.[434] Again, the 'Millwood' planting at Virginia Tech has met and exceeded that goal by more than six times. I should add that kernza, as a cool season grass, is likely to be highly compatible with agroforestry densities of honey locust, so rather than having to choose, you might be able to grow both together.

Keep in mind that you should really factor in the 3–4 years before the trees began to bear at all, and the very low yields of the first few productive years—this would lower the average yield. In the same light, keep in mind that the Virginia Tech trees were not yet mature in 2013, and will continue to bear for many decades to come. It appears that honey locust yields meet and exceed the yield threshold for commercialization of perennial and specialty annual grains, to which they can be compared nutritionally. Surely the yield of fully mature trees is higher than what Johnson reported. We'll have to wait and see what can be learned—the many plantings being established today will provide ample opportunity to collect data.

It should also be remembered that honey locust can be grown in wide-spaced agroforestry rows and intercropped with hay, wheat, oats, kernza, and other feed and forage crops. In that case their yields would likely combine to greater than the value of either one independently.

[434] Toensmeier (2016) *The Carbon Farming Solution*

# Harvest, Post-Harvest, and Feeding

## Direct Feeding of Pods Where They Fall

In the words of Georgia dairy farmer Ellen Williams, writing about honey locust pods to John Hershey in 1936: "Why barn them [store the pods] when you can graze your cattle on them all winter while they last?"[435] Williams also recommends raking pods in pasture into windrows to minimize trampling by cattle.[436]

***Figure 17:*** *Honey locust pods in pasture ready to be devoured by livestock. Image courtesy Austin Unruh.*

Once trees are 10–15 years old, the pods really start to pile up. O.A. Atkins of the Auburn Alabama Soil Conservation Service told Detweiler that, at recommended stocking rates for continuous grazing, there will be more pods on the ground than livestock can consume before they go bad.[437] I suspect that with high stocking rates for short periods, rather large quantities could be consumed quickly.

Pods should be consumed off the ground with no more than a few months from dropping, as quality degrades.[438] In wetter winters, this period is shorter.[439]

## To Grind Or Not To Grind?

Honey locust seeds are impressively high in protein. But the seeds have hard coats designed to survive passage through herbivore guts, to germinate in their manure. For a long time it was

[435] Hershey (nd) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[436] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[437] Detweiler (1947) *Notes on Honeylocust*
[438] Johnson (2012) "Millwood and wild-type honey locust seedpod nutritive value changes over winter"
[439] Johnson (2011) *Honeylocust and Black Walnut Tree Products within a Temperate Appalachian Silvopasture*

assumed that the seeds are not digestible to livestock unless the pods are ground.[440] Today this is the subject of some debate, which is not entirely resolved.

Without the seed protein, the value of unground pods to cattle is primarily as an energy supplement. The protein remaining is too low for maintenance of cattle (though of course you could supplement with a higher-protein food source).[441] Harvesting the pods, and grinding them, just to feed livestock, entails a lot of labor and expense—though it may be desirable as part of concentrated feed.[442]

***Figure 18**: Honey locust pods are highly palatable to cattle. The protein in the seeds is not very digestible to them, but soft-seeded cultivars offer a promising option. Image courtesy Austin Unruh.*

Dupraz writes that it is easy to look at manure of ruminants that have eaten pods, see a lot of seeds in the manure, and conclude that the animals do not digest them. He believes that this is a mistake and that accounting for the number of seeds ingested versus excreted shows that actually many are digested.[443]

Kreider reported that cattle can only digest seeds that have bruchid damage (which punctures the hard seed coat).[444] Wilson reports that his own observations show that sheep digest honey locust seeds while cattle do not.[445] Small ruminants certainly digest more seeds than cattle, though not 100% of the seeds are digested.[446]

[440] Detweiler (1947) *Notes on Honeylocust*
[441] Johnson (2012) "Millwood honey locust trees: Seedpod nutritive value and yield characteristics"
[442] Dupraz (1997) "Temperate agroforestry in Europe"
[443] Dupraz (1997) "Temperate agroforestry in Europe"
[444] Kreider (nd) "My experiences with honey locust"
[445] Wilson (1991) "Browse agroforestry using honey locust"
[446] Johnson (2013) "Millwood honey locust trees: Seedpod nutritive value and yield characteristics"

Sheep have been shown to digest perhaps 80% of seeds, though this depends on tree cultivar and breed of sheep.[447] Grinding is best for all monogastric livestock like pigs and horses.[448]

Dupraz points out that seed hardness varies considerably, and selecting for trees with softer seeds should increase protein digestibility.[449] Soft-seeded cultivars include 'Milaud', 'Piatt', and 'Total'.[450] [451]

A further advantage of collecting and grinding is that you won't get such prodigious growth of honey locust seedlings coming up in livestock manure.[452]

It appears that ripe pods do not degrade while they are still on the tree, as long as they remain reasonably dry. However once they drop to the ground, they are vulnerable to fermentation.[453] Nutrition and digestibility both decrease after pods spend a few months on the ground.[454]

## Harvesting, Processing, and Storage

At the moment I'm not aware of anyone harvesting and storing pods at a farm scale from a mature planting, so this section relies heavily on golden age writing, and some speculation based on mesquite and carob.

One harvesting challenge at this point in honey locust development is that the pods are dropped over a long period. However, it's not great to leave the pods on the ground too long.[455] One possibility is to select cultivars that drop pods all at once.

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[447] Wilson (1996) *Honeylocust Research Newsletter No. 2*

[448] Gold (1997) "*Gleditsia triacanthos* - honey locust, widely adapted temperate zone fodder tree"

[449] Dupraz (1997) "Temperate agroforestry in Europe"

[450] Foroughbakhch (2008) "Nutritional and digestibility values of six varieties of *Gleditsia triacanthos* L. pods"

[451] Alex Tanke, Dispersion Farms, personal communication

[452] Detweiler (1947) *Notes on Honeylocust*

[453] Detweiler (1947) *Notes on Honeylocust*

[454] Johnson (2013) "Millwood and wild-type honey locust seedpod nutritive value changes over winter"

[455] Freedman (1980) "Preliminary analysis of the potential for ethanol production from honey locust pods"

A long pole with a hook can be used to shake branches to drop pods.[456] Some producers also used to spread tarps under the trees when shaking, for faster collection.[457] Hand-raking of pods is apparently easy.[458] [459]

J.C. Moore of the Alabama Agricultural Extension Station wrote: "The pods are about 12 to 14 inches long and can be handled very much like corn [cobs]. We have stored pods in the open and under shelter. The pods do not keep more than 5 or 6 months when stored outside on the ground; however, they keep very well when stored under a shelter. Pods stored three years in the dry are in fair shape. Some weevil injury is noted but the sugar content is still high."[460]

A Spanish company offers several hand-pushed rolling carob harvesters suitable for small operations, similar in concept to a Bag-A-Nut harvester, which might serve for honey locust.[461] It has been suggested that haying equipment could be modified to harvest honey locust pods.[462] Some European carob producers are exploring the use of the kinds of combined tree-shaker and umbrella harvester used in nut production, which also might work for honey locust.[463] Perhaps newer equipment like biobalers, which make large rectangular bales out of thin-diameter woody biomass, could be used.

Whole pods can be ground with a hammermill.[464] Some producers used to adjust their hammer mills to separate out whole seeds for sale to nurseries or for mucilage (note that this would substantially reduce protein content).[465]

*Mesquite: Training Manual for Growers, Harvesters and Artisans* provides much information on small- to medium-scale processing of mesquite pods that may be a useful blueprint for honey

[456] Detweiler (1947) *Notes on Honeylocust*
[457] Detweiler (1947) *Notes on Honeylocust*
[458] Williams (1980) "Tree crops for energy production in Appalachia"
[459] Detweiler (1947) *Notes on Honeylocust*
[460] Detweiler (1947) *Notes on Honeylocust*
[461] Intermaquinas.es
[462] Detweiler (1947) *Notes on Honeylocust*
[463] https://www.carobbean.earth/
[464] Williams (1980) "Tree crops for energy production in Appalachia"
[465] Detweiler (1947) *Notes on Honeylocust*

locust.[466] For medium- to large-scale, there is much carob processing equipment designed to separate out seeds from flesh, which might serve or be modified for honey locust pods.[467]

Nurseryman E. Hendricks communicated to Detweiler about the hazards of processing dust: "The dust from honey locust is very irritating to the nose and a little irritating to the eyes. The irrigation does not last long but you really have a 'running' nose while the irritation lasts."[468] I have experienced this myself while grinding pods in the blender. Use a facemask and eye protection, please.

Stored pods keep about as well as corn cobs.[469] If piled too densely in storage, pods can begin to decompose and lose feed quality.[470] Bruchids are a confirmed pest of stored honey locust, and aflatoxin a potential concern. Both are discussed in the Pests and Diseases section below.[471] I have found that the pods were still sweet and of good quality for raw human consumption in March after several months of storage in my unheated garage in Massachusetts.[472]

## Feeding

Even though people have been feeding honey locust pods to livestock at least since George Washington's day, their feeding value has not been studied in remotely the same kind of detail as common feeds and forages. Mostly what we have is a lot of anecdotes and individual studies.

[466] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[467] alibaba.com
[468] Detweiler (1947) *Notes on Honeylocust*
[469] Detweiler (1947) *Notes on Honeylocust*
[470] Williams (1980) "Tree crops for energy production in Appalachia"
[471] Williams (1980) "Tree crops for energy production in Appalachia"
[472] Williams (1980) "Tree crops for energy production in Appalachia"

Honeylocust is not listed in any of the eight resources on plants poisonous to people or livestock that I consulted.[473] [474] [475] [476] [477] [478] [479] [480]

It may take ruminants a while to get comfortable eating honey locust pods. In one study it took four weeks for naïve lambs to start eating them.[481] It's not unusual for naïve animals (those which have never encountered a specific food before) to begin sampling very cautiously, this is one of the ways they keep from getting poisoned.[482] In one study, after several weeks, wethered sheep preferred honey locust to alfalfa.[483]

However, whether they take to them right away or need some time getting to know them, eventually honey locust pod palatability is high.[484] [485] Cattle will rear up on hind legs to eat pods hanging 7 or 8 feet up on low branches.[486] One study found that sheep prefer grafted cultivars over wild trees.[487] Bateman reports that her goats love even her razorback-type pods so much that they fight over them.[488]

Intake of pods (how much animals will eat in a day) is rather high. A number of studies, mostly in Europe, have looked at feeding the pods to sheep. Several looked at the maximum amount of pods that sheep would eat in a day if given unlimited access (*ad libitum*). Castrated Merinos in

[473] McQuinn (2020) *Horse Owner's Guide to Toxic Plants*
[474] Kingsbury (1964) *Poisonous Plants of the United States and Canada*
[475] Wink & Van Wyk (2008) *Mind-Altering and Poisonous Plants of the World*
[476] Hart (2003) *Toxic Plants of Texas: Integrated Management Strategies to Prevent Livestock Losses*
[477] Colorado State University Guide to Poisonous Plants online
[478] Everest (1996) *Poisonous Plants of the Southeastern United States*
[479] Panter (2011) *Plants Poisonous to Livestock in the Western States*
[480] Frohne & Pfänder (2005) *Poisonous Plants: A Handbook for Doctors, Pharmacists, Toxicologists, Biologists and Veterinarians*
[481] Pent (2018) "Lamb productivity on stockpiled fescue in honey locust and black walnut silvopastures"
[482] Provenza (2018) *Nourishment: What Animals Can Teach Us About Rediscovering Or Nutritional Wisdom*
[483] Foroughbakhch (2008) "Chemical composition and in vitro digestibility of *Gleditsia triacanthos* L. pods"
[484] Foroughbakhch (2006) "*In vivo* and *In situ* digestibility of dry matter and crude protein of honey locust pods (*Gleditsia triacanthos* L.)"
[485] Detweiler (1947) *Notes on Honeylocust*
[486] Detweiler (1947) *Notes on Honeylocust*
[487] Dupraz (1997) "Temperate agroforestry in Europe"
[488] Kathrin Bateman, Sovereign Hill Farm, personal communication

Greece would eat up to 4 pounds a day.[489] Wethers in France ate up to 5 pounds a day.[490] A study in Portugal made an interesting finding: "... Rams always showed a preferential and voracious behaviour, choosing *Gleditsia triacanthos* pods among other feed of diet (hay and soybean meal) ... However, above [2 pounds of dry matter of pods] per day the animals showed a selective behavior, choosing and eating the [pulp] and throwing out the seeds."[491] I didn't find any studies on intake for cattle.

Pods have been found to be nutritionally equivalent to oats in a two-year test.[492] Johnson's research found that 'Millwood' pods are roughly equivalent to oats or whole-ear dent corn.[493] In another study, honey locust meal was found to be inferior to corn, with only 82% of the weight gain that would have been gained from corn. However these were pods from wild trees, rather than from grafted cultivars.[494] Another study found the fermented pods were similar in quality to alfalfa hay.[495] See below for information on the nutritional composition of honey locust pods.

Johnson estimated that 'Millwood' trees could save $131 in supplemental feed costs per acre in an average year.[496]

The handful of studies we have do not always agree with each other. I recommend reading the referenced articles in detail. Studies during the golden age found that ground pods of wild trees were nutritious enough for winter cattle maintenance but not growth.[497] A 54-day study in Spain found that substituting honey locust pods for more than half of concentrates caused no reduction in milk production or quality.[498] A study at the Virginia Tech site found that lambs that ate pods in addition to their forages gained more weight than those on pasture alone.[499]

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[489] Foroughbakhch (2006) "*In vivo* and *In situ* digestibility of dry matter and crude protein of honey locust pods (*Gleditsia triacanthos* L.)"
[490] Foroughbakhch (2008) "Chemical composition and in vitro digestibility of *Gleditsia triacanthos* L. pods"
[491] Bruno-Soares (2003) "Merit of *Geditsia triacanthos* pods in animal feeding: Chemical composition and nutritional evaluation"
[492] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[493] Johnson (2012) "Millwood and wild-type honey locust seedpod nutritive value changes over winter"
[494] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[495] Johnson (2011) *Honeylocust and Black Walnut Tree Products within a Temperate Appalachian Silvopasture*
[496] Johnson (2009) "Optimal nutritive value of honey locust seed pods within temperate silvopasture"
[497] Detweiler (1947) *Notes on Honeylocust*
[498] Salazar (1949) "La acacia de tres espinas (*Gleditschia triacanthos* ), como planta forrajera"
[499] Pent (2018) "Lamb productivity on stockpiled fescue in honey locust and black walnut silvopastures"

Producers in Latin America have lots of experience feeding tree legume pods to livestock. They recommend feeding pods at 15% dry matter intake to spur growth, but think that 30% is too high and can reduce digestibility unless additional high fiber forages are fed.[500] Mixing pods with hay for forages should increase digestion time and digestibility—on their own, the pods move through the rumen digestive system rather quickly.[501] Greek studies found that the pods are best mixed with bulky feeds, and could provide 25–50% of daily organic matter.[502]

## Composition

How nutritious are honey locust pods? See this Nutrition Composition Table for details and sources for the data I've summarized here.

Whether for livestock or for people, honey locust pods are high in sugar and moderately high in protein. On a dry weight basis the pods are roughly comparable to dry beans in terms of protein and fat content.[503] A single study found 18.8% starch (in addition to the high sugar content).[504] Thus the pods are a good source of energy and protein. For ruminants they are an even better source of food energy, as much of their fiber content is also digestible to ruminants.

Nutritional quality gradually degrades over the winter. Pods that remain on the tree hold their quality better than those on the wet ground. Johnson found that 'Millwood' pods held their quality better than pods of wild trees.[505]

### Dry Matter

In this case, the percentage of a whole pod that is not water. Fodder compositions are almost always presented on a dry matter basis.[506] See Table 2.

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[500] Fernández Mayer (2017) *Producción de carne y leche bovina en sistemas silvopastoriles*

[501] Dupraz (1997) "Temperate agroforestry in Europe"

[502] Papanastasis (1999) *Selection and Utilization of Cultivated Fodder Trees and Shrubs in the Mediterranean Region*

[503] Kreitzman (2020) "Perennial staple crops: Yields, distribution, and nutrition in the global food system"

[504] Kaya (2016) "Potential nutritive value and methane production of pods, seed, and senescent leaves of *Gleditsia triacanthos* trees"

[505] Johnson (2012) "Millwood and wild-type honey locust seedpod nutritive value changes over winter"

[506] Kellems & Church (1998) *Livestock Feeds & Feeding*

***Table 2.*** *Dry matter content*

| Dry matter | Whole pod, % DM | Pod minus seed, % DM | Seed only, % DM |
|---|---|---|---|
| cultivars | 87.5–90.9 | 71.2 | 89.1–90.6 |
| wild trees | 77.9–92.2 | n/a | 91.8 |
| unstated genetics | 59.0–96.7 | n/a | 90.2–91.8 |

## Ash

Ash is what's left over after burning, presented as percent of dry matter. It is basically equivalent to the mineral content, as in how much nitrogen, phosphorus, calcium etc. is present in the fodder.[507] Higher ash levels mean higher nutrition. Only one cultivar has been tested for ash, but some wild trees were higher, so there may be room for improvement here. See Table 3.

***Table 3.*** *Ash content*

| Ash | Whole pod, % DM | Pod minus seed, % DM | Seed only, % DM |
|---|---|---|---|
| cultivars | 3.75 | 3.82 | 10.2 |
| wild trees | 3.5–6.1 | n/a | 2.55 |
| unstated genetics | 3.6–5.4 | n/a | 3.4–5.7 |

## Crude Protein

An estimated protein value, presented as percent of dry matter.[508] Much of honey locust protein comes from seeds, see the discussions of pod grinding and breeding for protein content for

[507] Kellems & Church (1998) *Livestock Feeds & Feeding*

[508] Kellems & Church (1998) *Livestock Feeds & Feeding*

details. Certainly some wild plants have much higher protein than any tested cultivars, so there is room to breed for this trait. See Table 4.

***Table 4**. Protein content*

| Crude protein | Whole pod, % DM | Pod minus seed, % DM | Seed only, % DM |
|---|---|---|---|
| cultivars | 10.1–13.0 | 5.2–9.6 | 19.8–29.7 |
| wild trees | 6.7–15.3 | 5.9–8.7 | 17.2–21.3 |
| unstated genetics | 7.0–23.1 | n/a | 10.6–29.7 |

## Crude Fiber

An estimated value for total fiber content. For ruminants fiber is valuable food, while for monogastric creatures like pigs and people it is healthful but not very digestible.[509] See Table 5.

***Table 5**. Fiber content*

| Crude fiber | Whole pod, % DM | Pod minus seed, % DM | Seed only, % DM |
|---|---|---|---|
| cultivars | 14.2 | 13.8 | 11.0 |
| wild trees | n/a | n/a | n/a |
| unstated genetics | 13.1–22.0 | n/a | 9.9–12.9 |

## Sugar

A basic form of food energy, and a valuable contribution of honey locust to human and livestock diets alike. Sugar content, even in the same cultivar, can vary considerably. Cultivars like 'Calhoun' and 'Millwood' produce much less sugar in the shade.[510] There also is minor variation

[509] Kellems & Church (1998) *Livestock Feeds & Feeding*

[510] Zach Elfers, Future Forest Plants, personal communication

in nutrition in the same tree from year to year, and substantial variation in sugar content by region, with 'Millwood' showing 21% sugar in Maryland and 37% in Alabama in one study.[511]

Higher sugar is better as far as selection and breeding is concerned. None of our cultivars is as high in sugar as the highest tested wild plants, so there is still room for improvement. See Table 6.

***Table 6.*** *Sugar content*

| Total sugars | Whole pod, % DM | Pod minus seed, % DM | Seed only, % DM |
|---|---|---|---|
| cultivars | 20.8–37.0 | 22.2–35.5 | n/a |
| wild trees | 12.9–42.3 | 19.0–21.5 | n/a |
| unstated genetics | n/a | n/a | n/a |

## Digestibility

Digestibility measures how much of the feed or forage is actually digested by livestock. In the case of dry matter digestibility (DMD), it is how much of the dry matter is digestible.[512] Organic matter (OM) is dry matter minus ash, and OM digestibility (OMD) reflects how much OM is digestible.[513] Here I've converted organic matter to dry matter for better (if imperfect) comparison.[514]

Here we combine two different measures of digestibility. *In vivo* and *in sacco* digestibility are more or less interchangeable (whether they measure dry matter or organic matter digestibility).[515]

[511] Duke (1983) *Handbook of Energy Crops*

[512] Mertens (2002) "Measuring DM and NDF digestibility and defining their importance"

[513] Mertens (2002) "Measuring DM and NDF digestibility and defining their importance"

[514] DMD = OMD * (1-%ash/100). Shaun Snoxell, Educational Concerns for Hunger Organization, personal communication

[515] Mertens (2002) "Measuring DM and NDF digestibility and defining their importance"

The final confusing element: The honey locust results are different for sheep and cattle. Table 7 presents results, converted to DMD, for honey locust cultivar whole pods and some grain and hay crops for comparison. The table data seem to agree with reports that cattle do not digest honey locust seeds as well as sheep. The pods are less digestible, on average, than oats and whole cob corn, but comparable to alfalfa and timothy hay.

Digestibility varies quite a bit between cultivars, and for fodder purposes it would be worth selecting cultivars for high digestibility. Only the French cultivars have been tested, and of those, 'Milaud' and 'Total' are tied for highest digestibility for both sheep and cattle. See Table 7.

***Table 7.*** *Dry matter digestibility of honey locust compared to other feedstuffs*

| Crop | Average dry matter digestibility % | Range of dry matter digestibility % |
|---|---|---|
| Honey locust cultivars, whole pod, sheep digestibility | 61.8 | 48.6–77.2 |
| Honey locust cultivars, whole pod, cattle digestibility | 50.7 | 41.8–58.7 |
| Oats, ruminant digestibility | 75.1[516] | 66.0–79.5 |
| Whole cob corn, ruminant digestibility | 77.7[517] | No range provided |
| Alfalfa hay, ruminant digestibility | 55.9[518] | 47.6–63.2 |
| Timothy hay, ruminant digestibility | 61.4[519] | 39.6–76.6 |

[516] feedipedia
[517] feedipedia
[518] feedipedia
[519] feedipedia

## Condensed Tannins

Tannins are a large group of compounds produced by plants. A modest amount can assist in digestion, but too much reduces palatability, digestion, and growth.[520] Total tannins in ruminant diets should not be more than 5%, though even if pod tannin content is high that's okay as long as they are mixed with low-tannin forages or concentrates.[521] [522] Levels in some pods are much higher than desirable for use as feed. Some tannins help kill internal parasites, and some can reduce enteric methane production to make ruminants more climate-friendly.[523] [524] It may be that tannins are what causes astringency in honey locust pods. We have no data for any cultivars, so it is not yet possible to correlate tannin content with level of astringency. Regardless, it would be desirable to select and breed for lower tannin content. See Table 8.

***Table 8.*** *Tannin content*

| Condensed tannins, % DM | Whole pod | Pod minus seed | Seed only |
|---|---|---|---|
| cultivars | n/a | n/a | n/a |
| wild trees | 2.8–14.8 | n/a | 0.27 |
| unstated genetics | 2.78–30.3 | n/a | n/a |

[520] Tedeschi (2021) "Nutritional species of ecologically relevant phytochemicals in ruminant production"
[521] Kumar (1991) "Anti-nutritional factors, the potential risks of toxicity, and how to alleviate them"
[522] Ramirez (2015) *Browse Nutrition: Semiarid Regions*
[523] Tedeschi (2021) "Nutritional species of ecologically relevant phytochemicals in ruminant production"
[524] Toensmeier (2020) *Farming Our Way Out of the Climate Crisis*

# Pests and Diseases

## Bruchid Beetles

Bruchid beetles are a large global family of insects that lay their eggs in the seeds of legumes. A native species, the honey locust bruchid (*Amblycerus robinae*), specializes in honey locust seeds.[525] We are indebted to a 1971 doctoral thesis from John Mathwig, which provides rich detail on the honey locust bruchid, which otherwise has been little studied.[526]

Mathwig found that in Wisconsin there are three generations in one year. In spring, adults emerge from pods that spend the winter on the ground. The adults eat honey locust pollen and pollen from other flowers. Upon emerging they mate, and then lay eggs both on other uninfested pods still on the ground, and on young green pods on the trees. The young that this spring generation lays on the old pods on the ground emerge 5–7 weeks later, and they also lay eggs on unripe pods in trees and old pods on the ground. The final generation emerges and lays eggs in ripe pods in the trees, and any pods remaining on the ground.[527] Seasonal peaks in adult activity were in early June and early October in Wisconsin.[528]

***Figure 19:*** *Bruchid beetle larva and bruchid damage in honey locust seeds. Image courtesy Zach Elfers.*

Mathwig provides us with some hope. He observed that some trees seem much more resistant than

[525] Mathwig (1971) *Relationships between bruchid beetles (*Amblycerus robiniae*) and honey locust trees* (Gleditsia triacanthos)
[526] Mathwig (1971) *Relationships between bruchid beetles (*Amblycerus robiniae*) and honey locust trees* (Gleditsia triacanthos)
[527] Mathwig (1971) *Relationships between bruchid beetles (*Amblycerus robiniae*) and honey locust trees* (Gleditsia triacanthos)
[528] Mathwig (1971) *Relationships between bruchid beetles (*Amblycerus robiniae*) and honey locust trees* (Gleditsia triacanthos)

others.[529] Bruchid resistance could be a priority in breeding programs.

The strong alternate bearing pattern of honey locust may be a strategy to disrupt the bruchid life cycle.[530] Development of annual bearing cultivars, or planting multi-cultivar orchards, which we desire for production, may inadvertently create perfect conditions for a population boom of bruchids.

Honey locust bruchids are most problematic where pods remain on the ground all winter. Perhaps a combination of very thorough grazing and cleanup can break their life cycle and reduce populations in the field.[531] At the very least it seems that all dropped pods should be eaten or removed by late winter in order to prevent spring emergence of overwintering bruchids.

In trials when given no other options, honey locust bruchids laid eggs on seeds of other legumes, but the larvae all died. These tested and unsuitable species included woody plants like mimosa, black locust, Kentucky coffee tree, Japanese pagoda tree, and wisteria, and annuals including soybean, lentil, and common bean.[532]

We can also learn from the general life cycle of bruchid beetles that attack woody legumes with large pods around the world. Connie Barlow notes in *The Ghosts of Evolution:* "Beetles of the family Bruchidea will deposit eggs not only on the surface of intact pods but also on any seeds they find exposed on the ground or on the surface of dung. They cannot, however, oviposit on seeds deeply embedded in dung. Fruit-eating mammals control populations of parasites, too, by consuming fruits before the wormlike larvae have matured into beetles."[533] So it seems that ruminants, by eating the pods, are killing larvae—and then depositing seeds in a safe, bruchid-free environment for safe establishment.

A handful of species of parasitoid wasps have been observed to lay their eggs in larval honey locust bruchids, providing some measure of biocontrol. Some insect predators also hunt and

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[529] Mathwig (1971) *Relationships between bruchid beetles (*Amblycerus robiniae) *and honey locust trees* (Gleditsia triacanthos)

[530] Mathwig (1971) *Relationships between bruchid beetles (*Amblycerus robiniae) *and honey locust trees* (Gleditsia triacanthos)

[531] Boe (2025) "Reproductive biology of the honey locust (*Gleditsia triacanthos*)

[532] Radac (2021) "*Amblycerus robinae* (Fabricius, 1781) (Chrysomelidae: Bruchinae), an alien species established in Europe"

[533] Barlow (2008) *The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and Other Ecological Anarchronisms.*

consume the bruchids.[534] Creating shelter and habitat for these beneficial insects on the farm, such as by planting pollinator hedgerows every so often, could enhance populations of these natural biocontrols. See *Farming with Native Beneficial Insects* for details.[535]

Bruchids can be especially problematic when storing the pods over winter. Collecting honey locust pods while recently fallen or harvested from trees, and grinding them quickly (bruchids don't go after ground seeds), prevents damage from bruchid larvae.[536] However here we mostly must turn to learning from efforts to manage other species of bruchids in legumes seeds around the world. These practices may or may not work for honey locust bruchid, but seem a worthy starting point.

To kill bruchids, mesquite processors prefer to heat the pods to an internal temperature of 144°F for one minute (this will kill all insects), or 122°F for one hour, or 113–122°F for one day.[537] Heating to 140°F for 10–15 minutes kills bruchids at all life stages.[538] Cooling pods or seeds is also mentioned, but honey locust bruchid is adapted to spending cold winters outdoors so this is not likely effective.

Bruchids are a very common pest of tropical pulse (dry bean) farmers today. Their control practices have not been tested on honey locust bruchid but seem a good place to start.[539] A number of control agents are mixed with stored legume seeds to control bruchids. These include essential oils like lemon, eucalyptus, fennel, and basil.[540] Vegetable oils like mustard, peanut, and soybean have been used, as has pesticidal neem oil.[541] Some leaf and root powders have been used including chili, turmeric, and neem leaf.[542] Some smallholder pulse producers use bentonite clay dust.[543]

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[534] Radac (2021) "*Amblycerus robinae* (Fabricius, 1781) (Chrysomelidae: Bruchinae), an alien species established in Europe"
[535] Lee-Mäder (2014) *Farming with Native Beneficial Insects: Ecological Pest Control Solutions*
[536] Detweiler (1947) *Notes on Honeylocust*
[537] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[538] Bhoge (2022) "A review on bruchid management in pulses"
[539] Bhoge (2022) "A review on bruchid management in pulses"
[540] Yamane (2013) "Biorational control measures for protection of stored grain legumes against bruchid beetles"
[541] Bhoge (2022) "A review on bruchid management in pulses"
[542] Bhoge (2022) "A review on bruchid management in pulses"
[543] Van Huis (1991) "Biological methods of bruchid control in the tropids: A review"

Other practices are used by larger legume seed farmers and processors. Dry bean seeds are sometimes stored in sealed containers that can be flushed with CO2 to kill bruchids—perhaps controlled atmosphere storage facilities could be used.[544] Insect growth regulators and pheromones may be useful as well.[545] Biopesticides have been used including Bt and *Beauveria bassiana,* both widely used by farmers in the U.S.[546] The chemical fumigant aluminum phosphide is used by larger farmers.[547]

## Aflatoxin

Aflatoxins are extremely toxic poisons produced by fungi of the genus *Aspergillus.* They can cause immediate poisoning, including sometimes fatalities, and also are extremely carcinogenic in the longer term. Aflatoxins are poisonous to ruminants as well as humans.[548] [549] Some forms of aflatoxin are even passed along in ruminant milk to people who drink it.[550] We don't necessarily know that *Aspergillus* grows on honey locust, but it is definitely a problem with mesquite and some other tree legume pods, as well as many common annual legumes like peanuts and soy, and on tree nuts.[551] This should be looked at before going down the road of commercialization for human consumption, and probably for ruminants as well.

Aflatoxins are found on a number of tree legumes including mesquite. They are rather common in mesquite pods on the ground, but less so in pods on the tree. Aflatoxins are most common in mesquite pods with bruchid damage.[552] Mesquite producers are advised to pick from the tree, or shake onto a tarp, rather than pick up from the ground, to minimize aflatoxin exposure. More advice is to thoroughly dry pods before storing. A black light can be used to inspect stored

[544] Van Huis (1991) "Biological methods of bruchid control in the tropids: A review"
[545] Van Huis (1991) "Biological methods of bruchid control in the tropids: A review"
[546] Bhoge (2022) "A review on bruchid management in pulses"
[547] Bhoge (2022) "A review on bruchid management in pulses"
[548] Sáenz (2021) "Aflatoxins in ruminants: What are their effects?
[549] Berkelaar (2005) "Aflatoxina - A cause for concern"
[550] Kreider (nd) "My experiences with honey locust"
[551] Boyd (2001) "*Aspergillus flavus* and aflatoxin contamination of leguminous trees of the Sonoran desert of Arizona"
[552] Boyd (2001) "*Aspergillus flavus* and aflatoxin contamination of leguminous trees of the Sonoran desert of Arizona"

mesquite pods because many strains of *Aspergillus* are fluorescent under black light.[553] This technique is also used with many stored legumes like peanuts.[554]

Contamination is often worst when feedstuffs are stored for a long time, or in very humid conditions. Many grains used for livestock feed are susceptible. Heating can kill the fungi but does not deactivate the toxicity once it is present. Mycotoxin binders like Silogycidol have been found to make ruminants resistant to aflatoxins, and to keep them out of their milk.[555] Rapid drying of stored legumes is highly recommended as a control.[556]

## Other Herbivory Issues

In the past honey locust was considered largely pest-free. Now that it is a commonly grown ornamental, often planted in monocultures for miles of city streets, it has more issues.[557] Of these, borers and the mimosa webworm seem to be the most serious.

### Mimosa Webworm

Mimosa webworm (*Homadaula anisocentra*) is an accidentally-imported pest that evolved to feed on mimosa, but has now learned to eat honey locust as well. Large plantings of ornamental honey locust are vulnerable.[558]

Insectivorous birds and beneficial insects often keep webworm populations in check. Mimosa webworm can be controlled with biorationals including neem oil, Bt, spinosad, and a number of conventional insecticides.[559]

There is variability in resistance, with the ornamental male clone 'Moraine' showing better resistance. 'Moraine' may be worth using as a pollen parent in breeding efforts, though crosses of 'Moraine' with Japanese locust (*G. japonica*) did not inherit its resistance.[560] Some ornamental

[553] Nabhan et al (2019) *Mesquite: Training Manual for Growers, Harvesters & Artisans*
[554] Berkelaar (2005) "Aflatoxina - A cause for concern"
[555] Kreider (nd) "My experiences with honey locust"
[556] Berkelaar (2005) "Aflatoxina - A cause for concern"
[557] Duke (1983) *Handbook of Energy Crops*
[558] Santamour (1977) "The selection and breeding of pest-resistant landscape trees"
[559] Gibb (2017) "Mimosa webworm"
[560] Santamour (1977) "The selection and breeding of pest-resistant landscape trees"

cultivars are more resistant than others, with 'Sunburst' the most vulnerable.[561] 'Sunburst' is probably a bad idea to use as a pollen parent in breeding work as a result. None of the other hardy species of *Gleditsia* show resistance.[562]

## Honey Locust Stem Borer

Stem-boring insects are an issue in the western plains.[563] Several species of borers attack honey locust.[564] The most serious seems to be honey locust borer (*Agrilus difficilis*).[565] Borer damage is much worse in dry years and can kill many trees during severe droughts.[566] Note that this species is distinct from black locust borer (*Megacyllene robiniae*).

Honey locust borers usually don't kill whole trees, but can kill back parts of the canopy.[567] The most vulnerable trees are those already weakened by poor soils or drought.[568] Preventing tree stress with good soils and irrigation are recommended preventatives, and some pyrethroid insecticides are also used.[569] Healthier trees can kill borer larvae with heavy sap flow. You can watch for gummy sap oozing from the entry wounds, and D-shaped exit wounds.[570] You can also monitor with ammonium bicarbonate lure traps.[571] Injuries to the trees will make them more vulnerable.[572] Removing dead and damaged limbs, and removing any dead trees, is recommended.[573] Wilson, grower of honey locust for many decades, has never had any trouble with borers.[574]

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[561] Gibb (2017) "Mimosa webworm"
[562] Santamour (1977) "The selection and breeding of pest-resistant landscape trees"
[563] Duke (1983) *Handbook of Energy Crops*
[564] Detweiler (1947) *Notes on Honeylocust*
[565] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[566] Kreider (nd) "My experiences with honey locust"
[567] Utah state (nd) "Honeylocust borer: *Agrilus difficilus*"
[568] Utah state (nd) "Honeylocust borer: *Agrilus difficilus*"
[569] Utah state (nd) "Honeylocust borer: *Agrilus difficilus*"
[570] Morton Arboretum (nd) "Honey-locust borer"
[571] Colorado State University (nd) "*Agrilus difficilis*"
[572] Morton Arboretum (nd) "Honey-locust borer"
[573] Colorado State University (nd) "*Agrilus difficilis*"
[574] Andy Wilson, Springtree Agroforestry, personal communication

Some trunk sprays are available.[575] Some systemic insecticides are available, though their effects on livestock (or people) eating the pods are unknown, and toxicity won't have been tested for because the assumption is that honey locust is an ornamental tree only.[576]

## Herbivorous Mammals

Rabbits can seriously damage young trees, and have caused abandonment of use of honey locust in windbreaks in some regions.[577] Browsing by cattle, and presumably goats, sheep, and deer, can prevent establishment of young trees.[578] I planted some grafted trees from Hidden Spring in the early 2000s which were sadly browsed by poorly monitored goats and reverted to rootstock.[579] Mice will eat the seeds of stored pods.[580] Fike reports that deer ate the bark of their grafted 'Millwood' trees, killing them, while leaving seedlings alone (they had to be regrafted and protected from deer).[581]

## Other Pests and Diseases

Honey locusts are affected by a number of other insects, which mostly produce cosmetic rather than life-threatening damage. These include various scale insects, mites, twig girdlers, midges, plant bugs, leafhoppers, beetles, pinhole borers, and scale insects.[582] [583] [584] In some regions honey locust is vulnerable to a canker disease (*Thyronectria austro-americana*).[585]

[575] Morton Arboretum (nd) "Honey-locust borer"
[576] Morton Arboretum (nd) "Honey-locust borer"
[577] Detweiler (1947) *Notes on Honeylocust*
[578] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[579] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[580] Kreider (nd) "My experiences with honey locust"
[581] John Fike, Virginia Tech, personal communication
[582] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[583] Blair (1990) "*Gleditsia triacanthos* L. Honeylocust" in *Silvics of North America*
[584] Cranshaw (2000) "Insect and mite pests of honey locust"
[585] Duke (1983) *Handbook of Energy Crops*

# Propagation

Here we have two basic categories—cloning and seedlings. Cloning techniques include grafting, root cuttings, and tissue culture. Cloning is highly desirable in that it produces a copy of the desirable parent tree that bears at a younger age, but cloned plants are expensive. Genetically uniform plantings of clones are more vulnerable to pests and diseases. Seedlings are lower cost but highly variable. Each seedling will be a genetic individual, and honey locust seems to have especially diverse seedlings that are unlike their parents in fruit quality, thorniness, and other qualities.[586] For details on all of these techniques, see *The Reference Manual of Woody Plant Propagation.*[587] For details on where to source trees, see Sources of Trees.

## Grafting

At present the most commonly used form of vegetative propagation of honey locust is grafting. There are some challenges in grafting honey locust. It's not as forgiving to graft as some fruit trees—some researchers report a success rate under 30%.[588] This is part of why grafted honey locusts are so expensive—and the cost of grafted trees a major barrier to adoption.[589]

Grafted honey locusts tend to sucker from below the graft union, more than most fruit or nut trees.[590] Take care when grafting, as some female trees will produce branches that make only male flowers.[591] It might be best to make sure to collect scionwood from branches that have been observed to fruit.

A great advantage of grafting is that it can produce thornless trees from thorny ones, by collecting scions (grafting wood) from mature, thornless branches of otherwise thorny trees. This is the basis of the ornamental honey locust industry.[592] Keep in mind that thornless cultivars, if grafted on thorny rootstock, can definitely produce thorny root suckers if roots are

[586] J.C. McDaniel (1980) "A plant breeder looks at some American tree crops: *Morus, Gleditsia* and *Diospyros*"
[587] Dirr (2006) *The Reference Manual of Woody Plant Propagation*
[588] Dupraz (1997) "Temperate agroforestry in Europe"
[589] Dupraz (2019) "Long-term monitoring of grafted honey locust trees for the production of fodder pods"
[590] Detweiler (1947) *Notes on Honeylocust*
[591] USDA NRCS (nd) *Plant Guide: Honey Locust*
[592] Chase (1947) "Propagation of thornless honey locust"

damaged. This is the case at my home, where an ornamental thornless male produces extremely thorny suckers wherever the roots have been damaged by lawnmowers over the years.

***Figure 20**: Grafted honey locusts at Future Forest Plants in Pennsylvania. Image courtesy Zach Elfers.*

The great horticulturalist Michael Dirr recommends June or July T-budding with green budwood. He notes that the buds come in clusters and several may sprout from the T-bud, these should be thinned to a single shoot.[593] Ferver reports that honey locust is as easy to graft as apples—as long as you wait long enough in the season for the rootstock to have leaves emerging and bark slipping.[594]

Various kinds of grafting have been used successfully, including cleft, whip and tongue, and inverted-T budding.[595] Wilson told Gold that "chip budding with green wood in August works best, and June budding is also satisfactory. Dormant scionwood results in a low percentage of successful grafts."[596] Wilson wrote in his honey locust newsletter: "Budding honey locust in the spring using dormant scionwood gives generally poor results. To produce honey locust shade trees, United States commercial nurseries bud in May/June using scionwood taken from this year's growth. Rootstock to be budded is often cut to the ground before bud break to produce a more succulent budding area . . . If you have established seedlings that have grown too large to bud, I recommend a standard bark graft with dormant scionwood. The bark graft is not pretty but it works well (80 percent takes)."[597]

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[593] Dirr (2006) *The Reference Manual of Woody Plant Propagation*

[594] Buzz Ferver, Perfect Circle Farm, personal communication

[595] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"

[596] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[597] Wilson (1994) *Honeylocust Research Newsletter No. 1*

Our crop champion interviewees shared their own favorite techniques. Elfers likes z-graft bench grafting in April. He reports that the plants don't seem to be fussy about temperature. He lets the rootstock leaf out before grafting. Then he exposes the plants to outdoor temperatures for callusing. In his experience, hot summer temperatures are not required.[598] R.J. Bryson, propagator for Trees for Graziers, likes whip and tongue bench grafting in March and uses the hot pipe technique often used for nut trees. He was able to perform budding in June by using actively growing buds and understock that had just been planted from seed in April, and got 3 feet of growth.[599] Tanke has had excellent luck with z-grafting. He has noticed that with high nitrogen fertilization, he sees stem dieback because the material gets too fleshy.[600]

Honey locust grafting is scaling up rapidly. For 2026 Elfers is custom-grafting 3,000 trees for Trees for Graziers.[601]

## Softwood and Hardwood Cuttings

It is generally agreed that honey locust is very difficult from softwood cuttings, but hardwood cuttings occasionally work. Dirr, brutally honest as always, summarizes: "commercially, no one produces the tree from cuttings."[602]

## Root Cuttings

Root cuttings were identified in the 1940s as the most successful and promising mode of vegetative propagation.[603] They are still considered quite successful.[604] Root cuttings are best if taken from vigorous young plants, rather than older trees.[605] [606] Note that root cuttings won't help if what you want to propagate is a grafted tree—instead you will just get a clone of the rootstock.

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[598] Zach Elfers, Future Forest Plants, personal communication
[599] Austin Unruh, Trees for Graziers, personal communication
[600] Zach Elfers, Future Forest Plants, personal communication
[601] Austin Unruh, Trees for Graziers, personal communication
[602] Dirr (2006) *The Reference Manual of Woody Plant Propagation*
[603] Detweiler (1947) *Notes on Honeylocust*
[604] Dirr (2006) *The Reference Manual of Woody Plant Propagation*
[605] Detweiler (1947) *Notes on Honeylocust*
[606] Unruh (2024) "January 2024 Nursery Update."

In the 1940s, hardwood or softwood cuttings were obtained (not easily) from elite cultivars and the plan was to use them as mother plants for root cuttings. However, World War II arrived and the project was abandoned.[607] [608] This does seem like an effort worthy of restarting today.

The team at Trees for Graziers has been having good success with root cuttings. Their learnings include: timing is somewhat erratic; the shoots can "cook" when emerging; the junction between root and shoot is thin and should be handled delicately.[609] Now that many of the thousands of seedlings that they have planted are beginning to bear, they are evaluating them and taking root cuttings for clonal propagation of thornless pod-producers.[610]

## Seedlings

Order seed or collect from the desired mother trees. Clean and store. Seed can be stored dry at just above freezing for several years.[611] To separate seeds from pods at scale, Wilson uses a pea sheller. This only works when the pods are fully dried.[612]

***Figure 21:*** *Honey locust seedlings at Yellowbud Farm in Massachusetts. Image courtesy Jesse Marksohn.*

Seeds must be scarified to remove part of the seed coat. The seed coat prevents germination, but protects seeds as they pass through the guts of large herbivores. You'll need to simulate herbivore stomach acid with sandpaper, a file, or other scarification techniques.[613] Immersing for 90–120 minutes in sulfuric acid is sufficient. Hot water can also be used though less effectively.[614] After scarification, put a few in

[607] Chase (1947) "Propagation of thornless honey locust"
[608] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[609] Austin Unruh, Trees for Graziers, personal communication
[610] Austin Unruh, Trees for Graziers, personal communication
[611] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[612] Zach Elfers, Future Forest Plants, personal communication
[613] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[614] Dirr (2006) *The Reference Manual of Woody Plant Propagation*

water and if they swell up overnight all is well, if not then further scarification is needed.[615] Scarified seed should germinate within 30 days.[616]

You can tell if seedlings will be thorny in their first few years. Seedlings destined to be extremely thorny will typically produce thorns their first year, but those that will someday be more lightly thorned may not produce thorns until their second year.[617] After bad experiences with delayed thorn development, Unruh is now waiting for seedlings to be at least 6 feet tall before determining that they are truly thornless. He is also pruning seedlings in the nursery, because that sometimes causes them to express thorniness early.[618] He then culls all thorny trees.

## Tissue Culture

Tissue culture is a sophisticated form of vegetative propagation, which is done at a very large scale in sterile laboratories. One potential use would be to obtain juvenile forms of grafted trees which could then be propagated by root cuttings thereafter.[619] Tissue culture is rather expensive and minimum orders are very large. Trees for Graziers are working with labs to see if tissue culture will be feasible for honey locust, and expect to know by the end of 2026.[620] If so, this would enable massive scaling of cloned cultivars, at a low price per tree.

[615] Cullina (2002) *Native Trees, Shrubs, & Vines: A Guide to Using, Growing, and Propagating North American Woody Plants*

[616] Dirr (2006) *The Reference Manual of Woody Plant Propagation*

[617] Gold, "Honeylocust (Gleditsia Triacanthos L.): Genetic Variation and Potential Use as an Agroforestry Species."

[618] Unruh (2024) "January 2024 Nursery Update."

[619] Unruh (2024) "January 2024 Nursery Update."

[620] Austin Unruh, Trees for Graziers, personal communication

# Breeding

## Respect for Indigenous People

Time and again, traditional food plants important to Indigenous people of North America have been taken up by breeders without permission, consideration, or compensation. Some of the breeding efforts have put wild-managed populations at risk of genetic contamination, with wild rice one of the most prominent examples. Indigenous people successfully protected wild rice, after a protracted legal battle. Today some have similar concerns about hybridizing native hazelnuts, which could easily cross-pollinate with wild native hazels. Ojibwe activist Benesikwe Shirley Nordrum said that "she would like to fight against the hazelnut breeding like [they] did with wild rice but there are so many Native food plants being messed with right now in both the mainstream and regenerative agriculture movement . . . There are so many fights." Genetic engineering and hybridization are among the top concerns of Indigenous activists.[621] Collaborative partnerships of plant breeding teams and Indigenous communities are both possible and desirable.[622] [623]

What does this mean for honey locust breeding? There is little danger of honey locust becoming an important enough crop that anyone would dream of genetic engineering, nor is hybridization really on the horizon currently. A good next step would be to communicate with Indigenous communities whose traditional land is in the native range of honey locust to begin some conversations. Of particular importance would be Cherokee people, for whom the tree has been important for millennia. Their sovereign nations include the Eastern Band of Cherokee Indians, located on part of their traditional land in western North Carolina, and the Cherokee Nation and United Keetoowah Band of Cherokee Indians, both located in Oklahoma. Perhaps it is time for a coordinated effort by honey locust champions to reach out and see if there is interest in having a conversation.

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[621] Shanovich (2025) "Consider *bagann:* The importance of hazel to Indigenous peoples of eastern North America and implications for sovereignty"

[622] Matson (2021) "Transforming research and relationships through collaborative Tribal-University partnerships on manoomin (wild rice)"

[623] Steen-Adams (2023) *Partnering in Research About Land Management with Tribal Nations - Insights from the Pacific West*

# Breeding Approaches

## Pollen Parents

Breeding honey locust requires a pod-bearing mother tree and a parent tree that produces pollen. You might use a male with good genetics, or male flowers from a mostly female tree.

Most ornamental males are of razorback genetics and not of much use to breeding. These might be male seedlings of good females. Many of these are present in grafted plantings, but none of these seem to have been named and propagated yet. Historic male cultivars noted as promising include 'Gadsden' (a probable relative of 'Calhoun') and 'Urbana' ('Millwood' crossed with 'Moraine'), though these may have been lost. 'Moraine' is an ornamental-type thornless male but at least has good webworm resistance. Where might males of good breeding potential come from?

They might be seedlings from grafted orchards. For example, Elfers and Wilson have selected some male seedling trees from Springtree for future release. All are offspring of grafted fatback cultivars.[624]

Another approach: seedling trees at Virginia Tech, Springtree, or other populations of seedlings of known elite fruiting cultivars could be screened for trees that are mostly male but produce some female pods (as some do). Those with female pods of good quality would be excellent candidates for breeding purposes, as their fruit characteristics would be known.

A third option is to use the male flowers from fruiting cultivars (it's not clear if all pod-bearing cultivars produce male flowers, but certainly many do). This is discussed in Deliberate Crossing below.

Finally, sometimes pod-producing trees will produce a fully male branch.[625] Perhaps this is why 'Millwood' grafts sometimes turn out to be male.[626] These might be worthy of propagation, as they are pollen-producers with what are presumably the genetics of a good fruiting cultivar (sometimes this kind of branch is a chimera, a genetic mutant, which may or may not retain the desired fruit quality genes).

[624] Zach Elfers, Future Forest Plants, personal communication
[625] USDA NRCS (nd) *Plant Guide: Honey Locust*
[626] Moore (nd) "The present outlook for honey locust in the South."

## Seedling Variability

A few fruits and nuts produce seedlings of similar quality to their parents. Hazelnuts and peaches are examples. Citrus seedlings are often clones of their parents (apomictic), though they first must pass through a spiny, non-fruiting decade. However, the great majority of fruits and nuts, particularly in temperate climates, produce seedlings that are highly variable and usually inferior to their parents. For example, most seedlings of grafted apple trees are more like sour crabapples than their sweet parents.

Kreider noted that of the many 'Millwood' seedlings he grew out, pod size varied, with a few even larger than 'Millwood', but none as sweet as their mother. Yields also varied.[627] Tanke's observations of the Battle Creek planting and the Downington trees suggest that only 5% of seedlings will inherit similar characteristics to their parents.[628] If you want to breed honey locust, be ready to plant out a lot of seedlings in order to get a few with the traits you want.

Of course, many seedlings will probably be non-fruiting males. Kreider found that half of 'Millwood' seedlings were males.[629]

Of great importance is the frequency and intensity of thorniness among seedlings. Remember that thornless grafted trees may be from thorny ortets, and their genetics therefore thorny. The thorniness of the pollen parent is also very important to consider. Almost all seedlings of 'Calhoun' and 'Millwood' were thorny for Kreider, though it's not clear who their pollen parent was.[630]

Don't be discouraged. See Marker-Assisted Selection below for some exciting news.

## Selection of Promising "Wild" Trees

All of the classic golden age cultivars were wild trees (or, perhaps, remnants or descendents of Indigenous orchards or managed populations). This group includes 'Calhoun', 'Millwood', and 'Schofer'. Dupraz made selections from feral French trees in the 1980s, yielding the desirable cultivars 'Super-M', 'Total', and 'Voi-Ferré-Marchandise' among others. This work continues

[627] Kreider (nd) "My experiences with honey locust"
[628] Alex Tanke, Dispersion Farms, personal communication
[629] Kreider (nd) "My experiences with honey locust"
[630] Kreider (nd) "My experiences with honey locust"

today with new cultivars like 'Chiaha', 'Colley', 'Cooper', 'Gap', 'Lawrence', 'Poole Forge', 'Reiff', and 'Richland'. Surely there are thousands of neglected but outstanding sweet fatback trees growing wild across the native and naturalized range of honey locust.

## Selection of Seedlings from Elite Plantings

Today's honey locust crop champions have done extensive evaluation and selection of trees from seedlings of special plantings.

The Battle Creek planting has yielded 'Lancaster North', 'Lancaster South', 'Monroe', and 'Piatt'. The cold climate of this planting is an especially useful filter to select cultivars suited to northern plantings. Recent selections from Springtree include 'Andy', 'SpringTree F', 'SpringTree H', and 'SpringTree K'.

Other cultivars that began as seedlings of named cultivars or elite plantings include 'Urbana', and perhaps 'Marguerite'.

## Marker-Assisted Selection

Dr. Richard Tegtmeier is an orchard scientist and program leader for the Rodale Institute's perennial research program. He is bringing some powerful new tools to bear on honey locust seedling selection. Rodale's approach is to take grower-driven hypotheses and put them to the test, so that their research is truly meeting farmer needs. After conversations with Elfers, Marksohn, and Unruh, he saw the potential for newly-affordable techniques to help their nurseries meet the growing demand for honey locust. He learned that two key bottlenecks for seedling trees are thornlessness and sex determination—if a farmer will be planting out trees, they don't want thorny ones or nonfruiting males.[631]

Beginning with 'Millwood', Tegtmeier has almost finished sequencing the honey locust genome (reading it, not manipulating it). He is growing out 50 thorny and 50 thornless seedlings of 'Millwood'. Running tests on these will enable him to identify where thorniness lives on the genome. As a result there will soon be a quick test, for less than $1 per sample, that will let growers know if seedlings will be thorny or not. This "marker-assisted selection" will also soon be able to test the sex of seedlings. In the near future, nurseries will be able to offer seedlings

[631] Dr. Richard Tegtmeier, Rodale Institute Orchard Scientist, personal communication

that are guaranteed female and thornless. This would remove a major bottleneck to honey locust adoption—because seedling trees are only a fraction of the cost of grafted ones. Then Tegtmeier can move on to learning to identify other desirable traits. This could speed up breeding work immensely. Tegtmeier's techniques will also make it possible to identify old, unlabelled grafted trees, as long as the cultivar has been tested previously.[632]

Another new tool is a handheld near-infrared spectrometer, which Tegtmeier had just received in the mail when I spoke to him. Working with his nursery partners, he will be able to calibrate it and then use it to quickly field-test pods of wild trees for sugar and protein content. He also hopes to use the power of drones to rapidly collect data and assess visible traits on large numbers of trees.[633]

Tegtmeier sees his role as being an accelerant for the selection and breeding work being done by the other crop champions I interviewed for this publication. The tools of genomics (marker-assisted selection) and phenomics (collecting data on observable traits) have become much more affordable in the last decade, making it possible to use them on underappreciated crops like honey locust. The selection and breeding still happen the old-fashioned way, but these tools speed up the process, increase efficiency, and reduce costs.[634]

## Deliberate Crossing

To my knowledge, not a single honey locust cultivar is the result of deliberate crosses between desirable cultivars, even though such crosses have been made successfully. This seems like a highly strategic next step in honey locust development.

Honey locust hand-crossing is similar to that of many nut trees. First, immature female flowers of the desired mother tree are isolated in pollen-proof bags to prevent accidental pollination by undesirable or unknown pollen (like from a nearby razorback street or yard tree). Once the female flowers are receptive (when stigma tips are sticky), ripe pollen from male flowers from the desired pollen parent is carefully applied to the stigma of the female flowers, and then the

[632] Dr. Richard Tegtmeier, Rodale Institute Orchard Scientist, personal communication
[633] Dr. Richard Tegtmeier, Rodale Institute Orchard Scientist, personal communication
[634] Dr. Richard Tegtmeier, Rodale Institute Orchard Scientist, personal communication

bag is replaced to prevent further, accidental pollination.[635] The resulting pods are labeled so that if and when they ripen, seed can be collected, planted out, and monitored.

The male flowers of 'Ashworth', a "mostly female" cultivar, were successfully used in controlled crosses by Jerry Cottingham. He used 'Ashworth' as the pollen parent in hand-crosses with 'Hershey', 'Calhoun' and 'Millwood' in the 1980s and grew out viable seedlings successfully.[636] The quality and fate of these seedlings is unknown. Dr. Ernest Schreiner of the U.S. Forest Service successfully crossed 'Calhoun' and 'Millwood' with the male flowers of the fatback 'Strickler', and John Hershey crossed 'Calhoun' and 'Millwood' with each other successfully.[637] Here again, nothing seems to be known as to where those seedlings are now, and how they turned out.

## Hybridization Potential

Honey locust naturally hybridizes in the wild with water locust (*G. aquatica*), a species with thin, papery pods.[638] Breeders often look to related species to see if there are traits worth crossing for. However, our honey locust seems to be the best of the genus when it comes to pod quality. Pods of at least three *Gleditsia* species are used to make soap, which does not sound promising.[639] Some have medicinal uses as well.[640] As noted above, some Indigenous people are opposed to artificial hybrids of their culturally important species.[641]

## Lessons from Ornamental Breeding

Breeding oaks for livestock and food has benefited greatly from the techniques developed by ornamental oak breeders.[642] Unfortunately most of the widely-grown ornamental honey locust cultivars are products of early work in the 1940s, or spontaneous seedlings noted for their

[635] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[636] Wilson (1996) *Honeylocust Research Newsletter No. 2*
[637] Detweiler (1947) *Notes on Honeylocust*
[638] USDA NRCS (nd) *Plant Guide: Honey Locust*
[639] Bryan (1995) *Leguminous Trees with Edible Beans*
[640] Hamlet (2001) *Mansfeld's Encyclopedia of Agricultural and Horticultural Crops*
[641] Shanovich (2025) "Consider *bagann:* The importance of hazel to Indigenous peoples of eastern North America and implications for sovereignty"
[642] Toensmeier (2023) *The Status of Oak Breeding and Domestication as Food for People and Livestock*

beauty.[643] [644] There seems to be little or no active breeding work from which lessons might be gleaned.

## Breeding priorities

Some of these are fairly universal for tree crops, while others are somewhat unique to honey locust. Gold and Hanover proposed the most comprehensive program I've seen for honey locust.[645] The ranking according to our panel of crop champions, from highest to lowest: sugar content, yields, annual bearing, thornlessness, pod size, % pulp (pericarp), producing viable male flowers, protein content, and seediness. However some panelists dissented and ranked thornlessness at number one.

### Large, Sweet, Fleshy Pods

Large pods, with a high level of sugary pulp, are the main attraction. Sugar content was the highest ranked by the majority of our expert interviewees. Gold and Hanover suggest sugar content should be at least 30%.[646] This has been considered essential at least as far back as Hershey and Smith, and was surely a top priority for Indigenous growers and curators for millennia. Especially high-sugar cultivars include 'Andy', 'Calhoun', 'Millwood', and 'Monroe'. Pods should have high palatability to livestock.[647]

Many cultivars are noted for especially large and/or fleshy pods. These include 'Calhoun', 'Chiaha', 'Lancaster 'North', 'Lawrence', 'Marguerite', 'Milaud', 'Millwood', 'Monroe', 'Shoefer', 'Trotter', and 'Voie-Ferré-Marchandise'.

[643] Boggs (2018) "Honeylocusts and mastodons"
[644] Spadefoot Nursery catalog
[645] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[646] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[647] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

## Non-Astringency

Elfers is primarily interested in honey locust for human consumption, and he and his partner grind and bake with pods regularly. He and I agree that for developing honey locust as a crop for human consumption, pods that do not burn the throat are a necessity (with that said, people have found ways of cooking with more astringent types for millennia). 'Calhoun' is currently the gold standard, being completely non-astringent in my tests with the Yellowbud Farm team and chef Kristof. 'Monroe' is also relatively non-astringent.[648] Ferver has found that 'Millwood' pods are sweet when somewhat unripe, and become astringent at maturity.[649] Screening cultivars for non-astringency should be a priority.

## Thornlessness

Clearly thornlessness is a non-negotiable trait for almost everyone. Unruh and Taylor Malone of the Fruit Explorers think thorniness is the most important trait, even ahead of sugar content. Trees with thornless ortets that could serve as mothers include 'Andy', 'Ashworth', 'Colley', 'Lancaster South', 'Marguerite', 'Monroe', 'Poole Forge', 'SpringTree F', 'SpringTree H', and 'Trotter'. Don't forget that the pollen parents must also be genetically thornless. The male 'Moraine' could be used as well, but stay tuned for release of thornless males with good genetics from Springtree Agroforestry.

A counterpoint: Marksohn says that some of his nursery customers prefer thorny plants, because they think that the thorns mean they won't need plastic tree tubes to protect them from deer and livestock.[650]

## Protein Content and Seeds

As we've discussed, there is disagreement about the digestibility of honey locust seeds from whole pods. Yet protein is important—Gold and Hanover suggest a target of at least 25% protein.[651]

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[648] Zach Elfers, Future Forest Plants, personal communication

[649] Buzz Ferver, Perfect Circle Farm, personal communication

[650] Jesse Marksohn, Yellowbud Farm, personal communication

[651] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

One approach is to select for softer seeds with thinner seed coats, which should increase protein digestibility.[652] Soft-seeded cultivars include 'Milaud', 'Piatt', and 'Total'.[653] So far, few of our U.S. cultivars have been evaluated for this trait.

Another approach is to select for pods with lots of seeds, and either (a) feed them to sheep, who can digest honey locust seeds fairly well, or (b) grind the pods. Gold and Hanover suggest aiming for 40 seeds per pod as a breeding target.[654] One cultivar with high seed and high protein is 'Super-M'. High seed production from razorback trees could be a future source of protein for livestock and people, a "bean tree" similar to the tropical pigeon pea (*Cajanus cajan*).

High protein doesn't only come from seeds. 'Monroe' has high protein with low seed content.[655] When comparing pods with seeds removed, 'Hershey' has the highest protein content of any tested cultivar. This could be an interesting avenue to pursue. 'Milaud' is noted for especially high protein, though it's not clear if this is from seed or pulp.

## Digestibility

To date, only the French cultivars have been tested for digestibility using measures that can be compared to each other. 'Milaud' and 'Total' were tied for best digestibility for both sheep and cattle. If breeding for ruminant feed, high digestibility is essential.

## Other Nutritional Issues

In all of the livestock nutritional factors we looked at in the Composition Table, there were wild trees with higher levels of what we want than any cultivars that have been tested. That implies that we can breed to improve honey locust's mineral content (ash), protein, and sugar, and to produce low-tannin cultivars as well.

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[652] Dupraz (1997) "Temperate agroforestry in Europe"

[653] Foroughbakhch (2008) "Nutritional and digestibility values of six varieties of *Gleditsia triacanthos* L. pods"

[654] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[655] Dispersion Farms website

## Precociousness, Yield, and Season of Drop

High yields were ranked third most important by our panel of crop champions. High-yielding cultivars include 'Heather', 'Hershey', 'Millwood', and 'Milaud'.

***Figure 22:*** *Precociousness is a highly desirable trait. This seedling in a Trees for Graziers planting is bearing heavily at only six years of age. Image courtesy Austin Unruh.*

Precocious trees begin fruiting at a young age. Gold and Hanover suggest that the goal for precociousness would be to bear pods by the first or second year after planting.[656] There is certainly variation in seedling precociousness from which to select.[657] Precocious cultivars include 'Hershey' and 'Milaud'.

When should pods ripen? When should they drop from the tree? Should they drop all at once, or over a staggered period? It depends on the desired management system and end use.

For harvest for storage or processing, uniform drop time is desirable.[658] Cultivars with early drop include 'Gap' and 'Lancaster South'. In the Northeast, early dropping may be desirable to avoid pods dropping into snow. Trees that drop uniformly in mid- or late-season might also be useful for grazing planning in warmer climates where winter grazing is possible.

Long-staggered (indeterminate) ripening period is ideal for always dropping some fresh pods into the pasture all winter, without losing quality to fermentation once on the ground.[659] While I didn't identify specific cultivars with this trait, it seems like the default, so it is probably widespread.

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[656] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[657] Kreider (nd) "My experiences with honey locust"

[658] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[659] Detweiler (1947) *Notes on Honeylocust*

## Annual Bearing

Most growers would like honey locusts that produce every year. A number of cultivars have this trait, or tend in that direction. These annual bearing cultivars include 'Andy', 'Big Fatty', 'Calhoun', 'Cooper', 'Leisczs Bridge', 'Poole Forge', 'Schofer', 'SpringTree H', 'SpringTree K', and 'Voie-Ferré-Marchandise'.[660]

## Pest Resistance

For development as a pod crop for people and livestock, bruchids seem like the most important resistance to improve. Some wild trees are more bruchid resistant than others.[661] Breeding for resistance to other pests, like mimosa webworm and honey locust borer, would also be desirable. 'Moraine' has higher mimosa webworm resistance, so it could be a good pollen parent in breeding.[662] There is some potential to breed other legumes like peanuts with resistance to the fungus that produces aflatoxin, and, should aflatoxin turn out to be an issue for honey locust, this kind of breeding would be very desirable as well.[663]

## Cold Climate Tolerance

There are already great cultivars through zone 6, like 'Calhoun' and 'Millwood'. We could use more cultivars for cold climates with short seasons, with 'Ashworth', 'Cooper', 'Heather' and 'Piatt' among the best so far. See Table 9 in the cultivar section for cold hardiness of female cultivars. Ornamental males with exceptional cold hardiness include: 'Prairie Silk' (3b), and 'Northern Acclaim' and 'Skyline' (both 4b)—these three might be good pollen parents for northern breeding work.[664] Late leafout and flowering are also identified as priorities, to avoid damage from late frosts.[665]

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[660] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[661] Mathwig (1971) *Relationships between bruchid beetles (*Amblycerus robiniae) *and honey locust trees* (Gleditsia triacanthos)

[662] Santamour (1977) "The selection and breeding of pest-resistant landscape trees"

[663] Khadgi (2025) "Emerging strategies for aflatoxin resistance in peanuts via precision breeding"

[664] Ball (2013) *Trees! An Illustrated Field Guide to Fruit, Nut, Ornamental, and Windbreak Trees for the Northern Plains*

[665] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

## Harvest, Storage, and Processing

It has been proposed that twisted-type pods may be easier to mechanically harvest than straight pods.[666] Also desirable for pods to be harvested is good storability, for which Gold and Hanover would like to see at least 12 months.[667]

## Other Priorities

Gold and Hanover suggested a number of desirable vegetative characteristics. These include vigor, late leaf-out, good branch and trunk form, and light shade.[668] Kreider and Fike both suggested that a straight-trunked form would have value as a timber tree.[669] [670] It might be nice to have dwarf trees for home garden production for human consumption, and the dwarf 'Nana' could be used in breeding these.

Kreider suggested breeding for better young tender pods that would be good as cooked vegetables, or good eating unripe.[671] As the unripe seeds are also edible like peas or shell beans, this might be a worthy goal as well.

As honey locust pollination becomes better understood, breeding goals may become clear. These might include trees that are especially good at self-pollination, and pod-producing trees that are especially good at pollinating other trees (perhaps with a longer flowering window).

To reduce weediness everywhere, and invasiveness outside of its native range, seedlessness would be desirable. Cultivars that already have low seed production include 'Milaud', 'Monroe', 'Voie-Ferré-Marchandise'. In this case, trees that set seedless fruit parthenocarpically would be especially desirable.

Eventually, seed orchards that consistently produce sweet-podded, thornless seedlings would be extremely useful. This would make it much more affordable for farmers to plant large amounts

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[666] Detweiler (1947) *Notes on Honey Locust*

[667] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[668] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

[669] Kreider (nd) "My experiences with honey locust"

[670] John Fike, Virginia Tech, personal communication

[671] Kreider (nd) "My experiences with honey locust"

of honey locust. If this turns out to be possible for honey locust, such an effort could follow the model of the 'Ducks Unlimited' swamp white oak (*Q. bicolor*).[672] Marksohn suggests that this is a critical step in making wide adoption of honey locust possible. He thinks an important component will be to assess what combinations of parents yield the best seedling offspring.[673]

There are many challenges faced by honey locust trees, and it would be nice to increase resistance to them. Gold and Hanover suggest resistance to herbicide, wind, ice, and drought.[674] The ornamental male 'Northern Acclaim' is noted for its drought resistance.[675]

Elfers suggests that much more diversity is needed to avoid a genetic bottleneck. "We need to keep finding feral accessions of thornless trees with fleshy pods. [The current cultivars with those characteristics are] a pretty small gene pool, we need to keep it fresh and not inbred . . . Twenty or thirty years of this are needed, to build a repository of 200 or so individuals with these superior traits."[676]

[672] Toensmeier (2023) *The Status of Oak Breeding and Domestication as Food for People and Livestock*
[673] Jesse Marksohn, Yellowbud Nursery, personal communication
[674] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[675] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"
[676] Zach Elfers, Future Forest Plants, personal communication

# Cultivars

We've come a long way from the days when 'Calhoun' and 'Millwood' were the only named cultivars commercially available. As of 2026, a remarkable 24 fruiting cultivars are commercially available.

Note that nutrition information is from the Composition Table.

Other cultivars mentioned by TVA researchers, but with no information, include 'Bessemer', 'Hartselle', 'Hershey #1', 'Lake', 'Lowland', 'Morrow', 'Penn', 'Smith', 'Tony', 'TVA #1', and 'TVA #3'.[677] [678] These might be fruiting cultivars, promising males, or ornamental types. Perhaps some of these survive in old TVA plantings, in Downingtown, botanical gardens, or in some old farm plantings somewhere.

Table 9 shows the minimum, proven hardiness of many female cultivars. Note that cold hardiness is not necessarily the same as pod ripening.

***Table 9**. Confirmed minimum cold hardiness of fruiting cultivars*

| | Minimum Temperature | Female Cultivars |
|---|---|---|
| Zone 4b | –25˚F | 'Ashworth' |
| Zone 5a | –20˚F | 'Cooper', 'Heather', 'Piatt' |
| Zone 5b | –15˚F | 'Lancaster South' |
| Zone 6a | –10˚F | 'Lancaster North', 'Millwood', 'Monroe', 'Schofer' |
| Zone 6b | –5˚F | 'Calhoun', 'Gap', 'Leisczs Bridge', 'Poole Forge', 'Reiff', Strickler' |
| Zone 7a | 0˚F | 'Andy', 'Chiaha', 'Colley', 'Marguerite', 'Richland', 'SpringTree F', 'SpringTree H', 'SpringTree K' |

[677] Chase (1947) "Propagation of thornless honey locust"

[678] Detweiler (1947) *Notes on Honeylocust*

## 3X

'3X' was selected by Thomas Mitchell in 1944 as the best of 2,000 trees he sampled in New York City, his contribution to efforts to find cultivars for the North. The pods were sweet but smaller than southern fatback cultivars. '3X' fruited well seven out of eight years. The ortet was a tree in the Brooklyn Botanical Garden. Sadly it was blown down by a hurricane. Mitchell sent root cuttings from the fallen tree to USDA but they did not succeed.[679] While the cultivar was lost, perhaps '3X' has seedling descendents at the Brooklyn Botanical Garden today. A search of the archives there might provide additional information on a honey locust lost in a 1944 hurricane—perhaps it was a grafted tree or of a named provenance.

## Andy

A selection made by Elfers with Wilson from seedlings that came up at Springtree Agroforestry Project in Virginia. Certainly a seedling of a grafted tree. Released in 2025 for the first time.[680] Hardy to at least zone 7a based on its location in Scottsville, Virginia.

Elfers writes: "I've been working with Andy Wilson [at Springtree] inventorying, evaluating, and selecting from the vast feral repository of honey locust he has overseen. This is a tree which is entirely thornless, the pods are tested at 34% sugar (at the high end for cultivars), and the tree appears to be strongly annually bearing, having had a good crop in 2024 and now again in 2025. That is the trifecta of good traits. I named it Andy in his honor".[681] Offered by Future Forest Plants as of 2026.

## Ashworth

Fred Ashworth was a tree crop champion in Heuvelton, New York, in the early- and mid-twentieth century. A farmer, and founder of St. Lawrence Nurseries in 1923, he trialed many fruits and nuts in his extremely cold, short-season climate (including selecting one of the first sweet bur oak cultivars).[682] At one point he planted a grove of thornless *inermis* honey locust seedlings at Potsdam College. Decades later, Bill McKentley, who took over the nursery, selected one of these trees with sweet pods that ripened well in their chilly USDA Zone 4b—making it

[679] Detweiler (1947) *Notes on Honeylocust*
[680] Zach Elfers, Future Forest Plants, personal communication
[681] Zach Elfers, Future Forest Plants, personal communication
[682] St. Lawrence Nurseries website.

the most cold-hardy fruiting cultivar to date. Survived the brutal late Massachusetts freeze of 2026 at my farm with no trouble. Bill talked it over with Fred and released the cultivar as 'Ashworth' sometime after the early 1970s. The ortet was still growing well as of 2025.[683] The tree is a biennial bearer, thornless, and has both male and female flowers.[684] Some say it has a sweet melon flavor, while others say its flavor is inferior.[685] [686] Currently available as grafted trees from multiple nurseries.

***Figure 23**: Pod of 'Ashworth', an especially cold-hardy cultivar. Image courtesy Zach Elfers.*

## Big Fatty

See 'Calhoun'.

## Calhoun

Pods of 'Calhoun' won first prize in a 1934 TVA contest.[687] The winning pods were submitted by L.H. Calhoun of Gadsden, Alabama, and the cultivar was named after him.[688] 'Calhoun' has gone on to be a very widely planted cultivar, second only to 'Millwood'.

Pods are large and 36% sugar, very high for a cultivar. 'Calhoun' is reputed to be an annual bearer, though certainly there is some variation from year to year. Apparently its yields are quite a bit less than those of 'Millwood'.[689] Pods average 16–18 inches long. It is the most non-astringent of all the cultivars he has tasted, says Elfers.[690] I myself can report that the pods are delicious even before grinding into flour, with a sweet banana flavor.

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[683] Zach Elfers, Future Forest Nursery, personal communication
[684] Facciola (1998) *Cornucopia II: A Source Book of Edible Plants*
[685] Zach Elfers, Future Forest Nursery, personal communication
[686] Facciola (1998) *Cornucopia II: A Source Book of Edible Plants*
[687] Santamour and McArdle, "Checklist of Cultivars of Honeylocust (Gleditsia Triacanthos L.)."
[688] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[689] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[690] Zach Elfers, Future Forest Plants, personal communication

The ortet was somewhat thorny.[691] Almost all seedlings of 'Calhoun' are thorny.[692] The grafted trees, however, are thornless.[693]

***Figure 24**: Pod of 'Calhoun', a delicious, non-astringent cultivar. Image courtesy Zach Elfers.*

'Calhoun' was grown by Hershey in Downingtown so it is hardy and productive at least to zone 6b. A three-year-old grafted tree is surviving well and growing vigorously for me in western Massachusetts, having taken –13˚F without more than a bit of damage to the twig tips. 'Calhoun' suffered no damage from the harsh late spring 2026 freeze at my Massachusetts farm. Grafts and seedlings have taken serious winter damage or been killed in zone 4.[694]

'Calhoun' is surely the mother of any number of seedling plants from the Battle Creek planting and elsewhere, and some of these may have developed into cultivars of their own. For example, Elfers suspects it is the parent of 'SpringTree K'. It also seems probable that 'Big Fatty' and 'Graft Scar' are just the names given to old, unlabeled 'Calhoun' trees in Hershey's Downingtown planting.[695]

This cultivar has set viable seed when pollinated by the few flowers of 'Ashworth', 'Strickler' and 'Millwood'. The few male flowers of 'Calhoun' have also successfully pollinated 'Millwood' and set viable seed.[696] [697]

Today 'Calhoun' is offered by a number of specialty nurseries.

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[691] Santamour (1983) "Checklist of cultivars of honey locust (*Gleditsia triacanthos* L.)"
[692] Kreider (nd) "My experiences with honey locust"
[693] Hershey (1944) *The Honey Locust: The Hill Sugar Factory, One of America's Living Diamonds*
[694] Kreider (nd) "My experiences with honey locust"
[695] Zach Elfers, Future Forest Plants, personal communication
[696] Detweiler (1947) *Notes on Honeylocust*
[697] Wilson (1996) *Honeylocust Research Newsletter No. 2*

## Chiaha

A 2023 Elfers selection from Sevierville, Tennessee. Pods extremely fleshy, ortet moderately thorny but scions taken from thornless branches. Found near the 'Trotter' ortet, near a boat launch at the headwaters of the Douglas Dam. Named for the Indigenous village of the Koasati and later Cherokee which once stood where this tree was found. Hardy to at least zone 7a based on location. Offered by Future Forest Plants as of 2026.

## Cluster

'Cluster' was selected sometime before 1947 from a wild tree in Villa Rica, Georgia—likely by Ellen Williams, from the many trees on her dairy farm there.[698] The ortet was thorny.[699] While the pods were not extraordinarily large or sweet, they were produced in an unusually high number of pods per cluster. This cultivar was part of the TVA collection as of 1980, maintained for its potential in breeding for higher yields.[700] Not currently available, perhaps lost.

## Colley

A 2023 selection by Elfers and tree crop champion Lucky Pittman, in Hopkinsville, Kentucky (zone 7a). Elfers noticed a promising pod on the ground below the entirely thornless tree while scouting for red mulberry trees with Lucky Pittman. Pittman later shot the scion out with a shotgun.

Named for the property owner, Robert Colley, a neighbor of Lucky Pittman's. The ortet is entirely thornless and the pods look promising. Offered by Future Forest Plants as of 2026.[701]

## Cooper

A recent Taylor Malone selection, from a (now deceased) tree in Johnson City, Tennessee.

The ortet was only slightly thorny. 'Cooper' produces male and female flowers and fleshy pods. It is a biennial bearer.

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[698] Santamour (1983) "Checklist of cultivars of honey locust (*Gleditsia triacanthos* L.)"
[699] Johnson (2009) "Optimal nutritive value of honey locust seed pods within temperate silvopasture"
[700] Chase (1947) "Propagation of thornless honey locust"
[701] Zach Elfers, Future Forest Plants, personal communication

'Cooper' is cold hardy at least in USDA zone 5. Tanke reports no winter twig dieback at –19˚F in Wisconsin, and says of it: "It seems the best adapted [to cold] of all the cultivars I've trialed, which is the majority of them".[702]

Offered by Future Forest Plants as of 2026.

## CYN

One of the French cultivars selected by Christian Dupraz, with thick pods and sweet pulp. Holds its pods until late in the season.[703] Not precocious.[704] Soon to be available in the U.S. nursery trade.[705]

## Diden

Pods of this cultivar won fourth prize in J. Russell Smith's first honey locust content of 1928. It was selected by Ms. A.C. Diden of Glenmary, Tennessee (rated at USDA Zone 6a). Some have said it had excellent flavor, while others say it had high sugar but was "puckery" (astringent).[706] [707] 'Diden' was planted at Beltsville Agricultural Research Center in Maryland as part of a large trial in the 1940s.[708] Not currently available, perhaps lost.

## Gadsden

A male seedling originally collected near 'Calhoun' near Gadsden, Alabama, in zone 7b. Selected as a male pollen parent with breeding potential, as it may have carried 'Calhoun's' desirable genetics as a half-sibling or cousin. 'Gadsden' was grown in the TVA collection as of 1980.[709] [710] Not currently available, perhaps lost. The ortet was thorny.[711]

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[702] Alex Tanke, Dispersion Farms, personal communication
[703] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."
[704] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."
[705] Zach Elfers, Future Forest Plants, personal communication
[706] Santamour and McArdle, "Checklist of Cultivars of Honeylocust (Gleditsia Triacanthos L.)."
[707] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[708] Detweiler (1947) *Notes on Honeylocust*
[709] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[710] Santamour (1983) "Checklist of cultivars of honey locust (*Gleditsia triacanthos* L.)"
[711] Chase (1947) "Propagation of thornless honey locust"

## Gap

An Unruh selection from Gap, Pennsylvania, with 20.8% sugar (the lowest of tested cultivars). It drops pods early, by early-November in Pennsylvania. Unruh reports that the pods are not fantastic, but it fills a nice drop window that others don't and that it could be useful for breeding early-dropping cultivars.[712] The ortet was thorny.[713] Hardy to at least zone 6b.

## Goldsworth

This tree was the likely winner of Smith's 1928 prize for best pods, submitted by dairy farmer Ellen Williams of Villa Rica, Georgia, in zone 7b. Pods were unusually thick at ⅜ inch, with non-astringent flavor and 29% sugar (medium for a cultivar).[714] The ortet was thorny.[715]

Elfers notes: "Unfortunately Miss Williams did not pinpoint the exact tree: it came from a grove and she just picked the pod off the ground. The wood given to Hershey and Smith was the wrong tree, and the actual tree variety was never propagated."[716]

## Heather

A cultivar selected in Maine, at least USDA zone 5. It is a razorback type but very high productivity.[717] It could be useful in breeding high yielding cultivars for very cold climates.

## Hershey

It's not clear if this cultivar was selected by Hershey or just named after him. 'Hershey' is precocious and high-yielding.[718] It has large pods, and their protein content (with the seeds removed) is the highest of any tested cultivar. The pods are astringent or bitter.[719] Tanke and Unruh report that 70% of seedlings of 'Hershey' are thorny, so the ortet was probably thorny. 4 feet of growth were killed back on my 'Hershey' by the brutal late freeze of 2026 at my

[712] Austin Unruh, Trees for Graziers, personal communication
[713] Chase (1947) "Propagation of thornless honey locust"
[714] Santamour and McArdle.
[715] Chase (1947) "Propagation of thornless honey locust"
[716] Zach Elfers, Future Forest Plants, personal communication
[717] Zach Elfers, Future Forest Plants, personal communication
[718] Facciola (1998) *Cornucopia II: A Source Book of Edible Plants*
[719] Zach Elfers, Future Forest Plants, personal communication

Massachusetts farm. ‘Hershey’ may actually be a renamed ‘Strickler’, or perhaps the offspring of Hershey’s ‘Calhoun’ × ‘Millwood’ cross.[720] Trees are offered by a number of nurseries.

***Figure 25:*** *Pod of ‘Hershey’, a precocious and high-yielding cultivar. Image courtesy Zach Elfers.*

## JEA

A Christian Dupraz selection.[721] One of the higher-yielding French cultivars, and precocious.[722] Soon to be available in the U.S. nursery trade.[723]

## Kyle’s Corner

See ‘Millwood’.

## Lancaster North

A tree from the Battle Creek grove in Michigan, selected in 2021 by Tanke and Elfers. The source of the original seed used was trees in Lancaster County, Pennsylvania. ‘Lancaster North’ is thorny, with sweet, very wide pods.[724] It suffered moderate damage at –19˚F, so it should be hardy to zone 5b or 6a.[725]

Offered by Future Forest Plants as of 2026.

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[720] Zach Elfers, Future Forest Plants, personal communication
[721] Foroughbakhch (1997) “Multipurpose and germplasm collection of *Gleditsia triacanthos* L.”
[722] Foroughbakhch (1997) “Multipurpose and germplasm collection of *Gleditsia triacanthos* L.”
[723] Zach Elfers, Future Forest Plants, personal communication
[724] Zach Elfers, Future Forest Plants, personal communication
[725] Jesse Marksohn, Yellowbud Nursery, personal communication

## Lancaster South

Another tree from the Battle Creek planting, selected in 2021 by Tanke and Elfers. The source of the original seed used was Lancaster County, Pennsylvania. 'Lancaster South' is a thornless sweet-podded female. It suffered little damage at –19˚F, so it is likely hardy to zone 5b or 5a.[726] Ripening earlier than 'Monroe'.[727]

## Lawrence

A tree from South Carolina selected by Chance Lawrence. Also known as 'Two Foot', as the fleshy pods are fully 24 inches long.[728]

## Leisczs Bridge

Selected by Elfers from a tree near Reading, Pennsylvania, in zone 6b. Mostly thornless, annual bearing, sweet somewhat fleshy pods. 'Leisczs Bridge' has promising breeding potential, but probably not a cultivar for planting itself. Offered by Future Forest Plants as of 2026.

## Marguerite

This cultivar was offered through Hidden Springs Nursery by Hector Black (at least zone 7a). He received grafted trees from the TVA and it's not clear if 'Marguerite' was from them, from Ralph Kreider of Illinois, or one of his own selections. It may be an old French cultivar. It produces fleshy pods, and the ortet was thornless or almost thornless. [729] Offered by Future Forest Plants as of 2026.

***Figure 26:*** *Pod of 'Marguerite', a cultivar of uncertain origins. Image courtesy Zach Elfers.*

[726] Jesse Marksohn, Yellowbud Nursery
[727] Alex Tanke, Dispersion Farms, personal communication
[728] Zach Elfers, Future Forest Plants, personal communication
[729] Zach Elfers, Future Forest Plants, personal communication

## Methodist Church

See 'Millwood'.

## Milaud (MIL)

Selected from naturalized or ornamental trees in southern Montpellier, France, by Christian Dupraz, for its sweet pods and high yields. Collected from ornamental nursery trees which were brought to France from South Africa. Many of the South African trees were seedlings of 'Millwood' and 'Calhoun' sent from the U.S., so 'Milaud' may be one of their descendents.[730] Maintained in the INRA test orchard in Montpellier, France.[731] [732] A biennial bearer, precocious, and the highest-yielding of the 12 French cultivars. Thick, sweet pods with few seeds.[733] A soft-seeded cultivar.[734] Highest digestibility of all tested cultivars for both sheep and cattle. Also has the highest protein content of any tested cultivar. Soon to be available in the U.S. nursery trade.[735]

## Millwood

'Millwood' is the "gold standard" of sweet honey locusts. It was a prizewinner in a 1934 TVA contest, having been selected by Dave Millwood of Lake Junaluska, North Carolina.[736] We know more about 'Millwood' than any other cultivar. It has among the largest pods of any cultivar, averaging 15 inches long.[737]

Sugar ranges from 21–37%, spanning the highest to lowest range of cultivars. The high end of 'Millwood' sugar content is among the highest of all cultivars. It contained 36.8% total sugar when grown in Alabama and 21% total sugar when grown in Maryland.[738] When grown in the

[730] Zach Elfers, Future Forest Plants, personal communication
[731] Dupraz (2019) "Long-term monitoring of grafted honey locust trees for the production of fodder pods"
[732] Foroughbakhch (2008) "Chemical composition and *in vitro* degradability of *Gelditsia triacanthos* L. pods"
[733] Papanastasis (1999) *Selection and Utilization of Cultivated Fodder Trees and Shrubs in the Mediterranean Region*
[734] Foroughbakhch (2008) "Chemical composition and *in vitro* degradability of *Gelditsia triacanthos* L. pods"
[735] Zach Elfers, Future Forest Plants, personal communication
[736] Santamour (1983) "Checklist of cultivars of honey locust (*Gleditsia triacanthos* L.)"
[737] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[738] Detwiler (1947) *Notes on Honey Locust*

shade, 'Millwood' produces razorback pods with no pulp.[739] Pod protein is 10.1–10.3, low for a cultivar.

Despite the high sugar, 'Millwood' is astringent and can burn the back of your throat—probably not a good choice for human consumption.[740] Elfers reports that it is relatively non-astringent compared to some.[741] Ferver says the underripe pods are non-astringent.[742]

'Millwood' yielded twice as high as 'Calhoun' in one study.[743] It is a strongly biennial bearer.[744]

***Figure 27**: Pod of 'Millwood' set the bar for size and quality, this one nearly 18 inches long. Image courtesy Zach Elfers.*

This is the cultivar for which we have the best yield data—13-year-old trees produced an average of 0.6 tons per acre over three years.[745]

'Millwood' produces some male flowers, and at least some of them produce viable pollen because it fertilized female flowers of 'Calhoun' and produced successful seedlings.[746] Sometimes grafted 'Millwood' trees are male, perhaps because single branches can become completely male.[747]

The ortet was thorny, but grafts are thornless.[748] Some say it is thornless even when pruned.[749]

The Virginia Tech planting that helped usher in the current honey locust renaissance is planted to 'Millwood'.[750] To my knowledge it is the only U.S. cultivar grown in Europe.[751]

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[739] Zach Elfers, Future Forest Plants, personal communication
[740] Alex Tanke, Dispersion Farms, personal communication
[741] Zach Elfers, Future Forest Plants, personal communication
[742] Buzz Ferver, Perfect Circe Farm, personal communication
[743] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[744] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[745] Chase (1947) "Propagation of thornless honey locust"
[746] Wilson (1996) *Honeylocust Research Newsletter No. 2*
[747] Moore (1948) "The present outlook for honey locust in the South."
[748] J.C. McDaniel (1980) "A plant breeder looks at some American tree crops: *Morus, Gleditsia* and *Diospyros*"
[749] Kreider (nd) "My experiences with honey locust"
[750] Wilson (1994) *Honeylocust Research Newsletter No. 3*
[751] Dupraz (2019) "long-term monitoring of grafted honeylocust trees for the production of fodder pods"

'Millwood' is a southern variety. It fruited well for Kreider in zone 6a Hammond, Illinois, and in Downingtown zone 6b. It was killed back at –20˚F, and died in Minnesota.[752] My 'Millwood' was killed back fully 6 feet by a harsh late freeze in spring 2026.

Seedlings of 'Millwood' have been sent around the world.[753] It is probably the mother of any number of seedling plants. 'Millwood' is the mother of the male cultivar 'Urbana'.[754] Most 'Millwood' seedlings are thorny, and few resemble their mother in terms of pod quality.[755]

Several of the Downington trees, and other unlabeled old grafted trees, are likely 'Millwood' including 'Kyle's Corner', 'Methodist Church' and perhaps 'Parking Lot'.[756]

'Millwood' is the most commonly offered cultivar, as seed and grafts, by nurseries in 2026.

## Monroe

A 2022 selection from the Battle Creek planting by Elfers and Tanke. 'Monroe' was planted from seed collected in Monroe County, Arkansas. Most of its half-siblings were killed but this Arkansas seedling thrived. The ortet is thornless.[757] Battle Creek is in zone 6a, and the tree had moderate dieback at –19F˚, so certainly zone 6 and maybe 5b.[758]

***Figure 28:*** *Pods of 'Monroe' are mostly seedless and very high in sugar. Image courtesy Alex Tanke.*

Pods are fleshy, and 35% sugar and 10% protein. 70% of pods are seedless, some even without seed casings. Fairly non-astringent.[759] Produces female and male flowers. A biennial bearer.

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[752] Kreider (nd) "My experiences with honey locust"
[753] Kreider (nd) "My experiences with honey locust"
[754] J.C. McDaniel (1980) "A plant breeder looks at some American tree crops: *Morus, Gleditsia* and *Diospyros*"
[755] Kreider (nd) "My experiences with honey locust"
[756] Zach Elfers, Future Forest Plants, personal communication
[757] Zach Elfers, Future Forest Plants, personal communication
[758] Alex Tanke, Dispersion Farms, personal communication
[759] Zach Elfers, Future Forest Plants, personal communication

Interesting in that it is high protein and low seed, suggesting that it has high-protein pulp, a desirable trait for cattle digestibility.[760]

## Moraine

A thornless male ornamental cultivar with high mimosa webworm resistance, which may make it useful in breeding.[761] Probably the pollen parent (with 'Millwood' as mother) of the male cultivar 'Urbana'.[762] The very first shade tree to be patented in the United States. Selected from a wild tree by Clarence Seibenthaler of Dayton, Ohio, in the 1940s. 'Moraine' was very popular for a time, at its height 75,000 'Moraine' trees were sold in a single year. Still one of the best ornamental male cultivars, and remains available in the nursery trade today.[763]

## Nana

A dwarf ornamental cultivar.[764] This trait could be useful in breeding smaller trees for home gardens for human consumption. Grafts offered by Perfect Circle Farm in 2026. Perhaps it might also serve as an interstem for dwarfing other rootstocks.

## Northern Acclaim

An ornamental male cultivar released by North Dakota State University. 'Northern Acclaim' is unusually cold hardy, to zone 4b, and also noted for exceptional drought resistance.[765] A desirable pollen parent for breeding cold- and drought-tolerant honey locusts. Available in the ornamental nursery trade.

## Parking Lot

See 'Millwood' or perhaps 'Shoefer' or 'Strickler'.

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[760] Zach Elfers, Future Forest Plants, personal communicationS

[761] Santamour (1977) "The selection and breeding of pest-resistant landscape trees"

[762] J.C. McDaniel (1980) "A plant breeder looks at some American tree crops: *Morus, Gleditsia* and *Diospyros*"

[763] Klingaman (2013) "Plant of the week: Moraine honey locust"

[764] Santamour (1977) "The selection and breeding of pest-resistant landscape trees"

[765] Ball (2013) *Trees! An Illustrated Field Guide to Fruit, Nut, Ornamental, and Windbreak Trees for the Northern Plains*

## Piatt

A 2021 Tanke and Elfers selection from the Battle Creek planting, of a tree grown from seed from Piatt, Illinois. A pod-producing female with some male flowers. Small thorns which gradually disappear, high vigor.[766]

Mostly thornless. Pods are roughly 25% sugar (low to medium for a cultivar), fairly fleshy, with a high number of seeds. The seeds have a thin shell, meaning 'Piatt' could potentially have high protein digestibility.[767]

Suitable at least to USDA zone 5a. One of the better candidates for cold-climate areas, having survived –19˚F with no cold damage.[768]

Offered by Future Forest Plants and Dispersion Farms as of 2026.

## Poole Forge

An Unruh selection from a tree in Narvon, Pennsylvania. The ortet has since been cut down and the stump sprayed with herbicide in 2025, thoroughly killing it. Narvon is in zone 6b.

The pods are only moderately fleshy but sugar content has ranged from 25–36%. Protein content is relatively low compared to other honey locusts at 6–8%.[769] It has low seed content.[770] It yielded well three years in a row under observation and is 100% thornless.[771]

Available from Future Forest Plants for 2026.

[766] Dispersion Farms Nursery website
[767] Alex Tanke, Dispersion Farms, personal communication
[768] Jesse Marksohn, Yellowbud Nursery
[769] Austin Unruh, Trees for Graziers, personal communication
[770] Austin Unruh, Trees for Graziers, personal communication
[771] Austin Unruh, Trees for Graziers, personal communication

## Prairie Silk

An ornamental male selected in Manitoba. Perhaps the most cold-hardy cultivar, surviving in zone 3a.[772] A desirable pollen parent for breeding extreme cold-tolerant honey locusts. Available in the ornamental nursery trade.

## Reiff

A cultivar from Ewing, Virginia, selected by Laura Reiff. The ortet is moderately thorny, with sweet fleshy pods. Ewing is in zone 6b. Offered by Future Forest Plants as of 2026.

## Richland

Selected by Elfers in 2024 in Dayton, Tennessee, near Richland Creek in zone 7a. 'Richland' has fleshy pods and the ortet is moderately thorny. Offered by Future Forest Plants as of 2026.

## Schofer

Selected in or near Pennsburg, Pennsylvania, in 1946 by Richard Schofer. Schofer is the baker who became a honey locust crop champion and planted 5 acres to supply his bakery.[773] 'Schofer' was found some 500 miles north of the other cultivars available at the time, and was the first twentieth-century cold-hardy fruiting honey locust cultivar.[774] Pennsburg is in zone 7a, but Elfers reports the tree is hardy to zones 5 or 6.[775]

***Figure 29:*** *Pod of 'Schofer', a cold-hardy cultivar. Image courtesy Zach Elfers.*

This cultivar has large fleshy pods comparable to 'Millwood'.[776] Some have reported the pods to be as good as

[772] Ball (2013) *Trees! An Illustrated Field Guide to Fruit, Nut, Ornamental, and Windbreak Trees for the Northern Plains*

[773] Santamour and McArdle, "Checklist of Cultivars of Honeylocust (Gleditsia Triacanthos L.)."

[774] Santamour and McArdle, "Checklist of Cultivars of Honeylocust (Gleditsia Triacanthos L.)."

[775] Zach Elfers, Future Forest Plants, personal communication

[776] Detweiler (1947) *Notes on Honeylocust*

'Millwood', others think they are inferior.[777] [778] The ortet was thornless or almost thornless. Tends towards annual bearing.[779]

'Schofer' was not commercially available for several decades. However, Wilson has a tree and Elfers collected grafting wood from it and now it is back in the nursery trade. Offered by Future Forest Plants as of 2026. Some of the Downingtown trees may be 'Shoefer'.

## SGO

A French cultivar selected by Christian Dupraz. Sweet pulp and thick pods.[780] Soon to be available in the U.S. nursery trade.[781]

## Skyline

A very common thornless male ornamental cultivar. Noted for its cold hardiness to zone 4b. Occasionally produces a few pods, which would allow evaluation of quality.[782] A potential pollen parent for cold hardiness breeding. Available in the ornamental nursery trade.

## SpringTree F

A selection made from the promising seedling trees at Springtree Agroforestry project by Wilson and Elfers. One of the best of a great many seedlings there. Pods of 'F' are 31.5% sugar, medium for a cultivar. The ortet is thornless. Hardy to at least zone 7a based on its location in Scottsville, Virginia. Offered by Future Forest Plants in 2026.

## SpringTree H

Another Springtree selection by Wilson and Elfers. Desirable traits include sweet pods with 31% sugar (medium for a cultivar), thornless ortet, and annual bearing. Hardy to at least zone 7a based on its location in Scottsville, Virginia. Offered by Future Forest Plants in 2026.

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[777] Detweiler (1947) *Notes on Honeylocust*

[778] Kreider (nd) "My experiences with honey locust"

[779] Zach Elfers, Future Forest Plants, personal communication

[780] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."

[781] Zach Elfers, Future Forest Plants, personal communication

[782] Ball (2013) *Trees! An Illustrated Field Guide to Fruit, Nut, Ornamental, and Windbreak Trees for the Northern Plains*

## SpringTree K

A fourth Springtree selection by Wilson and Elfers. Pods high in sugar, ortet is thorny. Bears annually similar to 'Calhoun', Elfers believes 'SpringTree K' is likely a seedling of 'Calhoun'. Hardy to at least zone 7a based on its location in Scottsville, Virginia. Offered by Future Forest Plants in 2026.

## Strickler

A prize winner in one of J. Russell Smith's contests, from Mt. Joy, Pennsylvania, in USDA zone 6b. 'Strickler' is desirable for cold hardiness, and high in sugar at 31% (medium for a cultivar), but rather bitter.[783] It has served as pollen parent in successful crosses with 'Calhoun' and 'Millwood'.[784] Not currently available, perhaps lost. Some of the Downingtown trees may be 'Strickler', and 'Strickler' may be the true identity of 'Hershey' as both have fleshy, bitter pods.[785]

## Super-M (SUM)

Selected from naturalized or ornamental trees in France by Christian Dupraz. Maintained in the INRA test orchard in Montpellier, France.[786] A biennial bearer with average yields. Not precocious.[787] A razorback type with little pulp and many seeds.[788] Whole-pod protein is 13% (highest of any cultivar). Soon to be available in the U.S. nursery trade.[789]

## Torbett

This tree won second place in a 1934 TVA contest. Submitted by J.A. Torbett in Rhea County, Tennessee. Composition was 34% sugar (high among cultivars), vigorous, pods on the small size,

[783] Santamour (1983) "Checklist of cultivars of honey locust (*Gleditsia triacanthos* L.)"
[784] Detweiler (1947) *Notes on Honeylocust*
[785] Zach Elfers, Future Forest Plants, personal communication
[786] Dupraz (2019) "Long-term monitoring of grafted honey locust trees for the production of fodder pods"
[787] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."
[788] Papanastasis (1999) *Selection and Utilization of Cultivated Fodder Trees and Shrubs in the Mediterranean Region*
[789] Zach Elfers, Future Forest Plants, personal communication

and very thorny. Does not appear to have been brought into cultivation afterwards.[790] The ortet was thorny.[791] 'Torbett' was maintained for breeding purposes by TVA at least until 1980.[792]

## Total (TOT)

Selected from a feral tree near a gas station in northern Montpellier, France, by Christian Dupraz for its sweet pods.[793] Maintained in the INRA test orchard in Montpellier, France.[794] A biennial bearer with average yields.[795] Not precocious.[796] A soft-seeded cultivar.[797] Elfers says "I have seen the pods of 'Total' at Springtree. They are fleshy, very long, and very seedy. Comparable to TVA selections."[798] Pods are 18–20 inches long.[799] Protein is 11.6%, medium for a cultivar. Highest digestibility of all tested cultivars for both sheep and cattle. Soon to be available in the U.S. nursery trade.[800]

## Trotter

Selected by Unruh from a tree in Sevierville, Tennessee, pods very large, ortet completely thornless. Fleshy pods, thorniness of parents variable. Elfers visited the site and selected some additional promising trees that were growing nearby. Offered by Future Forest Plants in 2026.

## Urbana

A thornless male seedling of 'Millwood', recommended as a pollen parent for breeding programs. Selected by tree crop breeder J.C. McDaniels in Urbana, Illinois.[801] He believed the

[790] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[791] Chase (1947) "Propagation of thornless honey locust"
[792] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"
[793] Foroughbakhch (2008) "Chemical composition and *in vitro* degradability of *Gelditsia triacanthos* L. pods"
[794] Dupraz (2019) "Long-term monitoring of grafted honey locust trees for the production of fodder pods"
[795] Papanastasis (1999) *Selection and Utilization of Cultivated Fodder Trees and Shrubs in the Mediterranean Region*
[796] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."
[797] Foroughbakhch (2008) "Nutritional and digestibility values of six varieties of *Gleditsia triacanthos* L. pods"
[798] Zach Elfers, Future Forest Plants, personal communication
[799] Zach Elfers, Future Forest Plants, personal communication
[800] Zach Elfers, Future Forest Plants, personal communication
[801] J.C. McDaniel (1980) "A plant breeder looks at some American tree crops: *Morus, Gleditsia* and *Diospyros*"

pollen parent of 'Urbana' to be 'Moraine' (which was planted next to the 'Millwood' which bore the seed that became 'Urbana').[802] 'Moraine' is a thornless male ornamental cultivar with high mimosa webworm resistance.[803] 'Urbana' does not appear to be available in the nursery trade currently, but could be searched for at arboreta and botanical gardens. Its sweet fatback genetics and likely webworm resistance would make it a valuable part of breeding efforts.

## Voie-Ferré-Marchandise (VFM)

Selected from naturalized or ornamental trees in southeastern Montpellier, France, by Christian Dupraz.[804] Maintained in the INRA test orchard in Montpellier, France.[805] An annual bearer with low yields but thick, sweet pods and few seeds.[806] Not precocious.[807] Protein of whole pods is 10.5%, low for a cultivar.

## VPO

Another French selection from Christian Dupraz, selected in northwestern Montpellier.[808] Noted for thick pods and sweet pulp.[809] Something of a chaotic producer, neither annual or biennial bearing.[810] Not precocious.[811] Soon to be available in the U.S. nursery trade.[812]

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[802] J.C. McDaniel (1980) "A plant breeder looks at some American tree crops: *Morus, Gleditsia* and *Diospyros*"

[803] Santamou (1977) "The selection and breeding of pest-resistant landscape trees"

[804] Foroughbakhch (2008) "Chemical composition and *in vitro* degradability of *Gelditsia triacanthos* L. pods"

[805] Dupraz (2019) "Long-term monitoring of grafted honey locust trees for the production of fodder pods"

[806] Papanastasis (1999) *Selection and Utilization of Cultivated Fodder Trees and Shrubs in the Mediterranean Region*

[807] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."

[808] Foroughbakhch (2008) "Chemical composition and *in vitro* degradability of *Gelditsia triacanthos* L. pods"

[809] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."

[810] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."

[811] Foroughbakhch (1997) "Multipurpose and germplasm collection of *Gleditsia triacanthos* L."

[812] Zach Elfers, Future Forest Plants, personal communication

# Cultivar Table

| Name | Mostly male | Mostly female | Pod notes | Annual bearer | Biennial bearer | Precocious | Yields | Drop season | Thornless | Mostly thornless | USDA Zone |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3X | | ✓ | small | ✓ | | | | | | | |
| Andy | | ✓ | 34% sugar | ✓ | | | | | ✓ | | 7a+ |
| Ashworth | | ✓ | sweet, flavor reports vary | | ✓ | | | | ✓ | | 4b+ |
| Big Fatty (Calhoun) | | ✓ | sweet | | | | | | | | |
| Calhoun | | ✓ | large, thick, 36% sugar | ✓ | | | low | | ✓ | | 6a |
| Chiaha | | ✓ | fleshy, sweet | | | | | | ✓ | | 7a+ |
| Cluster | | ✓ | clustering, less sweet | | | | | | | | |
| Colley | | ✓ | sweet | | | | | | ✓ | | 7a+ |
| Cooper | | ✓ | fleshy | | ✓ | | | | | ✓ | 5a |
| CYN | | ✓ | fleshy, sweet | | | | | late | | | |
| Diden | | ✓ | | | | | | | | | 6a+ |
| Gadsden | ✓ | | n/a | | | | | | | | 7b+ |
| Gap | | ✓ | | | | | | early | | | |

| Name | Mostly male | Mostly female | Pod notes | Annual bearer | Biennial bearer | Precocious | Yields | Drop season | Thornless | Mostly thornless | USDA Zone |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Goldsworth | | ✓ | thick (3/8"), 29% sugar | | | | | | | | |
| Heather | | ✓ | razorback | | | | high | | | | 5+ |
| Hershey | | ✓ | large | | | ✓ | high | | | | 6? |
| JEA | | ✓ | | | | ✓ | high | | | | |
| Kyle's Corner (Millwood) | | ✓ | sweet | | | | | | | | |
| Lancaster North | | ✓ | sweet, very wide | | | | | | | ✓ | 6b/5a? |
| Lancaster South | | ✓ | sweet | | | | | early | ✓ | | 5b+ |
| Lawrence | | ✓ | enormous | | | | | | | | |
| Leisczs Bridge | | ✓ | somewhat fleshy, sweet | ✓ | | | | | | ✓ | 6b+ |
| Marguerite | | ✓ | large, very fleshy | | | | | | | ✓ | 7a+ |
| Methodist Church (Millwood) | | ✓ | sweet | | | | | | | | |

| Name | Mostly male | Mostly female | Pod notes | Annual bearer | Biennial bearer | Precocious | Yields | Drop season | Thornless | Mostly thornless | USDA Zone |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Milaud (MIL) | | ✓ | soft seeds, sweet | | | | high | | | | |
| Millwood | | ✓ | large, 31% sugar, astringent | | ✓ | | high | | ✓ | | 6a |
| Monroe | | ✓ | fleshy, mostly seedless, 35% sugar | | ✓ | | | | ✓ | | 6a/ 5b |
| Moraine | ✓ | | n/a | | | | | | ✓ | | |
| Nana | | | | | | | | | | | |
| Northern Acclaim | ✓ | | n/a | | | | | | ✓ | | 4a |
| Parking Lot (Millwood) | | ✓ | | | | | | | | | |
| Piatt | | ✓ | soft seeds, 25% sugar | | | | | | | ✓ | 5a |
| Poole Forge | | ✓ | 25–36% sugar | ✓ | | | | | ✓ | | 6b+ |
| Prairie Silk | ✓ | | n/a | | | | | | ✓ | | 3b |
| Reiff | | ✓ | sweet, fleshy | | | | | | | ✓ | 6b+ |

| Name | Mostly male | Mostly female | Pod notes | Annual bearer | Biennial bearer | Precocious | Yields | Drop season | Thornless | Mostly thornless | USDA Zone |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Richland | | ✓ | fleshy | | | | | | | ✓ | 7a+ |
| Schoefer | | ✓ | large, fleshy | ✓ | | | | | ✓ | | 5 or 6 |
| SGO | | ✓ | sweet, thick | | | | | | | | |
| Skyline | ✓ | | | | | | | | ✓ | | 4b |
| Spring-Tree F | | ✓ | 31.5% sugar | | | | | | ✓ | | 7a+ |
| Spring-Tree H | | ✓ | 31% sugar | ✓ | | | | | ✓ | | 7a+ |
| Spring-Tree K | | ✓ | | ✓ | | | | | | ✓ | 7a+ |
| Strickler | | ✓ | 31% sugar | | | | | | | | 6b |
| Super-M | | ✓ | razor-back, many seeds, high protein | | ✓ | | | | | | |
| Torbett | | ✓ | small, 34% sugar | | | | | | | ✓ | |
| Total (TOT) | | ✓ | soft seeded | | ✓ | | | | | | |
| Trotter | | ✓ | very large | | | | | | ✓ | | |
| Urbana | ✓ | | n/a | | | | | | ✓ | | |
| Voi-Ferré-Marchandise | | ✓ | thick, sweet, few seeds | ✓ | | | low | | | | |

| Name | Mostly male | Mostly female | Pod notes | Annual bearer | Biennial bearer | Preco-cious | Yields | Drop season | Thorn-less | Mostly thorn-less | USDA Zone |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VPO | | ✓ | thick, sweet | | | | | | | | |

# What's Next?

Honey locust is a remarkable tree with great promise. We're not yet at the point where it can be recommended for every pasture, nor for widespread use for human food. Many of the issues identified by Detweiler in 1947 have not yet been resolved. Scanlon made an updated list in 1980 of what's needed, and it still sounds familiar. He identified the need for more sweet cultivars (great headway has been made on this), better propagation methods, spacing and management recommendations, harvest techniques, and comprehensive research and development.[813] Gold and Hanover added more to the list in 1993: "Constraints to realization of [honey locust's] full potential include: the lack of field-tested systems; the need to develop mechanical harvesting procedures; a requirement for careful genotype/site matching; a lack of proven, consistent, heavy-bearing varieties; thorniness; and variation in winter hardiness."[814] Most of these are still issues 33 years later. Someone needs to get to the bottom of the complex pollination questions as well.

Much progress has, however, been made. Far from just continuing to propagate the golden age cultivars, much active selection of new cultivars, both wild and seedlings from cultivar collections, is happening. At last we have a bit of yield data to work with, though not yet enough. More has been learned about the breeding system, bruchid beetles, and nutritional value. Tegtmeier's marker-assisted selection shows great promise to make seedling trees more viable and to accelerate breeding work.

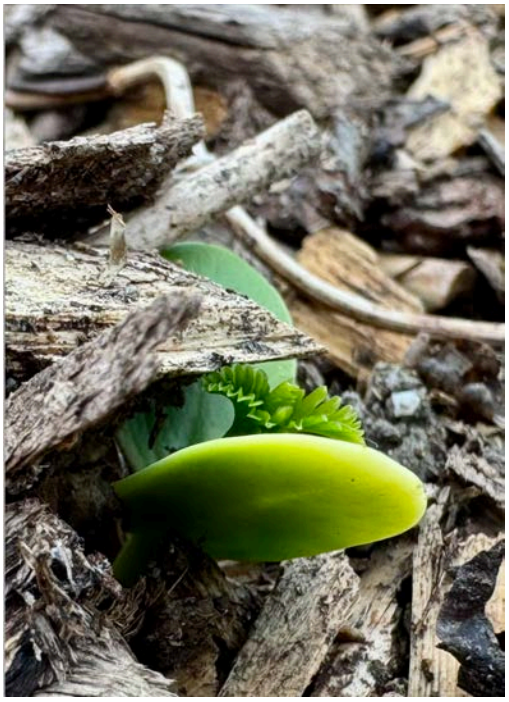

***Figure 30:*** *The future of honey locust as a crop is more promising than any time in the last 100 years. Image courtesy Eric Cornell.*

Before it is ready to become ubiquitous across the nation like its thornless ornamental relatives did, more needs to be learned about this underutilized and neglected tree. The time has arrived, however, for innovative farmers on the vanguard to set out

[813] Scanlon (1980) "A case study of honey locust in the Tennessee Valley Region"

[814] Gold and Hanover (1993) "Honeylocust (*Gleditsia triacanthos*), a multi-purpose tree for the temperate zone"

plantings—and indeed farmers are rising to the challenge. The wave of interest in silvopastoral agroforestry is of great help—as long as farmers are already planting trees in pastures for their shade and other benefits, why should some of those trees not be honey locusts? Having worked with the Virginia Tech planting for decades, Fike says "If thornless sweet pod cultivars are viable in your area, it's time to start planting silvopastures. There's no reason not to plant them widely."[815]

Unruh believes that in 30 years, honey locust could and should be widespread in U.S. pastures, to fill the winter feed gap with minimal labor—"all you need to do is plant it, protect it, and let it drop pods." He points out that unlike specialty tree crops like nuts for human consumption, there is no worry about glutting the market for livestock feed. That means that honey locust could have a much wider adoption potential than many other tree crops.[816]

Tree domestication is like a very slow relay race. Because honey locust trees live for over a century, the work must be handed on from each human generation to the next. Sweet cultivars, and knowledge of them, survived a dark age or two in the last century thanks to crop champions who kept the flame alive when the world did not seem to care—and due to the long-lived, resilient nature of the trees themselves.

Thanks to these generations of hard work, I am fortunate enough to be able to have grafted trees of seven cultivars planted at my new farm, with several perhaps ready to fruit for the first time this year. My hope is to hand-cross them with each other and make a small contribution to the next generation of this remarkable tree.

[815] John Fike, Virginia Tech, personal communication

[816] Austin Unruh, Trees for Graziers, personal communication

# Key Organizations, Individuals, and Germplasm Repositories

Battle Creek planting. A highly diverse planting from the early 1980s from 250 locations across honey locust's range. An invaluable source of cold-hardy cultivars. Michigan.

South Dakota State University, Professor Arvid Boe. Research on phenology, reproductive morphology, and bruchid impacts on honey locusts in Northern Plains. South Dakota.

INRA & AGROOF—Christian Dupraz, Agroforestry researcher. Cultivar selection and fruit exploring. Maintain a collection of French cultivars. Research of nutrition of honey locust pods for livestock. Montpellier, France.

Dispersion Farms—Alex Tanke. Cultivar selection and fruit exploring. Has planted hundreds of seedlings from the best cultivars in Wisconsin, when they come into bearing he hopes to find new cold-hardy cultivars. Based in Wisconsin.

Hershey legacy nursery. Many remaining trees from Hershey's golden age farm. Downingtown, Pennsylvania.

Future Forest Plants—Zach Elfers. Cultivar selection and fruit exploring. Nursery offers by far the greatest diversity of grafted cultivars. Based in Pennsylvania.

Perfect Circle Farm—Buzz Ferver. Cultivar selection and fruit exploring. Nursery offering grafted cultivars. Based in Vermont.

Rodale—Dr. Richard Tegtmeier. Marker-assisted selection support for nursery and breeding projects. Based in Pennsylvania.

Springtree—Andy Wilson. Established silvopasture planting. Cultivar selection and fruit exploring. Based in Virginia.

Trees for Graziers—Austin Unruh. Silvopasture establishment business. Cultivar selection and fruit exploring. Nursery offering grafted cultivars and seedlings of cultivars. Based in Pennsylvania.

Virginia Tech—Professor John Fike. Mature ‘Millwood’ food orchard research and demonstration site. Based in Virginia.

Yellowbud Farm—Jesse Marksohn and Eric Cornell. Cultivar selection and fruit exploring. Wholesale nursery offering seedlings of cultivars. Based in Massachusetts.

# Sources of Trees

Note that differences in price reflect retail vs. wholesale, bare-root vs. potted, size of trees and other variables.

Dispersion Farms. Based in Wisconsin. Offering two grafted cultivars in 2026. Grafted trees $40.

Fruitwood Nursery. Based in California. Offering scionwood of four cultivars in 2026. $5 each.

Future Forest Plants. Based in Pennsylvania. Offering 22 grafted cultivars as well as seedlings of cultivars in 2026. Grafted trees $40, seedlings $14.

Interwoven Permaculture. Based in Illinois. Offering scionwood of one cultivar, and seedlings of cultivars, in 2026. Seedlings $15, scionwood $6.

Perfect Circle Farm. Based in Vermont. Offering six grafted cultivars in 2026. Grafted trees $70.

Planting Justice. Based in California. Offering four grafted cultivars plus seedlings of cultivars. Grafted trees $30, seedlings $13.

Rock Bridge Trees. Based in Tennessee. Offering six cultivars in 2026. Grafted trees $89.

Silver Run Forest Farm. Based in Virginia. Offering seedlings of one cultivar in 2026. Seedlings $12.

Spencer Creek Nursery. Based in Oregon. Offering seedlings of cultivars. Seedlings $16.

Trees for Graziers. Based in Pennsylvania. Offering four cultivars and seedlings of cultivars. Grafted trees $70, seedlings $32.

Yellowbud Farm. Based in Massachusetts. Offering seedlings of cultivars. Seedlings $14.

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