



# Indigenous Grain Crops

## Millet

### Place of Origin

There are actually multiple species of millets domesticated throughout history from South and East Asia and East and West Africa; these varieties spread to other continents in areas with comparable climates. The major varieties are **Pearl millet** (*Pennisetum glaucum*; African Sahel zone), **Foxtail millet** (*Setaria italica*; East central Asia), **Proso millet** (*Panicum miliaceum*; Central and east Asia), **Japanese millet** (*Echinochloa esculenta*; Southeast Asia), **Browntop millet** (*Urochloa ramosa*; Southeast Asia), and **Finger millet** (*Eleusine corocana*; East central Africa).

### Modern Cultivation and Presence in the United States

All millets are edible but most food-grade millet grown in the U.S. is typically of the proso variety. Most U.S.-grown millet has been used as forage plants for livestock or more recently, used for wildlife plantings (Japanese millet) and for cover crop use (in mixes- foxtail & pearl are the most popular). Millet is a relatively minor crop in the U.S. but is grown on massive swaths of land worldwide and is more foundational to global culinary traditions (African varieties notably in Nigeria, Niger, Mali, Senegal, Burkina Faso, Sudan, Chad, and Tanzania; Asian varieties notably in India). While greater usage of millet in the United States has been comparatively unexplored and additional research is needed, opportunity and appropriate environmental conditions exist. Pearl millet varieties have been developed for the South while proso varieties have been developed for the High Plains. While variation exists between species and varieties, millets are significantly drought, disease, and pest resistant and more resistant to these environmental pressures than other cereal crops.

Basic Planting Information

**Table 2. Height, biomass, moisture requirements, and typical U.S. growing regions for various millet species.**

Common name	Typical height, biomass amount	Soil conditions, regions
Pearl millet	Grain-types: 4 feet, medium biomass Forage-types: 6–7 feet, higher biomass	Dry to moderate moisture Southeastern U.S., south and west of Corn Belt
Foxtail millet	3–4 feet, medium biomass	Dry to moderate moisture Eastern two-thirds of U.S.
Proso millet	3 feet, low to medium biomass	Dry conditions High Plains and other parts of Western U.S.
Japanese millet	4 feet, medium biomass	Moderate to high moisture Southeast to central U.S.
Browntop millet	4 feet, medium biomass	Moderate to high moisture Southeast to central U.S.
Finger millet	4–5 feet, medium biomass	Low to moderate moisture Adaptation in U.S. not well known but okay in central U.S.

**Table 3. Millet seeding rates and primary U.S. markets.**

Common name	Seeding rate*	Primary U.S. markets
Pearl millet	Grain varieties: 3–5 pounds/acre Forage varieties: 10–15 pounds/acre	Grain for poultry feed forage for cattle
Foxtail millet	15–20 pounds/acre	Forage and pet birdseed
Proso millet	12–20 pounds/acre	Birdseed and human food
Japanese millet	10–20 pounds/acre	Wildlife plantings
Browntop millet	10–20 pounds/acre	Forage and wildlife plantings
Finger millet	10–15 pounds/acre	Forage

\*Note that all the millets except pearl millet are normally planted with a grain drill in narrow (6 to 8 inch wide) rows. Pearl millet is more commonly planted on 15 to 30 inch rows. If used in a mix of cover crops, seeding rates should be proportional to the amount of millet seed in the mix. Most of the millets need warm soil temperatures of typically 70 degrees F. or more for seed germination, so are normally planted in the latter half of May or early June depending on the growing region; proso millet can tolerate cooler temperatures and can be seeded when soil temperature is 55 to 65 degrees F. If millets are used as a summer cover crop, planting can be mid-summer after an early season cash crop is harvested, such as wheat, potatoes, or spring greens. Maturity varies with foxtail, proso, Japanese and browntop millet being the fastest maturing types (60-90 days depending on planting date and variety and weather), and with pearl and finger millet being more intermediate in maturity (roughly 100 to 110 for seed harvest). Proper time for harvesting millets for hay varies by species.

Seeds should be sown into a shallow firm, mellow and moist seedbed, to obtain good contact between the seeds and the soil, and ensure good field establishment. If a crop destined as hay for animal feed experiences notable weather stress, such as drought, hay should be tested to ensure unsafe levels of nitrate have not accumulated.

In traditional cropping systems, millet is mostly grown together with other crops. Intercropping of millet with a drought-tolerant legume in general increases productivity of both crops compared to cultivation of a sole crop.



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## **Fonio**

### **Place of Origin**

Fonio is likely the oldest African cereal and has broad origins in West Africa. It is in the millet family, and goes by common names including "hungry millet," "hungry rice," fundi, and acha. It grows well in the Sahel (the biogeographical transition region between the Sahara and savanna). Its cultivation is particularly significant in Guinea and Nigeria, in addition to Burkina Faso, Ivory Coast, Niger, Gambia. There are two broad varieties of fonio: white and black, while white fonio is the primary variety grown. White fonio is commonly grown between Senegal and Chad while black fonio is more common in Nigeria and the northern regions of Togo and Benin. All fonio is gluten free.

### **Modern Cultivation and Presence in the United States**

In the last few years, fonio has become a trendy new grain staple food in the United States, in the same vein as quinoa, particularly due to its high drought and heat resistance that have long made it essential to West African diets. However, there still isn't a large investment in domestic cultivation, with a greater policy focus on imports from West African countries. We've found limited research from cooperative extensions on the subject, but that means there is opportunity to seek support from those entities and to shape the future of fonio in domestic agriculture.

### **Basic Planting Information**

Fonio is the world's fastest maturing cereal, reaching readiness for harvest in as little as 60-70 days (it may take some varieties up to 150 days to mature). It is capable of thriving in poor, rocky, and marginal soils but heavy and saline soils are less suitable. It can grow well in mountains or on plains with annual rainfall of ~400-3,000 mm. For germination fonio only requires a superficially loosened soil, because of its small seeds. Loose topsoil with a fine tilth provides good conditions for germination.

Traditionally, sowing is done by broadcasting. For this, the small seeds are best mixed with an equal quantity of sand to best spread the seed. After sowing, the seeds are covered with soil by a light hoeing or brushing with tree branches. The seed rates range from 10 to 30 kg per hectare, depending on soil fertility and growing conditions. Seed rates from 50 to 70 kg per hectare result in denser stands and reducing competition from weeds. However, broadcasting can result in bunches of fonio plants, which then develop poorly. Although not common yet in fonio production, sowing in rows provides a number of advantages: it requires less seeds, results in more uniform stands and – when sown at a row distance of 15 to 20 cm – allows mechanical weeding with a hoe or a tine or blade weeder, if the soil is not covered by dry mulch.

Fonio is an annual plant with a plant height of 45–50 cm. The roots are well developed and attached firmly to the soil. The grains are small, and the individual grain weight is 0.5–0.6 mg. The grain yield varies from 0.2 to 0.5 t ha<sup>-1</sup>. Note that some varieties are more susceptible to lodging (the bending over of stems of grain crops which makes it challenging to harvest).



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## Teff

### Place of Origin

Teff was domesticated in the northern highlands of Ethiopia in about 4000-1000 BCE, with an ancestor related to millet. It is actually typically written as "tef," and its name means "lost grain" in Amharic because it is so tiny. It is a good source of fiber and minerals, such as calcium and iron, and is gluten free. Teff was long believed to be high in iron, but more recent tests have shown that its iron content comes from soil mixed with the grain after it's been threshed on the ground – the grain itself is not unusually high in iron.

### Modern Cultivation and Presence in the United States

While there is more global interest in food-grade teff, expanded cultivation has largely been for hay and animal forage crops. Australia, South Africa, Kenya, India, Canada, and the United States have some cultivation, but it is only a major staple crop in Ethiopia & Eritrea where it contributes about 25% of total national cereal production. However, teff has definitely arrived in the United States through the influence of Ethiopian and Eritrean immigrants and interest in the crop's tolerance for heat, drought, and flood conditions. Much of this country's cultivation and experimentation with teff has occurred in the Great Plains and the Pacific Northwest, but successful harvests have occurred in the Mid Atlantic and Northeast.

### Basic Planting Information

Teff is classified as intermediate between tropical and temperate grasses, day-length sensitive, and optimal flowering occurs at 12 hour day-length. It is adapted to drought or water-logged conditions but is classified as adapted for growth in hot, dry regions. Teff is considered a low input crop, requiring minimal fertilization. Plantings following alfalfa, legumes, or sod may not need any additional nitrogen fertilization on the first cutting. The total seasonal nitrogen needs of teff are relatively low, generally in the range of 50 to 90 pounds of available nitrogen. Excessive single applications of nitrogen above 100 pounds per acre may result in lodging. In multiple cut regions, split applications of nitrogen (30 to 50 pounds) following each cut throughout the growing season will enhance forage production. Nitrate toxicity problems associated with other warm season grasses have not been reported in Teff. Moderate amounts of phosphorus and, in some cases, sulfur may be required.

The soil should be at a minimal temperature of 65 degrees Fahrenheit or warmer at planting, with subsequent growing temperatures above 80 degrees. Forage cultivars can be harvested multiple times in a growing season, barring frost. Because teff can be planted from late spring to mid-summer, it is a good double cropping option following cereal grain crops such as wheat. Teff is an excellent rotation break crop when renovating a perennial grass pasture or older alfalfa stand. It germinates quickly and is ready for early stage forage harvest in 45-55 days. Full maturity varies from 90 to 130 days. Seeds are very small, and the number of seeds per pound is approximately 1.3 million. Germination typically occurs in 3-5 days.



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## Sorghum

### Place of Origin

Sorghum was first cultivated in the region of Ethiopia or Chad over 5000 years ago. It spread to India by 4000 years ago and later to China and to southern Africa by about 1500 years ago. Sorghum was introduced in North America with the slave trade in the 18th century. Today, it is the 5th most important cereal crop in the world. Sorghum is gluten free.

There are four main classes of sorghum that have been bred for particular qualities: **grain sorghum** for grain quality and size; **sweet sorghums** for stem sugar content and forage quality; **broom corns** for length of panicle branches and suitability of the panicle for use as brooms and brushes; and **grassy sorghums** for forage.

### Modern Cultivation and Presence in the United States

Sorghum is mainly grown in Sudan, Nigeria, Burkina Faso, Ethiopia, Mali and Egypt. In the United States, it is traditionally grown throughout the Sorghum Belt (South Dakota to Southern Texas, primarily on dryland acres). In 2020, the top 3 sorghum producing states were Kansas, Texas, Colorado. Sorghum is actually the third-most widely grown cereal grain in the U.S., favored for its drought tolerance, resistance to mycotoxins and fungi, and survivability in relatively harsher climatic conditions. It has mostly been grown for livestock feed or use in ethanol production, but there is increasing interest in its use as a food-grade grain.

### Basic Planting Information

Sorghum is a vigorous, hardy and drought-tolerant perennial grass but is mostly cultivated as an annual crop. There isn't a cereal crop besides millet that has a more efficient root system. Along with the ability to roll its leaves up to reduce evapotranspiration, this allows sorghum to tolerate drought conditions by going dormant and then resuming growth when water becomes accessible.

Sorghum can grow up to 4 meters tall, and it should be planted when soil temperatures reach 60 to 65°F. Generally, this is 15 to 20 days after corn planting or between May 15 and early June. Grain yields decrease as planting is delayed after early June. Most hybrids require 90-120 days to reach maturity, therefore late-planting as an emergency crop is not recommended.

Sorghum seeds prefer a fine bed for germination (if the soil is plowed). Most farmers sow the seeds directly into furrows, following a plow or a ripper. Seeds can also be broadcast and harrowed into the soil, but this hampers weeding and may result in irregular stands. Soil cultivation and planting should take place before or at the onset of rains. When planted into dry soil, the planting depth should be 5 cm, but when planting in a moist soil use a planting depth of 2.5 to 4 cm. Optimum plant spacing is determined by the availability of moisture, depending on rainfall and soil type (more plants can be planted more densely successfully in areas with higher rainfall). Under favorable conditions, recommended spacing between rows can vary from 50 to 75 cm, and spacing in the row from 12 to 20 cm. For drier or less fertile conditions a row distance of 90 cm to 1 meter and



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spacing between plants of 15 cm is appropriate. If another crop is planted between the rows of sorghum – depending on the climate and the intercropped species – every second row is planted with the intercrop, or the spacing between the rows is enlarged. Sorghum thrives when planted after a legume crop.

Although sorghum grows well on a wide range of soils, the best results are achieved on loams and sandy loams. Sorghum is adapted to poor soils. In situations where sorghum is grown continuously on the same fields without rotation, the risk of pests and diseases increases, especially where diseases like anthracnose, leaf blight, leaf spot and tar spot, downy mildew or rusts are prevalent. Other diseases include the honeydew disease or ergot, root and stalk rots. In many parts of Africa, birds are also common pests of ripening sorghum causing enormous losses before it is harvested. There are many varieties out there bred for specific growing conditions.

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## Dryland Rice

### Place of Origin

**African (*Oryza glaberrima*), Chinese (*Oryza sativa* varr *japonica*), and Indian (*Oryza sativa* varr *indica*)** rice varieties are surmised to have been domesticated independently ~3,000, ~9,500-6,000, and ~8,500-4,000 years ago respectively. However, there is some controversy over the origins of Asian rice varieties, if japonica or indica developed first and led to the development of the other. Varieties of African and Chinese origin are typically grown on “dryland” or “upland.” Asian rice varieties were introduced to Africa during colonization and over time have increased in use, to the point that modern varieties related to glaberrima are disappearing. African rice is suspected to have originated in the Inner Niger Delta in modern Mali. There is a small group of researchers that believe glaberrima is actually a hybrid variety developed after japonica was introduced to the region.

African rice remains sacred to followers of Awasena among the Jola people in Senegal, the Gambia, and Guinea-Bissau. Broken rice became the grain of choice for Senegalese people during French colonization which stopped local production of the previously preferred millet in favor of items for export into European markets. With the concurrent French colonization of Indochina, the cheaper, poorer-quality broken rice was imported. Local cultivation of *O. glaberrima* varieties took further hits during the second half of the 20th century when fluctuating climate and weather conditions challenged traditional growing methods. Research connected to the Jola people's traditional rice growing practices revealed that it is the women who can identify different varieties of African rice, who know that the African types mature earlier, are usually direct seeded on higher ground rather than transplanted, and are hardier but lower yielding than the Asian types. African rice varieties have largely survived in ritual/ceremonial contexts and pop up as heritage varieties in the United States. Hybrids between African and Asian varieties have been developed to better suit African climates, traditional growing methods (including upland), and to improve food security.

Some of the most well-known African rice dishes come from countries in West Africa (Nigeria, Ghana, Senegal, Gambia), but rice is an important staple food across the entire continent. Rice cultivation is in a period of explosive growth in Sub-Saharan Africa, particularly in West Africa (Nigeria, Côte d’Ivoire, Mali, Guinea, Sierra Leone, and Senegal), Madagascar, and Tanzania.

### Modern Cultivation and Presence in the United States

Slaves from west Africa brought the "Carolina Gold" variety along to North America which became the most valuable of the colony's exports by 1720.

Today, rice is commercially grown largely in Arkansas, California, Louisiana, Mississippi, Missouri, and Texas. Most rice varieties require a long, hot growing season, but fast maturing varieties from Japan have been used as far north as Maine.



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Interest in growing dryland rice in the Mid-Atlantic is just beginning to get attention, and **CGA Members Nazirahk Amen (Purple Mountain Grown)** and **Heinz Thomet (Next Step Produce)** are likely great resources based on their experience growing dryland rice in Maryland. Nazirahk and Heinz have been directly involved with experimentation and documented research on their experience.

### Basic Planting Information

African *O. glaberrima* varieties have certain negative features with respect to the Asian *O. sativa*: the seed scatters easily, the grain is brittle and difficult to mill, and, most importantly, the yields are lower. But the *O. glaberrima* types also offer distinct advantages: the plants have luxurious wide leaves that shade out weeds and the species is more resistant than its Asian cousin to diseases and pests. Moreover, African rice is better at tolerating fluctuations in water depth, iron toxicity, infertile soils, severe climates, and human neglect. Some *O. glaberrima* types also mature faster than Asian types.

*O. sativa* varr *japonica* originated in the mountainous region of the Chinese Yangtze River Basin and *O. sativa* varr *indica* originated in the lower lying region around the Ganges River in India and Bangladesh. Naturally, japonica varieties have achieved greater success in dryland systems, while indica varieties have more intensive water needs satisfied by lowland/wetland systems.

The system of rice intensification (SRI) is the prevailing means of growing dryland rice originating in Madagascar in the 1980s. The basic methodology and more intensive manuals & resources can be found at [this link](#). Varieties of dryland rice grow best when started indoors (in cold climates) in plugs. The plugs prevent disruption to the root systems during transplant, and starting them a few weeks early gives them a chance to get a head start on the season and on the weeds. Planted rice 10-12 inches apart in beds approximately four feet apart. This variety grows to 20-24 inches in height, taking up a fair amount of vertical space. It is possible to direct seed dryland rice, but the main concern is competing with weed pressure. In addressing food security and advancing agriculture in Africa, New Rice for Africa (NERICA) varieties have been developed and identified to compete against a variety of environmental challenges in both dry and wetland systems.

On average, it takes dryland rice 120 days to reach maturity, but this also largely depends on variety.

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## Wild Rice

### Place of Origin

While distantly related to the *Oryza* tribes of rice domesticated in the Eastern Hemisphere, wild rice (*Zizania palustris*) is its own genus of 4 main species native to North America. That this plant is called “wild rice,” can be confusing because wild varieties of *Oryza* are also still called wild rice. Wild rice was a staple food of tribes in the North Central region of the continent, centered around what is known today as the Great Lakes, including by the Ojibway, Menomini, and Cree people. They called these plants “manomio” or “manoomin,” meaning good berry.

### Modern Cultivation and Presence in the United States

Although the idea occurred to colonizing occupants of North America almost a century earlier, it wasn't until the 1950s that anyone began cultivating wild rice as a field crop in Minnesota. Cultivation has since spread and is proven possible as far south as Texas and Florida.

Three varieties of wild rice grow in the United States today: ***Zizania aquatic***, ***Zizania palustris***, and ***Zizania texana***. *Z. texana* is native to a smaller range in the upper two miles of the San Marcos River in Hays County, Texas and is actually considered endangered. *Z. palustris* is suited to the growing conditions in the area of the country near the Great Lakes and is the variety that contributes to commercial production today. This variety and the traditions surrounding its cultivation, harvest, and preparation remain important to Native peoples located in the northern Plains, and the species is considered stable. *Z. aquatic* is native to the Atlantic and Gulf Coasts, and due to forced relocation, much of the indigenous harvesting tradition in the region has been lost. However, it remains in the wild and is a stable member of regional ecosystems.

### Basic Planting Information

Wild rice grows in streams, rivers, or lakes, preferring shallow water with a slow current and muddy substrate. It is possible to cultivate, albeit challenging. The water depth can range from 4 inches to 4 feet, but 18-22 inches is ideal. Wild rice seed needs a period of cold dormancy to initiate germination, so the best time of year to plant is in the fall before the first frost. Dry seed will not germinate, so keep the seed moist but avoid mold. Broadcast seed in the selected body of water at a rate of 30 to 35 pounds per acre. Viable seed will sink to establish itself while chaff and immature seed will remain floating on the surface.

Wild rice germinates as spring warms up and appears above the water's surface starting in June. The plants will mature throughout the summer, growing to at least 2 m in height above the water as erect, hollow, jointed stalks. Leaves are long and narrow with rough, toothed edges, reaching dimensions of 3 cm wide and 40 cm long. Immature plants have long, ribbon-like underwater leaves. Plants are very sensitive to rough conditions, and too much wind or surf can uproot them. Aquatic weeds and pests are also a concern to watch out for.



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Wild rice has both male and female flowers, which bloom in loosely branched clusters at the stem peak by early August. It is an annual plant that cross-pollinates. The female flowers usually emerge before the males and are pollinated by male flowers from other clusters. The female flowers located on the stiff upper branches produce the edible seeds, while the male flowers on the flexible, lower branches bear the pollen. It takes the wild rice grains a week or two to ripen into elongated, brown-skinned seeds.

Wild rice is ready to harvest in the fall when flower heads have ripened and turned a rich purple. The same traditional methods for harvesting by boat can be used: one person stands in the front of the vessel, while another person, known as the “knocker”, remains seated in the back of the boat. The “knocker” gently bends the rice stalks over the boat and then uses two cedar sticks to gently tap the rice kernels off the stalk, catching the grain in a blanket. It’s okay if some seed falls in the water, because that then becomes the following year’s harvest.

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## Sugarcane

### Place of Origin

Sugarcane was domesticated in tropical Southeast Asia, likely specifically in New Guinea, by 8,000 BCE. It spread throughout Asia and reached Europe during the Crusades and arrived in Brazil with the arrival of Portuguese colonizers. Christopher Columbus likely brought it to the West Indies, and from there it also reached mainland North America, beginning its history as an essential cash crop powered by the exploitation of slave labor.

### Modern Cultivation and Presence in the United States

Sugarcane is a global crop cultivated in many tropical or subtropical areas. Significant cultivation occurs in Laos, China, Brazil, India and Myanmar. In the United States, it is grown in Texas, Louisiana & Florida. Sugarcane was once a significant crop in Hawaii, but the last sugar mill in that state closed in 2016. It can be challenging to maintain in areas that don't have access to processing infrastructure.

In 2020, the average yield per acre of sugarcane in the U.S. was 38 tons. To be profitable, sugarcane must be produced relatively close to a sugar factory. There are government policies that effectively limit the amount of sugar that can be produced in the United States but which support the price growers receive, thereby limiting the expansion of sugarcane acreage. Sugarcane is considered a "green" crop for its minimal required inputs and minimal waste that can also be put to use as an energy source.

### Basic Planting Information

Sugar cane is a perennial warm season grass. It is planted, usually in the fall of the year, by using the vegetative stalks of the cane and not seeds. Plants arise from the joints on the stalk and are typically harvested for the first time the following fall. New stalks emerge after the crop is harvested and two to four additional annual cuttings (called ratoons) are taken before the land is fallowed and replanted. It has a 12- to 15-month growing cycle and is planted annually between September and January and harvested between late September and late April. When harvested, it's cut just above the root level so new sprouts will grow. Sugarcane plants grow to be 10-20 feet high. Commercial sugarcane is planted from stalk cuttings and placed in furrows five feet apart.

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## Maize

### Place of Origin

It is believed that maize/corn was domesticated in the region that is now central Mexico 9000 years ago, but it didn't look anything like the maize of today. Maize started out as a wild grass called teosinte that had a few small, hard kernels. Throughout the process of domestication, the indigenous people of the continent carried teosinte south, allowing different genetic qualities to emerge and recombine, making the job of tracing maize's origins today more complicated.

Eventually maize reached people all across the Western Hemisphere and became an essential, foundational crop in the nutrition, cuisine, culture, and tradition of many tribes of indigenous peoples. By placing greater reliance on agriculture rather than hunting and gathering food, malnutrition/undernutrition became less of a concern and more time could be allocated to the development of other parts of culture. Indigenous people also discovered that eating maize with beans made for a complete protein source balancing levels of essential amino acids, the foundation of the Three Sisters, along with squash. They also grew maize intercropped with beans to the benefit of improved soil fertility.

When colonizers arrived from the Eastern Hemisphere, they were introduced to maize. It made its way back to the Old World and then globally to become one of the world's most important crops today.

### Modern Cultivation and Presence in the United States

Maize is the world's most important grain, and the United States is by far the world's largest producer, resulting in almost 384 million metric tons at harvest, or about one third of the world's production volume. Most of that cultivation happens in the Corn Belt, located between Indiana and Nebraska. Although this cultivated land area hasn't grown much over the past 150+ years, yields have skyrocketed, initially due to advances in agricultural technology and farming techniques, but now more so by genetic modification and longer growing seasons facilitated by climate change.

This massive maize harvest has 3 major categories of use, whether kept domestically or exported: as feed for cattle, hogs, and poultry; to make ethanol to be mixed in with gasoline; or as food for human consumption. In American food manufacturing, corn is transformed into food additives and stabilizers or constituent components of processed foods.

Maize is certainly grown by smaller, independent farms using environmentally-friendly growing practices, learning from the traditional practices of indigenous farmers, in most other states in the country. However, it's also important to note that not all maize is the same as the classic corn on the cob you can enjoy in the summertime. There are actually two broad categories of maize: **sweet corn** and **field corn**. Field corn is further divided into flour, dent, and flint corn. Each of the field corns are differentiated by their starch levels. **Flour corn** mostly has soft starch and is the indigenous maize of the Southwest United States, used in tortillas and tamales. **Flint corn** has mostly hard starch and has broad use among peoples of the Northeast, prepared as



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polenta or popcorn. **Dent corn** is a hybrid of flour and flint corn made in the Midwest with intermediate levels of starch. At maturity, each kernel features an obvious dent, hence its name. This is the field corn used as animal feed grain, but it is also milled and used as grits in the Southeast.

### Basic Planting Information

With some minor variation, sweet corn and field corn can be planted using similar techniques. Corn typically grows to be between 5 and 12 feet tall, and a healthy plant will develop a root system down to 6.5 feet deep. You can plant in the spring when the danger of frost has passed and soil temps are at least 65 degrees Fahrenheit. Corn needs a lot of nitrogen from the soil, which explains why it's such a good companion plant with beans. Seeds should be planted 1 inch deep and 6-12 inches apart (you can also plant them more densely to start and thin to this range once germination occurs) in rows that are 30-36 inches apart. Varieties that take longer to maturity and grow taller need more space than varieties that are shorter and quicker to mature. Corn produces silks which are its means for pollination, and planting in blocks as opposed to individual rows makes pollination easier.

Sweet corn is ready to be harvested in its “milk” stage, when the kernels produce a milky liquid when broken, approximately 63-100 days from germination. If the liquid is clear, you’re too early, and if there is no liquid you’re too late for harvest.

Field corn varieties mature past the milk stage and are ready to be harvested when the corn husks are visibly dried (100-120 days). If you live in a climate that experiences a lot of rain and humidity (such as the Mid-Atlantic) you can bring the corn in to dry longer in a controlled environment.

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