Module 6 - Weed Control

Lesson 6.1 Organic Weed Control and the Meaning of 'Clean Fields'

Description

Good weed control is possible on organic farms. In this lesson, we explore the realities of organic weed control, the concept of "clean fields", and discuss the tools and strategies used on organic farms.

Learning Objectives

- Understand the goals of organic weed control
- Understand the strategies and tools available for organic weed control

Watch the Video

Sources and References

§ 205.206 Crop pest, weed, and disease management practice standard. https://www.ecfr.gov/current/title-7/subtitle-B/chapter-I/subchapter-M/part-205/subpart-C/section-205.206

Lesson 6.2 Knowing Your Weeds

Description

Weeds are worthy opponents in the battle to raise a successful crop. As with any competitive match-up, knowing your opponent is key to beating them. In this lesson, we discuss the aspects of weed that are most useful in gaining good control in the field.

Learning Objectives

- Understand weed lifecycles and vulnerabilities

Watch the Video

Dig Deeper

Comprehensive list of weed ID guides:
https://wssa.net/wssa/weed/weed-identification/weed-id-pages/

Sources and References

Arneson, Nick, et al. “Giant Ragweed.” Getting Rid Of Weeds, Grow , 3 Sept. 2021, https://growiwm.org/weed/giant-ragweed/

Renz, Dr. Mark. Weed Seed Production. University of New Mexico, https://weeds.nmsu.edu/pdfs/Weed_seed_production.pdf

Sandborn, Dixie. “Weeds Are an Indicator of a Soil's Health.” MSU Extension, Michigan State University, 15 Aug. 2016, https://www.canr.msu.edu/news/weeds_are_an_indicator_of_a_soils_health

Lesson 6.3 Keep Weeds from Emerging

Description

Weeds are plants that have evolved to thrive in specific agricultural environments. So as long as we use the same practices in the same way, weeds will continue to be a significant problem. Therefore, our jobs as advisers and farmers is to keep weeds guessing with integrated tactics, so that we can short circuit their lifecycles and stop their evolution. In this lesson, we discuss how to keep weeds from emerging in the first place.

Learning Objectives

- Understand strategies for preventing weed emergence

Watch the Video

Dig Deeper

North Carolina study:
https://www.researchgate.net/publication/232666116_Seeding_Rate_Effects_on_Weed_Control_and_Yield_For_Organic_Soybean_Production

Canadian research:
https://www.umanitoba.ca/outreach/naturalagriculture/weed/files/singleseason/seed_rate_e.htm

Montana study: https://www.jstor.org/stable/4046575

Mirsky study:
https://www.ars.usda.gov/research/publications/publication/?seqNo115=360583

Sources and References

Leavitt, Matt and M. Smith. When Should I Plant My Organic Corn? Albert Lea Seed, 29 Apr. 2020, https://alseed.com/when-should-i-plant-my-organic-corn/.

"Maryland Farm & Harvest: Beltsville Research". Maryland Farm & Harvest, 27 Apr. 2018, https://www.youtube.com/watch?v=2F95sajjHuw.

Place, George T., et al. "Seeding Rate Effects on Weed Control and Yield For Organic Soybean Production." Cambridge Core, Cambridge University Press, 20 Jan. 2017, https://www.cambridge.org/core/journals/weed-technology/article/abs/seeding-rate-effects-on-weed-control-and-yield-for-organic-soybean-production/5A561FE3EE017A93E7BE3B78D87B645B.

"Seeding Rate and Row Spacing". Agriculture and Agrifood Canada. University of Manitoba., https://www.umanitoba.ca/outreach/naturalagriculture/weed/files/singleseason/seed_rate_e.htm

Teasdale, John, et al. "Weed Species and Traits Associated with Organic Grain Crop Rotations in the Mid-Atlantic Region ." Publication : USDA ARS, USDA Agriculture Research Service, 12 Sept. 2019, https://www.ars.usda.gov/research/publications/publication/?seqNo115=360583

USDA-ARS Studies Cover Crops Nationwide. USDA-ARS, 15 Dec. 2020, https://www.youtube.com/watch?v=lvk4obs48JY

Xue, Qingwu, and Robert N. Stougaard. "Spring Wheat Seed Size and Seeding Rate Affect Wild Oat Demographics". Cambridge University Press, 2022, https://www.jstor.org/stable/4046575

Lesson 6.4 Kill the Weeds That Do Emerge Part 1

Description

So you did everything you could to discourage a weed from becoming a weed, but nature prevails and your organic field isn't as clean as it once was. In this lesson, we dive into the many strategies for killing those weeds that do emerge.

Learning Objectives

- Understand the importance of timing in cultivation for weed control
- Understand the many cultivation tools, their strengths and weaknesses

Watch the Video

Dig Deeper

The Art and Science of Cultivation:
https://www.youtube.com/playlist?list=PLr2Fb2Gh3HiEMqJRcvoQyNv2G7jDcoaHy

Organic Weed Control - Practical Farmers of Iowa:
https://www.youtube.com/playlist?list=PL5v5mi3djmDtVQW3bGPiAFflHO4W35Maz

Sources and References

Lanini, W. Thomas. "Organic Herbicides - Do They Work? ." UC Nursery and Floriculture Alliance, University of California, https://ucnfanews.ucanr.edu/Articles/Feature_Stories/Organic_Herbicdes_-_Do_They_Work/

Mallory, Ellen. "Blind Cultivation for Weed Control in Small Grains." Cooperative Extension: Grains, Pulses & Oilseeds, University of Maine,

https://extension.umaine.edu/grains-oilseeds/topics/blind-cultivation-weed-control-small-grains/

Lesson 6.5 Kill the Weeds That Do Emerge Part 2

Description

In part two, we explore alternative strategies for killing weeds such as flame weeding, the weed zapper, mowing, field walking, and allowed herbicides.

Learning Objectives

- Understand alternative mechanical strategies for weed control

Watch the Video

Sources and References

Lanini, W. Thomas. "Organic Herbicides - Do They Work?." *UC Nursery and Floriculture Alliance*, University of California, https://ucnfanews.ucanr.edu/Articles/Feature_Stories/Organic_Herbicdes_-_Do_They_Work/

Lesson 6.6 Long Term Weed Control

Description

With most bank accounts, the account holder is trying their best to deposit more than they withdraw, right? There's one bank that works in the opposite way: the weed seed bank. In this lesson, we discuss strategies for long term weed control.

Learning Objectives

- Understand the role of crop rotation in weed management
- Understand strategies for reducing the weed seed bank

Watch the Video

Dig Deeper

Seed terminator: https://extension.missouri.edu/news/mizzou-weed-science-shares-seed-terminator-research

Sources and References

"Combcut: Lyckegård En." https://lyckegard.com/en/products/combcut/

Lauren, Quinn. "Harrington Seed Destructor Kills Nearly 100% of U.S. Agronomic Weed Seeds in Lab Study." College of Agriculture, Consumer and Environmental Sciences, University of Illinois Urbana-Champaign, 28 Jan. 2020, https://aces.illinois.edu/news/harrington-seed-destructor-kills-nearly-100-us-agronomic-weed-seeds-lab-study

"Meneguzzo Lop Weed Trimmer." Farm Power Implements, 4 Sept. 2019, https://www.farmpowerimplements.com/products/meneguzzo-lop-weed-trimmer/

"Organic Weedpuller." https://www.organicweedpuller.com/

Lesson 6.7 Farmer Perspectives on Flame Weeding

Description

This lesson explores farmer perspectives and experiences with flame weeding as organic weed control.

Watch the Video

Lesson 6.8 Farmer Perspectives on Blind Cultivation

Description

This lesson explores farmer perspectives and experiences with blind cultivation as organic weed control.

Watch the Video

Lesson 6.9 Farmer Perspectives Cultivators and Alternative Tools

Description

This lesson explores farmer perspectives and experiences with cultivators and alternative tools as organic weed control.

Watch the Video

Lesson 6.10 Farmer Perspectives on Weed Control Timelines

Description

This lesson explores farmer perspectives and experiences with weed control timelines.

Module 6 Quiz

*Correct answers are in **bold**.*

Organic farmers in the Midwest typically plant two to three weeks after their conventional neighbors to help with weed control. Which answer below explains why delayed planting helps with organic weed management?

- Lower soil moisture helps seeds germinate quickly
- **Higher soil temperature promotes quick and vigorous plant growth for the crop**
- Organic regulations mandate later planting
- Organic varieties establish better in cooler soils

Match the name of the weed control strategy with its description. “Cultivation, mowing field edges, planting clean seed, good seedbed prep, crop rotation, adjusting seeding rates, and delayed planting - All of these strategies, when used together, create an agroecosystem to resist weeds and grow a good crop.”

- **Small hammers**
- An ounce of prevention
- Process over products

Match the name of the weed control strategy with its description. “Organic weed, pest, disease, and fertility management depend on intertwined processes that work within an agroecosystem, no products that seek to control and confine that system.”

- Small hammers
- An ounce of prevention
- **Process over products**

Significant amounts of weed seeds at or near the surface can be eaten by rodents and insects.

- **True**
- False

Which practices are most effective for controlling perennial weeds like Canada thistle?

- Legume cover crops
- Shallow tillage
- **Crops with thick biomass like sorghum sudangrass**
- **Repeated mowing**

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