

Sattin Hill Farm Course

Module 15: Pest Management

Introduction

In this module, Josh goes over his approach to pesticides, growing crops at the right time, and his personal pest management strategies.

Context

Every farm has its own particular nuances when it comes to pest pressure. While Josh's approach to pest management will contain some strategies that apply to his specific context, the principles behind them are universal. Your geographic location, weather, soil type, and crop selection will all determine what kind of specific pest issues you have.

Long Term Strategy

Josh's approach to pest management focuses on long term solutions, as opposed to just treating symptoms of immediate problems. A running theme throughout this course is the idea of planning ahead and designing systems that save time, lead to higher yields, and ultimately more profit on the farm.

Pest management is one of these systems of design that should ideally be set into motion from the beginning. It should be viewed as a holistic approach to reducing the risk of pest damage on your farm.

Pesticides

Josh decided very early on that he was not going to use any pesticides or herbicides on his farm—even if they were labeled organic. This has been a challenging position to maintain over the years, which has even led to losing crops at times. While spraying affected crops with an organic pesticide would be an easy immediate solution, Josh remains committed to his conviction to seek out and address the root cause that is leading to his pest pressure when it occurs.

While this is his personal stance, he also encourages farmers to not be dogmatic about their approach to this topic. If a farmer has put in all the time and energy into planting, growing, irrigating, and cultivating a crop (and they need that crop for income for their family), then there must be some balance and consideration that comes into play. When

it comes to feeding your family, using an organic pesticide as a last result is nothing to be ashamed of.

With that said, the goal remains to set up your systems with enough preventative measures in place to where pesticides won't even be necessary. Managing pests without using pesticides puts the emphasis on prevention, as opposed to treating symptoms.

It's All Connected

The driving principle behind Josh's approach is connectedness. Whenever a toxin (organic or synthetic) is killing a pest, there will always be casualties of beneficials as well. Whether it's pollinating insects, spiders or other beneficials who eat the pests, or even the microorganisms in the soil, "knocking down" pests will always take out a substantial amount of beneficials as well. This compounds over time and creates greater imbalances, which in turn create more dependence on the pesticides and other artificial inputs. It's a vicious cycle that will keep perpetuating itself. Instead, Josh recommends finding a holistic approach that pursues maintaining the natural balance of nature.

Josh proposes that agriculture as we know it is not natural. We don't see rows upon rows of one plant demonstrated in nature. This is a uniquely human approach to manipulating nature into producing high quantities of food.

Nature, on the other hand, is diverse, interplanted, and mixed. "Pest" is simply a deviant label we have given to certain kinds of insects that get in the way of our farming pursuits. In nature, they are a part of a whole, just eating what they like to eat. When they happen to come upon a bed of rows and rows of a certain plant they are hard-wired to eat, they naturally come in great numbers to feast!

Timing

A key strategy in pest prevention is timing. One aspect of this timing refers to planting the right crop at the right time of year. For example, Josh doesn't grow brassicas in the summer. When he did, he had such bad luck with flea beetles that he decided it wasn't worth it anymore.

When it comes to squash, Josh has learned to start as early in the spring as he can, because by late June the squash bugs will arrive in full force. If the plants are strong

enough by the time they arrive, he can keep them at bay for a while and still get a good crop. But after that they are too overwhelming and crops will be lost.

He has learned to strategize by growing squash very intensively in this short window, and to communicate in advance with customers to ensure he has a market for it.

A challenge about growing certain crops at only certain times of year is not having them available more often. From a business standpoint, it's much more convenient to have a longer growing season. For example, when selling to restaurants, if you can have a crop available for four or five months, it will be much easier to secure a chef than it would be if you only have a crop available for four to six weeks.

When it comes to selling at farmers markets, there is definitely more flexibility. However, it is still important to educate your customers on the seasonality of crops, and to let them know in advance that you will be having a seasonal crop available, but only for a month or so. Customers who are familiar with local food will understand the seasonality of crops based on temperature and time of year, but may not be as familiar with the seasonality of pest pressure. For example, if they are requesting kale or arugula in July, you can say something like, "I'm sorry—I can't grow those crops in the summer due to the pest pressure, and I don't use pesticides." As you customers learn more about this, they often appreciate it and feel more connected to their local food source.

If possible, Josh recommends not growing crops at the time of year when the pests are there to eat them.

Soil Health

Soil health plays a big role in pest prevention. Healthy soil translates to healthy plants, and healthy plants have a greater chance of surviving pest pressure. Some experts say that if you have a healthy enough plant it will defend itself against pests. Josh has not found this to always be true in his context. For example, Josh recently had an outbreak of white flies on his lettuce. He was worried he would lose the whole crop, but within one week they were all gone. He discovered that lady bugs had come in and eaten all of the white flies. Being healthy to begin with, the plants recovered nicely and he was still able to get a good yield from that planting. Had the plants not been as healthy, they likely wouldn't have weathered the experience. He attributes their successful recovery to the living soil they were grown in. While they didn't necessarily defend themselves against the white flies, they were healthy enough to recover after help from the lady bugs to eradicate them.

Soil Diversity

In addition to the health of the soil, another important component to pest prevention is the diversity in the soil. What Josh means by diversity in the soil is growing a diversity of crops in each bed throughout the season, and leaving the root material in the ground to decompose as part of a no-till strategy. This diversity of inputs is constantly feeding the soil, and in turn creating a multitude of different microorganisms.

Josh makes sure to always plant a crop from a different family after each planting. For example, if he's planting carrots in a current bed, he'll follow that with lettuce. If he's planting lettuce, he'll follow that with brassicas. While he has not found it necessary to adhere to a specific crop rotation plan on his farm with it being so small, his guiding principle is to not plant the same family of crops back-to-back in any given bed.

Bed Diversity

Bed diversity is the practice of not planting multiple beds of one crop all next to each other. For example, when planting three beds of lettuce, instead of planting them right next to each other, stagger them with other crops (i.e. bed one: lettuce, bed two: carrots, bed three: beets). This way, if there is a pest attacking one particular crop, they are less likely to hop over to the very next bed planted with the identical crop. This strategy helps to isolate pest issues and reduce crop loss.

Hedgerows

In addition to diversity in your soil and diversity between your beds, increasing the biological diversity on your farm as a whole is another key component to Josh's approach. Sattin Hill Farm is situated in a suburban neighborhood, a piece of land that was cleared 60 years ago in order to build homes. Most of the woods that surround him are not very biologically diverse, which can be an issue for attracting beneficials. Beneficials refer to those insects who prey upon the crop-eating insects, which we would label as pests.

With crops rotating in and out so often on a small scale market farm, the habitat for beneficial insects is often disrupted. To help offset this issue, Josh tries to create natural habitats for these beneficial insects and pollinators in close proximity to his growing space. These intentionally planted peripheral habitats are called "hedgerows."

There are many different versions of hedgerows, but the principle behind them is the same. Hedgerows are actually an old concept, more often found in Europe. They can

also be used as windbreaks, forming a barrier to protect vulnerable crops from damaging winds that would otherwise cut across a field. Hedgerows can also be composed of edibles such as fruit trees, bushes, and flowers. Not only can they provide additional value with these marketable byproducts, they also help to beautify the farm.

When choosing what to plant for a hedgerow, Josh recommends consulting someone knowledgeable about the native plant species in your area. This is what he did on his farm, which has worked out quite well. Native species will also require less maintenance, having already adapted to the local microclimate.

After selecting what they wanted to plant for the hedgerows on Josh's farm, they spread leaves and homemade compost over the area to be planted, covered it with wood chips, wet it down, and then tarped it. After a few months, everything under the tarp broke down and turned into rich soil. They planted their hedgerow, and then mulched it again.

Bird Boxes

Having bird boxes on your farm is another way to increase the biodiversity, and bring balance to your insect populations. Many birds are also considered beneficials, consuming large amounts of insects everyday. Strategically placing bird boxes around the farm can greatly reduce your pest issues.

Insect Netting

Insect netting is a proactive approach to pest prevention. It's put to use when you know in advance that you're going to have a pest issue with a certain crop at a certain time of year. The netting is most often draped over wire support hoops that are installed over the bed every five feet or so, and then weighed down with sand bags along the perimeter of the bed. This holds it tightly in place and eliminates spaces along the ground where the pests might enter.

Insect netting should be placed over a bed immediately following direct seeding or transplanting, so the pests never have an opportunity to reach the crops. The timing is important, because if pests have already had an opportunity to find the seedlings, the insect netting will simply trap them inside where they can continue feasting on your crops!

The kind of insect netting that Josh uses is called ProtekNet, available from Johnny's. While it is expensive, it's very high quality and should last for many seasons if properly cared for. It allows light and moisture to pass through easily, without increasing the

humidity. Josh had previously tried a light-weight row cover (like Agribon 15) as a cheaper alternative. However, it ripped so easily that he decided to invest in Protek Net instead. In comparison to the insect netting, the row cover also trapped in more heat—which can stress crops in the summer.

Animal Pests

The topic of pest management is not exclusive to insects. Many different animals can also be categorized as pests when it comes to damaging crops. One of the most common threats to vegetable farmers is deer. If you have deer in your area, installing legitimate deer fencing around your growing space is really the only effective way of keeping them out. This can be a big expense, but is one of those necessary pieces of infrastructure that can't really be sidestepped. Deer can do thousands of dollars of damage to crops in one single night.

On Josh's farm deer haven't been too much of an issue. Squirrels are the primary threat for his area. One year he lost all of his tomatoes to the squirrels, and as a result he has chosen to not grow tomatoes anymore.

Rabbits and groundhogs have also been problems on his farm. These rabbits and other smaller animals tend to be drawn more towards the delicate smaller plants. One prevention technique that he found to work is setting up electric chicken netting around the openings of his tunnels. Row cover or insect netting can also be an effective means for keeping out rabbits, especially if the fencing around your space is inadequate.

Conclusion

In summary, Josh's pest management all comes back to a holistic approach focussed on prevention, rather than treating symptoms. It's all about taking proactive measures that anticipate the problems before they arise. Creating a farm with biological diversity and healthy soil should also set you up for long term success.