Livestock 360°
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In this Issue

What is Integrated Pest Management?

All Articles by Jason Detzel, Livestock Educator Ulster County CCE unless otherwise noted


Photo Credit: NRCS

Well, summer is here and that means it is the season of plenty, and by that I mean plenty of pests! We have dedicated this entire issue of Livestock 360 to integrated pest management. If you have any pest issues, this is the place to start.

Integrated pest management (IPM) is scientifically based, whole-farm strategy that focuses on long term prevention of pests and the damage they cause through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Basically we can use this system to identify and evaluate pests and their damage, formulate treatment plans that specifically target these pests while avoiding beneficial organisms in the environment, and monitor the results. The focus of IPM is really on the long term control and suppression of pests that affect plants and animals.

The genesis of IPM can be traced back to pesticide resistance. The early use of pesticides as a magic bullet was quickly thwarted by the biological tenacity and rapid evolution of pests. Resistance to these chemicals was quick to develop and this issue fell squarely on the shoulders of those who unwittingly overused these chemicals. As time went on, the most powerful chemicals were no longer getting the job done and the livestock continued to be vulnerable to parasites. IPM was developed to explore alternative techniques that considered the entire farm ecosystem and reduced our dependence on pesticides thus preventing widespread resistance.

IPM uses many different types of treatments but is structured so that the least

(Continued on page 2)

Cornell University Cooperative Extension Ulster, Orange, Sullivan and Dutchess Counties

invasive options are considered and utilized first to avoid those treatments that may be potentially damaging to other vulnerable species or the system as a whole. So while pesticides and insecticides are a viable treatment option, they are usually the last option considered when designing the plan because of their indiscriminate nature.

All IPM plans consist of the same six components

- Pest identification
- Monitoring and assessing pest numbers and damage
- Guidelines for when management action is needed
- Preventing pest problems
- Using a combination of biological, cultural, physical/mechanical and chemical management tools
- After action is taken, assessing the effect of pest management

The reason that identification is the first and most critical component of the process is because the more we know about the specific pest, the more effective our treatment. Each species has specific patterns of emergence, mating, and lifecycles that may be manipulated to achieve effective results. The next step involves the producer surveying the number of pests and setting a treatment threshold. Many of the most common crops and livestock have established thresholds for treatment, making this decision one of the simplest for producers.

Do it yourself horsefly trap from instructables

The treatments for pests come in four separate categories which will be reviewed in this bulletin including biological, cultural, mechanical, and chemical management of pests. The final step is assessment of the treatment. This system is data driven and the more data we collect and distribute, the more effective we can be in our treatments.

Integrated pest management is not a new system for evaluating and eliminating pests but it is an effective one. With the shadow of climate change, our global mobility, and the development of resistance to our former treatments, IPM is a producer's best bet to ensure a timely and healthy harvest.

A History of IPM

For a little history of IPM, we need to go back to the period in time just after WWII when many synthetic insecticides were introduced in the United States. Growers welcomed the addition of these new pest control products which were very effective at dropping the pest density quickly to a manageable level. However, entomologists soon noticed that these mostly calendar-based insecticide spray programs also killed off the natural predators of these pests which allowed a quick resurgence of the target-pest requiring additional applications. These repeated applications sometimes killed off many beneficial pollinators too, such as bumble bees and honey bees. In California and in some of the cotton-belt states such as Arkansas, entomologists soon began a new concept of pest management called "supervised pest control" which sought to reduce the number of pesticide applications based upon a monitoring system that estimated the number of target insects in the field and the natural enemy populations.

By the 1950s, California entomologists coined the term "integrated control" which sought to identify the best mix of chemical and biological control for many major pests. The goal of this new program was to use chemical insecticides in a manner which resulted in minimum effects on the biological control complex. By regular monitoring, the grower treated only when a population level reached the economic threshold to prevent the pest population from reaching the economic injury level, which is the point at which the economic losses of the crop would exceed the cost of the control. Treating only when the pest population reached an economic threshold, offered the grower other benefits such as reduced number of pesticide applications which saved money by reducing the cost of pesticides and reduced the number of trips through the field

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3 Biological Control

Utilizing Parasitic Wasps to Control Flies in Dairy Barn


Photo Credit: Lyle Buss/University of Florida

Biological control is the use of natural enemies—predators, parasites, pathogens, and competitors—to control pests and their damage. Invertebrates, plant pathogens, nematodes, weeds, and vertebrates have many natural enemies. This technique favors the conservation of natural enemies and predators of pests. Only 1% of all insects and mites are harmful, therefore utilizing techniques that do not harm the vast majority helps to retain the balance and predatory system that is constantly playing out across our farms.

There have been some techniques developed to utilize biological controls for the suppression of flies that live in manure. IPM encourages us to focus on the most efficient strategies to combat these flies if and when their numbers reach a certain threshold. We will monitor prior to this threshold and will initiate a treatment as required. The first step in this process is identifying the pests that are infesting our cattle ranch. Upon observation of the cattle, we find that we have face flies and horn flies on the cattle. The next step is setting the thresholds. This information can be difficult to find but the threshold for horn flies is 200 on each animal side and for face flies it is more than 50 on each animals face. Upon completion of the count we find that we are just over the threshold for both species of flies and must make a treatment decision.

IPM presents us with a cultural, chemical, mechanical or biological treatment option. Face flies are very difficult to catch in traps because of their lifecycle so mechanical treatment is not efficient. The two flies tend to breed in similar environments and cleaning out these areas is an option but not typically effective as the flies can breed in hard to reach places. This leaves us with two viable treatment options: chemical and biological. Biological control involves the introduction and promotion of non-stinging predatory wasps that feed on fly larvae. Cornell has completed some studies and found that this method can be effective in fly control when utilized under optimum conditions. Basically this method will work well for animals that spend most of their time in one central area and concentrate their manure. Pasture systems will most likely have to utilize a different treatment strategy. In our case, the cattle are milked in a barn and loaf nearby for a significant part of the day. This is the area where we will focus our treatment.

These wasps are native to the area but do not occur and reproduce in high enough concentration to have a significant effect on the fly populations. In order to be effective, the wasps need be released each week during the fly season each year. The costs are in the couple of hundred dollars range but this comparable with chemical controls. Although difficult to quantify, losses due to nuisance flies can be significant if left untreated.

The other vitally important component to this technique is to avoid applying any chemicals in or around your barn. Because of this it is critical that you not treat your manure with pesticides in order to kill the flies. This will kill fly larvae but it will also wipe out your natural predators. In his research, Richard C. Axtell discovered that “the mite population increased very slowly following decimation by insecticide treatment, while the numbers of fly larvae increased rapidly.” In other words, if you use pesticides, the fly numbers will bounce back more rapidly than the wasps in the barn.

Could biological control right for you farm?

Addendum on parasitic wasps. After writing this piece and while working on some grant funding ideas I did some more digging on the use of these wasps. I was able to locate a SARE funded study that investigated their use to

(Biological Controls Con.)

decrease fly populations in dairy barns. The results indicate that the use of the wasps was not effective. The investigators found that less than 50 percent of the flies had failed to hatch during the first week after release. Secondly, they found that the numbers of flies found in the diaries was not statistically significant when compared to control where no wasps were released.

This is exactly why we do this research. These results signal that we need to adjust our fly control strategy. While the flies were not statically different, they did prey on some of the fly larvae and further research may reveal a missing critical component, that when added, can improve the efficiency of predation. In the meantime, we as producers must continue to work within the framework of IPM to develop strategies that when combined can deliver significant results in the arena of fly control

Links:

Barn Flies Management Guide: New York State Integrated Pest Management Program

Using Parasitoids in an Integrated Pest Management Approach to Control Flies on Dairy Farms:

Examples of Home Made Traps

Click on the picture to learn more

Dairy fly trap

Horse fly trap

Cow vacumn for horn flies

Ferral pig trap

5 Cultural Controls

Are Deer our Most Invasive Pests?


Photo Credit: Cornell University

Cultural controls are practices that reduce pest establishment, reproduction, dispersal, and survival. For example, following strict quarantine protocols when bringing new animals into your system will help prevent the spread of pests and disease.

We've all been there. Driving blissfully along a back country road. The last rays of the amber sun are peeking through and around the Catskills and the windows are down just enough to smell the tedded hay in the fields. You can see your driveway up ahead as you put your blinker on and check the clock, just in time BAAAAAMMMM! You look ahead to see the deer flying over your windshield and you slam the brakes. For many of you this scenario is all too familiar. I myself have hit three deer in the five years that I have lived in the Hudson Valley and it never gets any easier.

Deer are a product of our landscape manipulation. These native ruminants, once rare in these parts, prefer the transitional landscapes that we enjoy in our yards. Where the forest meets the grass is where you will find the deer munching away. Our robust apple and field crop industries also provide nutritious food for the deer throughout the growing season. Further easing their way, most of their natural predators have been eliminated by humans though landscape modification. We have created a perfect scenario for the deer population to explode and we are now facing the consequences thorough destroyed gardens, lost crops, and damaged vehicles. Integrated pest management allows us to consider the issue from a scientific point of view where utilization of one or multiple treatment options allows us to effectively eliminate or deter the pest population.

In this scenario we are going to assume that we are working with a home owner in Wallkill. They have 2 acres, 2 neighbors, a lazy dog and a trampoline in their yard. We have easily identified the pest that is wrecking the landscaping around the house by the jagged bite marks on the plants, the tracks, the scat, oh, and the six deer that are in the yard every night at dusk. Our threshold for damage was met ages ago when we lost most of our original landscaping to the deer and even some of our trees when the deer ate the bark in the winter time.


Deer Damage to Trees
Photo Credit: MSU Extension

Now that we understand the problem, we can figure out a way to mitigate it. The simplest way to lower the deer population would be to use lethal tactics and shoot them. This action would be considered a mechanical treatment of pests. Unfortunately this is not going to be an option because we are too close to our neighbors to use a gun and we do not know how to use a bow. We did some research on noise and light deterrents but the data indicates that deer become used to them quickly and you are right back where you started, albeit a little poorer. There is the option of utilizing a chemical repellant but these must be applied after any significant rainfall or heavy dew and this is simply not an option for our busy lifestyle. The last option is the cultural component that will modify the environment to make it less favorable or undesirable to the deer population.

The most effective way for us to deter the deer is to plant trees and shrubs that the deer do not prefer around the house while building a small four foot tall fence around our vegetable garden. Deer do not like to jump into small areas and will avoid the garden, and after finding that their meal ticket has been revoked they will eventually locate better shrubs to munch on. While the cultural component of this treatment doesn't work as rapidly some of the other methods, it will be longer lasting.

This scenario is a good example of how combining aspects of IPM can allow you to formulate the most effective strategy for controlling your pest problem.

Dealing with Residential Deer Impacts

Plants Resistant to Deer Damage

6 Mechancial and Physical Controls

Keeping Your Flock Safe From Aerial Predators


Northern Goshawk
Photo Credit: Cornell Ornithology

Mechanical and physical controls kill a pest directly, block pests out, or make the environment unsuitable for it. Traps for rodents are examples of mechanical control. Physical controls include mulches for weed management, steam sterilization of the soil for disease management, or barriers such as screens to keep birds or insects out.

There is nothing worse than losing an animal. It is especially difficult when that animal is killed by a predator while under your watch. Summer is the time of year when our laying flocks are out on pasture and feasting on the mid-summer bounty of bugs, plants, and whatever else then can get their beaks on. Spending all this time eating and laying, it is no wonder that the chickens are easy prey to death from above. Aerial predators such as hawks and eagles are difficult to deter, and because they are an organism capable of learning, they are especially difficult to control once they get a taste for your plump tasty flock.

IPM directs us to identify the pest, quantify its damage, and set a treatment threshold. For example, let's say that through observation we have identified the animal preying on our chickens is a Northern goshawk, and because of the persistent nature of the species, we have set the treatment threshold at one dead bird.

Now that we have met our threshold it is time to decide on our treatment. Goshawks are protected by the migratory bird species act and it is illegal to utilize lethal force to control them, therefore we must do our best to design deterrents that do not harm the predators. The most obvious and effective strategy would be mechanical. We could design a covered run using poultry netting to protect our flock while they are out foraging in the daytime. The protected run is very effective but can be expensive to purchase and set up, and will not work in deterring predators in a free range system.

Other mechanical strategies include setting up pallets or boxes where the chickens can hide if they are alerted to the presence of a predator. These boxes can be moved with the chickens as needed so they work well in pasture systems. Some folks have had success with utilizing hanging compact disks, or stringing fishing line around to deter the hawks. This may work for a while but the birds will become habitualized to these strategies, decreasing their effectiveness as time goes on.

Chemical treatment of pests are not an option because they could harm these protected birds so we are left to explore biological strategies for control. Most of us do not have roosters in our flocks but keeping a few in your flock can help in the fight against avian predators. Roosters are natural watch guards and if you observe their behavior you will see that they scan their surroundings for signs of predators. When a predator is discovered, the rooster will emit a predator-specific call that will send the flock ducking for cover or to head back into the shelter. There have even been cases of roosters fighting off predators.

The other biological strategy you can utilize is to breed for hardiness and avoidance behavior. Basically, any birds in your flock surviving to winter possess the genetic know how to avoid the predators and those that did not make it were deficient in this area. If you retain these birds from your flock and breed them with your best roosters you will work to promote these traits in your flock. This process is nothing new and is the reason that heritage breeds tend to be hardier and far better at avoiding predation than production animals.

These mechanical and biological control strategies can be effective in halting predation by aerial predators but as with the other modalities of control there is one other natural strategy. Predators are beings that hunt native prey animals. Whenever we have a predator-to-prey ratio that is out of balance there will be difficulties. If we do our best to understand the natural prey and its pre-

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Chemical Control of Parasitic Worms

Chemical control is the use of pesticides. In IPM, pesticides are used only when needed and in combination with other approaches for more effective, long-term control. Pesticides are selected and applied in a way that minimizes their possible harm to people,

Non-target organisms, and the environment. With IPM you'll use the most selective pesticide that will do the job and be the safest for other organisms and for air, soil, and water quality; use pesticides in bait stations rather than sprays; or spot-spray a few weeds instead of an entire area.

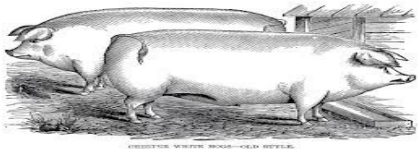
Photo Credit: Susan Schoenian.

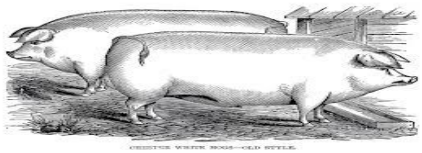
The barber pole worm has caused serious issues for small ruminant producers across the nation. The unknowing overuse of chemical deworming agents has made the issue even more pressing as the parasites evolved and became resistant to a wide array of anthelmintics. In keeping with the tenets of IPM we will first identify the pest and assess the pest numbers and damage. There is a simple way to do this with small ruminants which is known as FAMACHA. Basically a producer checks the animal's membranes to see how red they are compared to an official chart. The deeper the red color, the healthier the animal. Barber pole worms feed off of red blood cells and as the parasites continue to feed, and as the animal continues to weaken, there is less blood available in the membranes and they show paler. Checking the official color chart we can see that four of our ten milking goats are being significantly affected by barber pole worm. One goat being significantly affected by the parasite is our threshold so we must take action from a whole flock perspective.

Now that we have set and met our treatment threshold we can go ahead and plan our intervention. There is no way to mechanically remove the parasites from inside the animal and there are no traps to catch them so the mechanical treatment will not be effective in this case. Culturally there are some changes you can make to your grazing system such as rotating the animals more or creating safe pastures but the affected producer does not currently have the acreage to make this a viable option. The best biological control for these parasites is desiccation due to exposure to the sun but this treatment, like the cultural controls, requires safe pastures and more space than we currently have. The final treatment option is chemical.

Chemical controls can be very effective when used appropriately and this case calls for selectively treating only those animals that have met the treatment threshold. Blanket treating all of the animals will promote resistance and lower our chances of effectively treating the pests.

In keeping within the teaching of IPM we will also utilize an appropriate dose depending on species, rotate our dewormers as necessary, and allow our animals to shed the parasites in a pasture that we will then quarantine for some time until we are sure that the parasite that survived the deworming have been killed by the elements.





Keeping Flocks Safe (Con)

ferred habitat, we can steward these specific areas and hopefully increase the prey population on our property. This has the advantage of providing the predators with more of their natural prey and hopefully keep their stomachs full of these critters instead of the ones you are raising for profit. In the case of the goshawk, we have come to understand that these birds prey upon a variety of other birds, amphibians, and mammals. If we were to allow a few patches of the farm to form small thickets, this would provide shelter and habitat for native rabbits that may encourage our hawk population to feed on the native bounty as opposed to our livestock

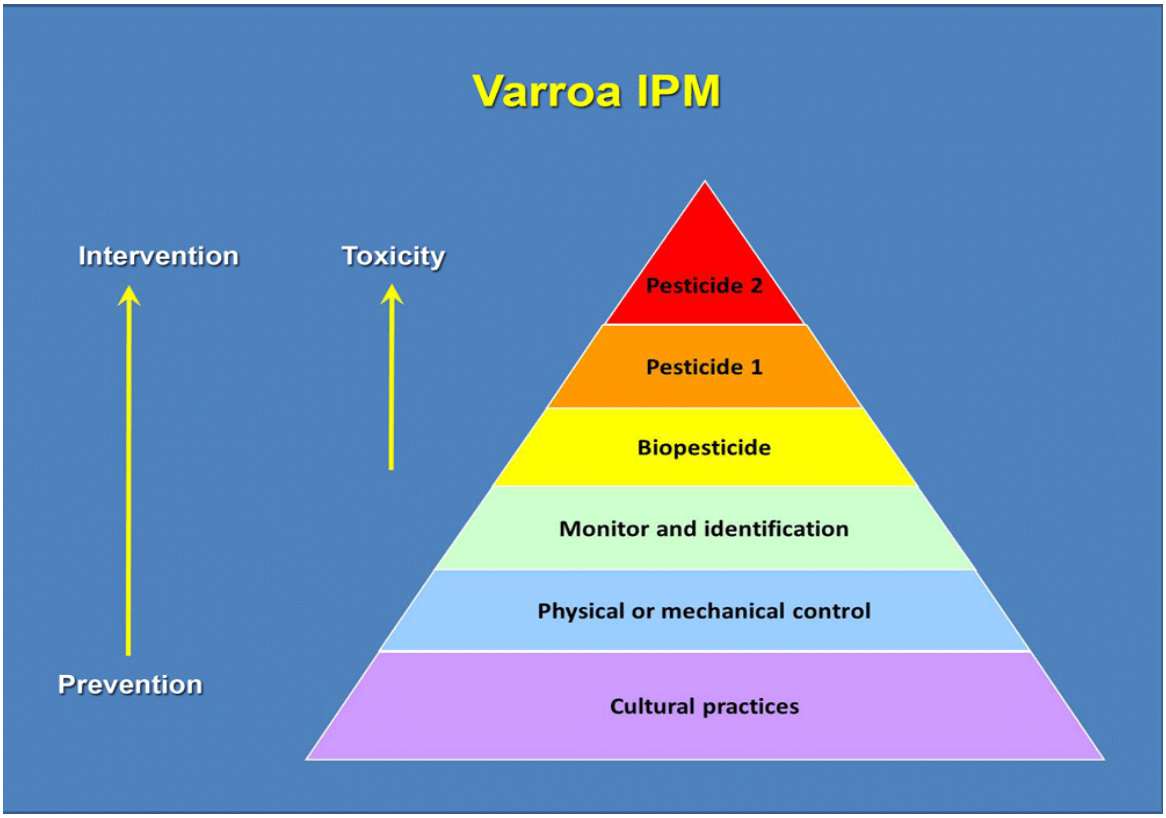
to apply the treatment. Longer periods between treatments also extended the useful life of a given pesticide or family of pesticides having the same mode of action by slowing resistance.

Later on, the phrase "integrated pest management" was introduced which expanded the concept of integrated control to include all classes of pests and to include other control measures in addition to chemical and biological controls. Genetic, cultural, mechanical, and physical tactics were added to the IPM arsenal. In 1972, President Richard Nixon directed federal agencies to promote the concept and application of IPM to all relevant sectors. This expanded approach to pest management included the cooperation of entomologists, nematologists, plant pathologists, and weed scientists. Much of the applied research that makes up the core of the IPM programs has been developed since the 1970s at land-grant colleges and universities in the US, and their counterparts from other parts of the world.

Although IPM's early focus was on agricultural field pest management, it now includes diseases, weeds, and other pests that infest homes, commercial buildings, landscapes, and animals. Schools, golf courses, dairies, and poultry operations are just a few examples of areas which use IPM today.

A note on these scenarios: Each of the following examples has been simplified in order to focus on each of the treatment options in IPM. In reality, treatment options will most likely involve a combination of controls and treatments in order to achieve the most effective results.

Full Article



Utilizing IPM to Protect Bee Populations

What Integrated Pest Management Means For Today's Beekeeper

Wm.Michael Hood,Dept.ofEntomology, Soils, and Plant Sciences, Clemson University

Integrated Pest Management, or simply IPM for short, is a phrase that is familiar to many beekeepers today. This concept of pest management seeks to control pests using a variety of strategies that are safe, effective and economical and will lead to a sustainable level of control. The concept and application of IPM should be covered in all beekeeping short courses that include pest management. My colleague and good friend Nicholas Calderone at Cornell University states this well when he said, "a discussion of IPM is important at anytime because it always represents the best long-term approach to the problem of pest management. "

Beekeeping IPM Principles

There are eight basic principles of a beekeeping IPM program:

Acceptable pest levels: The emphasis here is on pest control rather than on pest eradication, because complete elimination of a pest is sometimes impractical and often impossible. A pest eradication program is often too costly and environmentally prohibitive. As for the US beekeeping industry, a recent pest to enter the US is the small hive beetle which was first collected in South Carolina in 1996, but was not properly identified till July 1998 from beetle collections in Florida. Following this first identification, surveys were soon conducted in the Southeastern US for small hive beetles and reports indicated that the pest was found to be wide spread in the coastal areas of four SE states. Not only was the pest found in managed colonies, but they were also found in feral colonies as well. Once a beekeeping pest is established in the wild, any efforts at eradication is a real challenge and very costly. Apparently, eradication efforts for small hive beetles in the US were not seriously considered. Therefore, the US beekeeping industry has set out to establish "acceptable pest levels" using treatment thresholds or action thresholds which can be defined as the pest population level at which significant control is necessary to prevent the pest population from reaching the economic injury level. For the beekeeping industry, the economic injury level is the pest population level that colony collapse is expected, regardless of control efforts. These thresholds are pest, site, and time specific and must be re-developed or confirmed in regions outside the region for which they were developed. Using a research-based treatment threshold system will eliminate many unnecessary treatments, thus slowing down resistance of a pest to a specific plant-derived or synthetic chemical.

Photo Credit: Cornell University

Preventive cultural and regulatory practices. The national "Honey Bee Act" of 1922 was passed by Congress and signed into law by the President in 1922. The Act was mainly a result of an effort to protect our honey bees from the Isle of Wight disease that had occurred in other parts of the world. This legislation restricted the importation of live adult honey bees into the US and has played a major role in reducing the chance of honey bee pests and diseases from entering the country. A cultural change has taken place in the Southeastern US where small hive beetles are a problem. Most beginner level short courses in the past have taught beekeepers to place their colonies in apiary locations that receive morning sun and afternoon shade. However, beekeepers are now advised to locate their apiaries in full sun rather than shade to reduce small hive beetle reproduction.

Monitoring or scouting practices. A good understanding of the biology and behavior of a pest, along with early detection will normally offer the beekeeper time to use non-chemical options. Most pests have a seasonal life cycle which is predictable and therefore a monitoring program can be more focused at certain times of the year. Since insects and mites are cold-blooded, their development is temperature-controlled and development cycles have been recorded based upon accumulated degree-days. In most cases concerning honey bees and their pests, they live in mostly a temperature-controlled environment, so development time is easier to predict. Varroa mites are a good example of a honey bee pest which monitoring is essential for effective control, especially during some parts of the season. Reliable survey techniques that have been rigorously tested are always needed in an effective IPM program. Varroa mite detector boards, ether role, and alcohol wash are tools used to monitor or survey for this pest. Varroa mite treatment thresholds have been developed in some regions of the US.

Genetic control. Genetic practices include the release of sterile or incompatible individuals with the intention of flooding the population with inferior stock The Russian Honey Bee Breeding Program, lead by USDA/ARS bee scientist Thomas Rinderer, was begun in 1997 when queens were imported into the US from Russia. Colonies headed up by Russian queens show resistance to varroa mites as well as some tolerance to small hive beetles. Varroa sensitive hygienic (VSH) bees have been selected from present US honey bee stocks and they also show a tolerance or resistance to varroa mites.

Mechanical control. In the beekeeping industry, many mechanical control tools are used to maintain pest populations below a treatment threshold. More drastic measures, such as chemical control, are recommended when the pest population reaches the treatment threshold level. However, mechanical control is highly recommended for honey bee pests, such the small hive beetle. Hand smashing, vacuuming, and trapping are examples of recommended control measures for this pest. The use of screened bottom boards is recommended for varroa mite control which allows the varroa to fall to the ground and not recover.

Physical control. Physical practices include the use of heat, cold, light, humidity, carbon dioxide, light, ventilation or sound to control a pest. Most pests have physical limitations that affect their activities or survival. Freezing temperatures are an excellent way of killing or controlling wax moths and small hive beetles in stored drawn comb. Light and ventilation are also recommended for control of wax moths in stored drawn comb. Heat has been shown to affect varroa survival and placement of colonies in sun may aid in control of this pest. Placement of colonies in sun will also create drier soil conditions which disrupt the lifecycle of small hive beetles.

Biological control. Natural biological processes or materials such as beneficial insects or various pathogens offer safe and sometimes economical methods of pest control. A Bacillus thurengensis (BT) product, Certan®, was once registered for wax moth control in stored comb but the registration of this product has been withdrawn and is no longer available in the US. Soil nematodes, Heterorhabditis indica, are currently marketed in the US (Southeastern Insectaries, Inc., Perry, Georgia, ph. 1-877-967-6777) for small hive beetle control as a soil treatment to kill beetles when they enter the soil to pupate.

Chemical control. Synthetic pesticides played a major role in the management of honey bee pests like varroa mites following their first discovery in the US. Most beekeepers quickly jumped on the pesticide treadmill beginning in the late 1980s and many simply wanted to know when to place the pesticides in the hive and when to remove them. Some beekeepers elected to illegally use products not labeled for beekeeping pests, such as varroa. Within a few years of repeated use, some beekeepers began to report that products like Apistan ®and Checkmite +® were no longer effective for varroa mite control. If these products had been used by beekeepers in an IPM approach and only when necessary requiring longer periods of time between treatments, the useful life of these synthetic chemicals would likely have been prolonged. Pheromones, attractants, and repellants are other chemicals that play a role in beekeeping pest management.

For full article click here

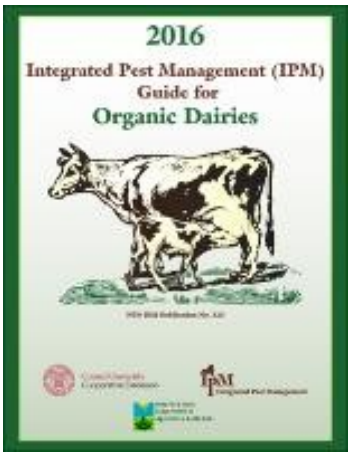
Keeping Flock Safe (con)

increase the prey population on our property. This has the advantage of providing the predators with more of their natural prey and hopefully keep their stomachs full of these critters instead of the ones you are raising for profit. In the case of the goshawk, we have come to understand that these birds prey upon a variety of other birds, amphibians, and mammals. If we were to allow a few patches of the farm to form small thickets, this would provide shelter and habitat for native rabbits that may encourage our hawk population to feed on the native bounty as opposed to our livestock

Finding useful and accurate data can be difficult in the vast noise of the world wide web. Luckily I have compiled a list of species specific publications that provide guidance into the process of integrated pest management. Cornell has an excellent page devoted to the subject that is also linked below.

General IPM Links

New York State Integrated Pest Management
Biointensive Integrated Pest Management



Poultry

Pest Management Recommendations for Poultry

Swine

Pest Management Recommendations for Sheep, Goats, and Swine

Cattle and Horses

Pest Flies of Pastured Cattle and Horses
Barn Flies Management Guide
2016 Integrated Pest Management Guide for Organic Dairies
Pest Management Recommendations for Horses

Small Ruminants
Integrated Management of Flies in and around Dairy and Livestock Barns

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Getting Started with Rotational Grazing

This is a 2-day hands-on clinic that will provide you with the practical skills to implement a rotational grazing system on your property. Join CCEUC Livestock Educator, Jason Detzel, to explore the topic of rotational grazing and how you can utilize this tool to improve the efficiency of your operation and the overall health of your animals.

Rotational grazing can increase your profits by lowering your feed costs, improving your pasture swards, decreasing your on farm labor, producing healthier animals, and combatting parasites.

The clinic will be divided into 2 parts:

- **August 25: Classroom portion** of the clinic at CCE Ulster County (232 Plaza Road in Kingston)
- **August 26: Farm visit** at a participating farm (specific location to be announced after registration).
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You're not required to attend both the class and farm visit, and registration pays for both, but you must attend the class August 25 class to attend the August 26 farm visit.

http://ulster.cce.cornell.edu/events/2017/07/21/getting-started-with-rotational-grazing

Contact Information

Cornell Cooperative Extension of Dutchess County
2715 Route 44, Suite 1
Millbrook, NY 12545
(845) 677-8223
Jennifer Fimbel, Livestock Educator
jlf20@cornell.edu
Stephanie Radin, Agriculture Program Leader
sradin@cornell.edu

Cornell Cooperative Extension of Orange County
18 Seward Ave.
Middletown, NY 10940
(845) 344-1234
Rachel Moody, Equine and Livestock and Dairy Educator
ram72@cornell.edu
Maire Ullrich, Agriculture Program Leader
mru2@cornell.edu

Cornell Cooperative Extension of Sullivan County
Extension Education Center
64 Ferndale-Loomis Rd.
Liberty, NY 12754
(845) 292-6180
Michelle Lipari, Livestock Educator mml249@cornell.edu
Melinda Meddaugh, Agriculture Program Leader
mm2592@cornell.edu

Cornell Cooperative Extension of Ulster County
232 Plaza Rd.
Kingston, NY 12401
(845) 340-3990
Jason Detzel, Livestock Educator
Christian Malsatzki, Agriculture Program Leader
cpm78@cornell.edu

WEEKLY LIVESTOCK UPDATE

Are you receiving Livestock Weekly Update by e-mail on Fridays? If not, go to http://eepurl.com/bei625. Choose Commercial Livestock as an option (you can choose other topics too). Keep up to date with programs, alerts and news for livestock producers. Livestock 36o is