



Pest Management

by Kert Young, Extension Brush & Weed Specialist

Pest Costs

Pest damage to crops, industry, environment, health, and buildings costs society billions of dollars every year. Pest problems occur nearly everywhere and affect every person. *Helicoverpa zea* is a moth with several common names including corn earworm, tomato fruitworm, cotton bollworm, and 'head worm' for small grains. The wide range of crop names for this pest hints at how extensively just one pest can damage sources of food and fiber. Constant monitoring and careful management are required to prevent this pest from significantly reducing the quantity and quality of crops not only in commercial fields but in private gardens, as well. The food industry is frequently scrutinized for pest contamination. Listeria, Salmonella, and other microbes have contaminated food to be sold to the public. The estimated costs for food safety incidents (notification of the public, product recalls, related lawsuits) were estimated at \$7 billion annually in the US (Hussain and Dawson, 2013). Costs related to humans infected by the mosquito-borne, West Nile Virus amounted to \$778 million in the US (1999-2014) and 1200 virus-associated deaths (Staples et al., 2014). Although not living, buildings also are negatively impacted by pests. Su (2002) estimated annual economic losses at \$11 billion due to termites damaging wooden structures in the US.

Some of the easiest pests to find are weeds. Rangeland weeds, both domestic and introduced are expensive to control. In the US, it costs \$2 billion annually to manage weeds including economic impacts to livestock producers (DiTomaso, 2000). One of the most common ways to control agricultural pests is through the use of pesticides. Pesticide production is a \$32 billion industry each year. Five billion pounds of pesticide are applied to crops annually, worldwide (Sexton et al., 2007).

Integrated Pest Management

Pest management emphasizes improving system condition and sustainability while minimizing damage, risks, and costs associated with management practices. Pests are most successfully controlled long term when managed using an integrated pest management plan at the ecoregional scale. Integrated pest management evaluates all threats to the

integrity of the whole system. Treating the causes of system degradation rather than only treating symptoms is essential to integrated pest management success (Hobbs and Humphries, 1995). Integrated pest management considers all combinations of appropriate methods and tools to reduce pest damage below the economic or ecologic threshold, which vary by location and management objective. Above the threshold, it becomes financially beneficial to invest in control treatments to reduce pest population density or extent. For ecological thresholds, pests should be controlled before the loss of a critical component of the system that would jeopardize the value, integrity, or self-sustainability of the system. The ideal outcome of pest management is a healthy and productive system that functions properly; is long-

term, self-sustaining with the ability to resist damaging disturbances in the future; has the capacity to recover when disturbed without requiring external inputs; and provides the values (e.g., goods and services) that can be expected of the system.

Prevention

Preventing the introduction and establishment of pests should be the goal of everyone because pests place a major burden on the environment and welfare of society. The spread of pests needs to be confined to their current extent and uninfested areas need to be protected from new pests whether the pest has been in the area for a long time or on the brink of entering. Localized pest problems become regional problems when pest transport is not carefully managed. Wind, water, and especially modern forms of transportation introduce pests into uninfested areas. Almost all areas contain some type of pest. Whenever animals, produce, equipment, and essentially anything is moved from a pest-infested area to an uninfested area, the items being moved need to be checked for pests and cleaned before transport, as needed.

Quickly controlling pest outbreaks saves money compared to controlling pests after they have spread more widely. One of the most effective and least expensive approaches to pest management is to maintain healthy system conditions. Stressed organisms are more vulnerable to pest attacks and in turn can serve as hosts that further enable pests to reproduce and spread farther. A healthy system resists pest attacks by not leaving resources easily available for the growth of new pests. If a pest does enter the system, a healthy system is resilient and quickly overcomes pests and returns to the pre-invaded condition. This is similar to a healthy animal that rarely becomes sick but when it does has a strong immune system that recovers quickly. In terms of crop pests, rapid pest control maintains high quality products in greater quantity, which makes environmental and financial sense for agricultural producers and society welfare as a whole.

Even without human involvement, some pests fly, hang on to migrating wildlife, or crawl into uninfested areas. To help prevent the spread of pests, they quickly need to be contained. Incorporating barriers into management practices to prevent pest movement makes it easier to minimize the spread of pests. Green houses, hoop houses, row crop covers, and baggies on fruit can reduce the spread of pests to neighboring areas.

Pests Control Treatments

While there are several pest management options, they can be organized into a few categories including biological, chemical, cultural, fire, and mechanical. The potential positive and negative effects of each treatment type should be considered when planning pest management for example, treatment longevity and severity of environmental disturbance. Before selecting management practices to control pests, consider how the proposed management practice will affect the beneficial organisms that naturally limit or feed upon other potential pests and overall system sustainability. Practices that harm both pests and desirable organisms are counter-productive and lead to increased costs because of the need to treat not only the original pests but also the need to treat other pests that previously were suppressed by the now missing species.

Collaboration

Cooperative pest-management groups are essential to providing a regional response to pest invasions. Individual pest control efforts are useful and should continue but without controlling offsite pests the continual reintroduction of pests from the outer areas into small treated areas makes pest control a perpetual problem. Pests spread wherever conditions allow. Greater pest management success on a regional scale may be achieved when people work together and pool resources. Working within pest management groups, spreads out costs of pest control by improving economies of scale, for example, buying chemical control agents in bulk rather than in small and more expensive quantities or sharing expensive treatment equipment. People working together toward a common goal improves individual and group

motivation over the long term. The New Mexico Department of Health, for example, is part of a nation-wide network with the Centers for Disease Control and Prevention. This network monitors and shares information on emerging health issues, which enables a rapid and organized response to the spread of infectious diseases (Emerging Infections Program, 2018).

Summary

Understanding pest biology, environment, and appropriate management practices are prerequisite to developing a coordinated and integrated management plan that combines the most effective combination of management practices to maintain long-term pest control and improved system conditions at the lowest cost. This requires regular system monitoring. The most cost effective form of pest management is to maintain healthy systems that inherently are resistant to pest invasion and quickly recover if pests do establish. New Mexico State University, Cooperative Extension Service Specialists are eager to help county cooperative extension agents in every county of New Mexico to assist all of the people in NM.

Literature

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*Strengthening Our
Agriculture Roots*
Empowering Women through Agriculture

April 24-25, 2019
Sagebrush Inn & Suites
Taos, NM
Event Agenda

Day 1 - April 24

- 1:00 – 1:30 pm Registration Chamisa Lobby (Conference Center)
- 1:30 – 1:45 pm Welcome
- 2:00 – 2:45 pm Keynote Speaker: Dina Chacon, New Mexico Beef Council Executive Director
- 2:45 – 3:30 pm Family Dynamics by Brenda Mack, Cain Cattle Company, Mountainair, New Mexico
- 3:30 – 4:00 pm Networking Break
- 4:00 – 4:45 pm Estate & Succession Planning for Farmers and Ranchers by Jim Parker, XXX
- 5:30 -6:30 pm Dinner
- 6:30 – 7:30 pm Social Event

Day 2 - April 25

- 8:30 – 9:15 am “So you want to Stand Out” by Vonda Frost, SI Cattle Co., High Desert Chronicle Asst. Editor and Sonja Serna, NMSU Multimedia Specialist
- 9:15- 10:00 am Livestock Drug use and labeling by Elaine Blythe, Associate Professor of Veterinary Pharmacology St. Matthews University
- 10:00 -10:30 am Networking Break
- 10:30 – 11:20 am Workshop Rotations - 1
Low stress cattle handling- Tammy Pate, Elkhorn Ranch, Montana
Tractor Safety- Valerie Huerta, NM Farm and Livestock Bureau, Director of Organization
Trailer Safety- Sage Faulkner, 4F Cattle Co.
- 11:30 – 1:00 pm Lunch
- 1:00 – 1:50 pm Workshop Rotations - 2
- 2:00 – 2:50 pm Workshop Rotations - 3
- 3:00 pm Capnote Speaker: Larry Torres, UNM Professor

Event Presented by:



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UPCOMING EVENTS

NMSU Bull & Horse Sale

Saturday, April 27th

NMSU Campus

Indian Livestock Days

May 7th, 8th, & 9th

Route 66 Hotel Casino – Albuquerque, NM

US Beef Academy

May 12th – May 17th

Corona, NM

New Mexico Youth Ranch Management Camp

June 9th – June 14th

CS Ranch Cimmaron, NM



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