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Agricultural Experiment Station

ARTESIA AGRICULTURAL SCIENCE CENTER

2023 ANNUAL REPORT

THE NMSU AGRICULTURAL EXPERIMENT
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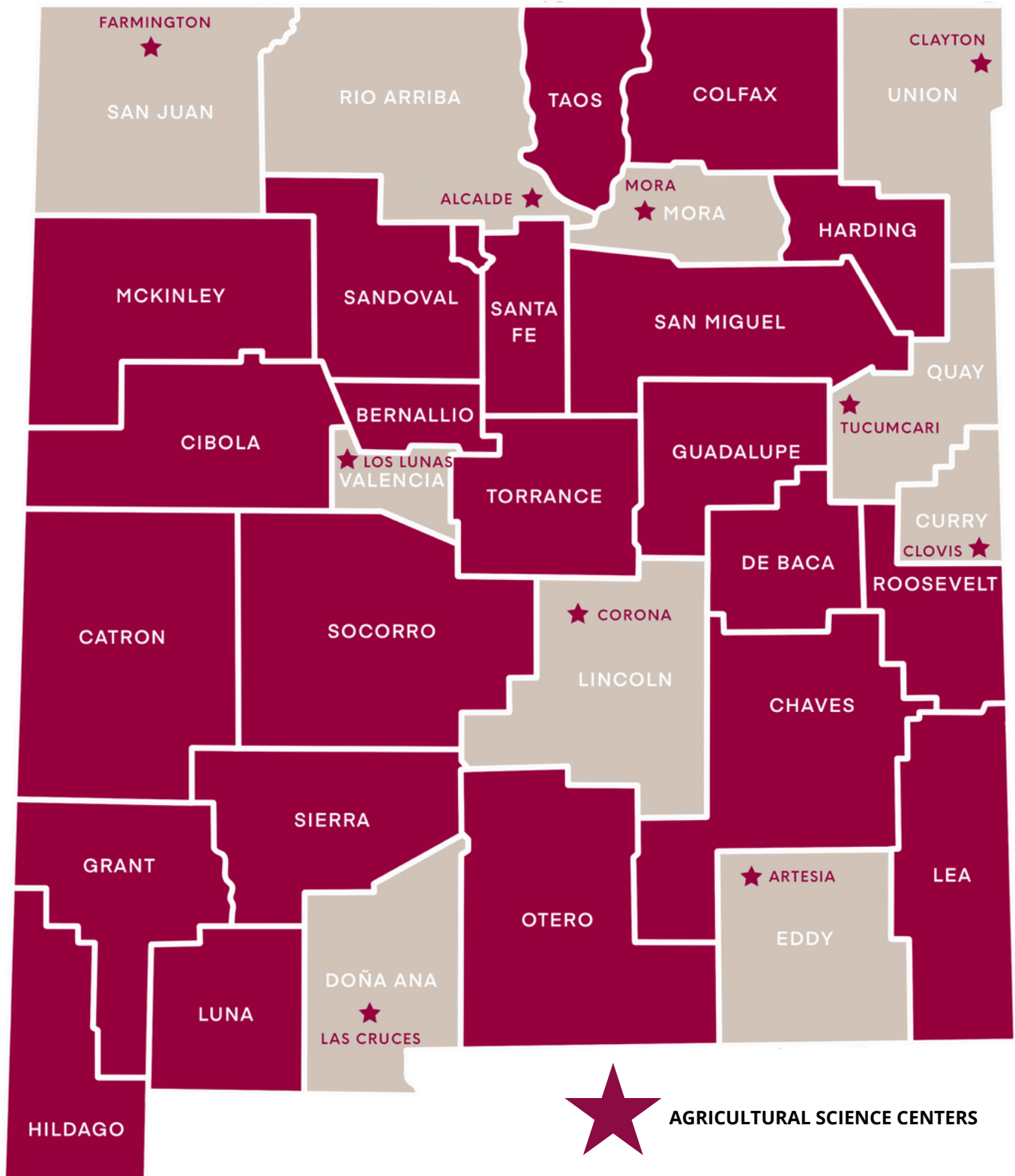
NOTICE TO USERS OF THIS REPORT

These are not formal Agricultural Experiment Station research results. Readers are cautioned against drawing conclusions or making recommendations as a result of the summaries in this report. In many instances, data represents only one of several years' results that will ultimately constitute the final formal report for a project.

None of the data are authorized for release or publication without the written prior approval of the New Mexico Agricultural Experiment Station.

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AGRICULTURAL SCIENCE CENTER LOCATIONS MAP



EXECUTIVE SUMMARY

The year 2023 brought growth to the Agricultural Science Center at Artesia. The never-ending extension work performed by resident faculty continued to support local growers, using ongoing and continuing research to provide science-based solutions. Identifying new and novel pests in southeastern New Mexico and how to combat them as well as soil/crop management in our constantly changing semi-arid environment continue to be at the forefront of research at the center. Variety trials for alfalfa and cotton continued at the center as well as investigation into biological controls of major crop pests in New Mexico. The extreme heat and low precipitation at the center and across the region brought many difficulties last year which heightens the importance of work being done on crop management and irrigation techniques in the AES system.

In alignment with the state-wide ASC structure, the positions of Farm Manager and Assistant Farm Manager were created and filled in the spring of 2023. These positions augmented the staffing number at the center, which is always welcomed, but also allowed for new ideas and new collaborations to prosper. A concerted effort was made to maintain the headquarters and entry to the center. This included consolidation and relocation of equipment being repaired or past its useful life to more proper areas, reinvigorating the front entrance with new flora, and increased maintenance of parking lots and road frontages. This concept was carried throughout the center as plots and fields across the farm were cleaned, cultivated, and prepared for future use.



One of those uses was a healthy soils project born from a collaboration between ASC Artesia and Eddy County Extension Service. As fields were reinvigorated, so were the irrigation infrastructure and farm equipment over the course of the growing season. A new 6R 155 tractor was purchased which updated an aging tractor fleet but also brought with it a GPS system that can be utilized across the center to increase accuracy and efficiency of field-work. While challenges always remain, the team at ASC Artesia has remained steadfast in their mission to improve and further agriculture in southeast New Mexico.

RESEARCH HIGHLIGHTS



MANAGEMENT OF SOILS IN THE PECOS VALLEY

Investigator: Robert P. Flynn (rflynn@nmsu.edu)

PROJECT OVERVIEW

Soil health continues to be a relevant concern in an age defined by problematic changes in climate. New Mexico soils are an integral support system for important crops like alfalfa, hay, pecans, and cotton. Healthy soils support healthy crops, so it is essential to assess the welfare of New Mexico soils.

MEETING THE NEEDS OF NEW MEXICO

Hosting educational seminars and participating in the Certified Crop Adviser (CCA) programs helps to educate the New Mexican farmers, homeowners, and future farmers such as elementary school children on how to better care for their soils. Additionally, traveling around the state to conduct soil tests and assess properties benefited local communities and underserved groups.

IMPACT

The programs and seminars hosted this year boosted community literacy on awareness of soil health and the importance of nutritional timing for sustainable farming. Participants in grade school educational efforts learned essential concepts about soil health, while CCA participants learned effective practices for caring for New Mexico crops. The programs helped to improve sustainable practices on soil and water usage, benefiting the state's agricultural industry for years to come.

FUNDING ACKNOWLEDGMENT:

NMSU Agricultural Experiment Station and NMDA

COLLABORATING AGRICULTURAL SCIENCE CENTERS:

Texas A&M AgriLife in El Paso, Clovis Agricultural Science Center, and Rex E. Kirksey Agricultural Science Center in Tucumcari



Soil compaction probe taking samples from healthy soil fields

STATEWIDE ALFALFA VARIETY TESTING

Investigators: Robert P. Flynn (rflynn@nmsu.edu), Mark Marsalis, Leonard Lauriault, I. Ray, and C. Pierce

PROJECT OVERVIEW

Choosing which variety to plant is one of the first steps for a grower to take when deciding to plant alfalfa. Variety trials provide those key factors which allow them to be able to make informed decisions. In 2023, 42 varieties were tested among 3 trials at the NMSU Agricultural Science Center at Artesia.

MEETING THE NEEDS OF NEW MEXICO

Alfalfa hay is often one of New Mexico’s top cash crops. Growers need to know which varieties are the best performing for their area, therefore testing is needed in multiple locations around the state including Artesia.

IMPACT

Improving crops for the needs of New Mexico farmers through yield and crop quality Alfalfa is an excellent source of fiber and high-quality protein needed for most dairy cow diets. However, traits such as lignin, an indigestible phenolic compound in alfalfa cell walls provide structure to the plant, but it is not digestible. The trait that is introduced into the genetics of alfalfa can increase fiber digestibility by 10% and decrease manure by 2.8M tons per year. Our mission is to assist breeders from campus and private companies to determine whether their genetics apply to NM growing conditions and soils. Alfalfa alone in NM garnered \$1.7 billion in cash receipts in 2022. (NMDA 2022 Agricultural Statistics Bulletin).

FUNDING ACKNOWLEDGMENT:

Seed Company entry fees

COLLABORATING AGRICULTURAL SCIENCE CENTERS:

Rex E. Kirksey Agricultural Science Center in Tucumcari, Agricultural Science Center at Los Lunas, and Leyendecker Plant Science Center



STATEWIDE COTTON VARIETY TESTING

Investigators: Robert P. Flynn (rflynn@nmsu.edu), Leonard Lauriault, and Naveen Puppala

PROJECT OVERVIEW

Choosing which variety to plant is one of the first steps for a grower to take when deciding to plant cotton. Variety trials provide those key factors which allow them to be able to make informed decisions. In 2023, 10 varieties were tested at the NMSU Agricultural Science Center at Artesia.

MEETING THE NEEDS OF NEW MEXICO

Cotton has long been a staple of southeastern New Mexico. Conducting variety trials in Artesia will provide growers with the necessary information needed to make informed decisions when it comes to choosing cotton varieties.

IMPACT

Improving crops for the needs of New Mexico farmers through yield and crop quality. Knowing how cotton varieties perform in the various growing areas of New Mexico will lead them to make the best decisions for their farms. Seed companies that support these trials, also can use this valuable information to further breeding lines and help with providing suitable marketing recommendations.

FUNDING ACKNOWLEDGMENT:

Seed Company entry fees

COLLABORATING AGRICULTURAL SCIENCE CENTERS:

Rex E. Kirksey Agricultural Science Center in Tucumcari and Clovis Agricultural Science Center



RESISTANCE TO BT PROTEINS AND TO INSECTICIDES IN NEW MEXICO

INSECT PESTS

Investigators: Jane Pierce (japierce@nmsu.edu), David Kerns (Texas A&M University), Peter Ellsworth (University of Arizona), Gabriel Zink (USDA Arizona), and Robert Bowling (Pioneer Corp)

PROJECT OVERVIEW

The goals of this project are to predict resistance in the early stages so growers are prepared to manage the risk of damage from insect pests. Researchers are evaluating resistance to Bt proteins in a number of ways. One approach has been to work with industry to evaluate the level of resistance to Bt proteins in local populations of *H. zea*, cotton bollworm, corn earworm, and *H. virescens*, tobacco budworm. In previous trials, they also evaluated damage by *H. zea* in multiple Bt varieties. Researchers will do similar trials in 2024 in corn to look at field resistance in eastern NM and will also be looking at significant resistance in southwestern corn borer populations in SW NM.

MEETING THE NEEDS OF NEW MEXICO

New Mexico growers need to be aware of the risk of resistance in local populations. For example, southwestern corn borer caused very high levels of damage in corn in southwestern New Mexico despite growers using Bt corn. Researchers are working on determining the level of resistance with USDA and Texas A&M University. Depending on the level of resistance growers will know whether they should spend money on Bt seed and if they should establish monitoring or trapping programs to manage insects that could be resistant before they cause serious yield losses.

IMPACT

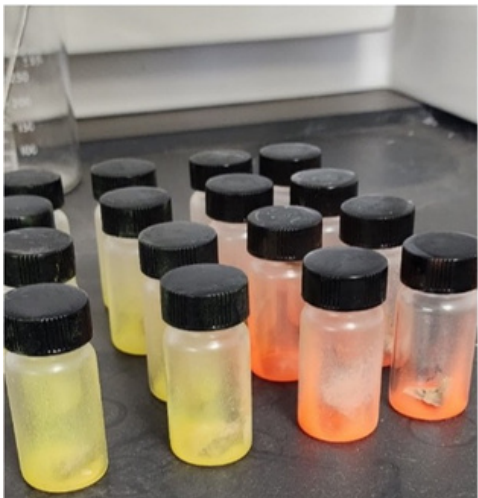
Growers need tools to manage insect pests that are continually adapting to our changing environments and controls. For example, southwestern corn borer caused extensive damage to corn in southwestern New Mexico in 2022 and 2023 becoming resistant to Bt proteins. Researchers are working with a variety of collaborators to determine the level of resistance to one or more Bt proteins in our NM population of southwestern corn borer. An obvious concern is the migration of resistant insects to new areas of NM beginning in the Mesilla Valley. Researchers are working on determining their ability to migrate over time to predict possible issues in other corn-growing areas of NM. Bollworms and tobacco budworms will ultimately become resistant to Bt proteins. Researchers have been working with Cotton Incorporated and seed companies to evaluate resistance to Bt proteins in NM populations of insects and by looking at field damage in NM in multiple varieties of cotton and corn. They are developing tools to control insect pests for when Bt genes no longer provide good control.

FUNDING ACKNOWLEDGMENT:

NMSU Agricultural Experiment Station, Howard Hughes Scholars Program, and the EIP-IPM program, award number 2021-70006-35765

COLLABORATING AGRICULTURAL SCIENCE CENTERS:

Clovis Agricultural Science Center, Leyendecker Plant Science Center, and Agricultural Science Center at Farmington



Bioassay looking at *H. zea* resistance to pesticides

EXTENSION AND RESEARCH IMPLEMENTATION PROGRAM FOR NEW MEXICO

Investigators: Jane Breen Pierce (japierce@nmsu.edu), Leslie Beck, and Phillip Lujan

PROJECT OVERVIEW

The entomology program in Artesia has been involved in the Extension Implementation Program for years. However, in 2023 the entomologist in Artesia took responsibility for managing the program for all of New Mexico. This program includes faculty and staff from Agricultural Science Centers, campus departments, and county offices. The goal is to improve pest management practices in New Mexico with pests identified as nematodes, insects, pathogens, and weeds. The project also includes efforts to manage some beneficials that help control insect pests including predators, parasitoids, and beneficial fungi. Pollinators are also being addressed with pollinator gardens in conjunction with county agent offices and projects with multiple universities and nonprofit organizations.

MEETING THE NEEDS OF NEW MEXICO

The primary objective is to encourage the implementation of pest management techniques particularly those that are not already well advertised by industry. This project represents all areas of integrated pest management with extension and research faculty and staff working in entomology, plant pathology, weed science, and nematology and in a wide range of geographic areas of NM from San Juan County to Las Vegas, NM in the northwest and northeast, to Artesia in the Southeast to Las Cruces, Los Lunas/Albuquerque. Biological control of both diseases and insect pests is an emphasis. Predators for example commonly control 80% control of insect pests but this is not widely known. Improvement of diagnostic capabilities allowing for molecular identification is another emphasis.

IMPACT

Enhancing biological control of alfalfa weevil alone stands to save NM growers over \$1.2 Million per year. Pecan weevil and pecan nut casebearer are targets of our biological control efforts. Pecan nut casebearer eggs often have 80% control in SE NM. Bollworm eggs frequently have 60-70% predation in only 48 hours in the field. An appreciation of the level of free control may cause growers or gardeners to adjust practices for example providing alternate habitats or using insecticides that have less impact on beneficials. For diseases, growers can use soil amendments and biological controls for soil-borne diseases. The impact of more precise identification will be huge and hard to measure particularly with new and emerging pests. A new nematode was identified in NM recently but researchers need to develop in-house molecular techniques to do further identifications for NM growers.

FUNDING ACKNOWLEDGMENT:

NMSU Agricultural Experiment Station and the EIP-IPM program, award number 2021-70006-35765

COLLABORATING AGRICULTURAL SCIENCE CENTERS:

Leyendecker Plant Science Center and Agricultural Science Center at Los Lunas



Artesia Jr. High STEM summer program group

DISTRIBUTION OF KISSING BUGS AND INFECTION RATES WITH *T CRUZI* IN NEW MEXICO

Investigators: Jane Breen Pierce (japierce@nmsu.edu) and Steve Hanson

PROJECT OVERVIEW

In 2022 and 2023, we collaborated with molecular biologist, Steve Hanson and other EPPWS faculty, expanding collections to a broad area of New Mexico with kissing bugs collected from SW New Mexico north to Sandoval County. Areas of emphasis include determining which species are present in different areas of NM, rates of infection, and the best molecular tools to use to determine infection rates of *T. cruzi*, the causative agent of Chagas disease. Three species were collected and analyzed with PCR testing. There was also follow-up sequencing to verify species and infection rates.

MEETING THE NEEDS OF NEW MEXICO

Chagas disease is considered rare to non-existent in New Mexico by most medical providers. Our survey results to date indicate that the rate of *T. cruzi* infection is much higher than the 4% rate determined in the 1960s. While kissing bugs are not very efficient vectors and the simple presence of *T. cruzi* in a population does not equate to high risk, the risk to humans is likely not negligible and a determination of the risks is appropriate. The risk of acquiring Chagas disease might not be high in humans but there are relatively common issues in allergic reactions. Transmission to dogs kenneled outside is high because dogs are consuming kissing bugs. Dogs kenneled outdoors are far more likely to acquire Chagas disease as they readily consume kissing bugs and contract the disease more efficiently than humans.

IMPACT

Awareness of risks associated with kissing bugs will prompt citizens to mitigate risks by controlling kissing bugs or making homes more secure from kissing bugs. Understanding risks to dogs will also cause the public to reduce risk to dogs with simple measures such as not keeping dogs kenneled outside at night or at least turning off outside kennel lights that attract kissing bugs.

FUNDING ACKNOWLEDGMENT:

NMSU Agricultural Experiment Station, Howard Hughes Scholars Program, and the EIP-IPM program, award number 2021-70006-35765

COLLABORATING AGRICULTURAL SCIENCE CENTERS:

Sustainable Agricultural Science Center at Alcalde, Santa Fe, and Grant County Extension Offices



Kissing Bugs



Light trap used to collect kissing bugs and common kissing bugs found in New Mexico

DEVELOPING TOOLS TO MANAGE INSECT PESTS IN NEW MEXICO

Investigators: Jane Breen Pierce (japierce@nmsu.edu) and Ivan Tellez

PROJECT OVERVIEW

New Mexico growers benefit from high levels of natural control from the desert environment and high biological control. The natural environment with low relative humidity and high temperatures results in high mortality for most insect pests. However, with irrigation, the late-season crop canopy is a more hospitable environment due to plant respiration and shade allowing greater survival of insect pests. Researchers are examining this issue to develop management tools to approximate the desert conditions more closely, allowing greater control of insect pests while conserving beneficial predators and parasitoids.

MEETING THE NEEDS OF NEW MEXICO

Many major New Mexico crops cannot produce profits without limiting insecticide applications. This project's objective is to avoid the cost and environmental impact of insecticide applications by using other control measures. Researchers can maximize natural controls using biological controls and cultural controls. While there is currently, usually adequate control in Bt crops, there has been some evidence of resistance which is inevitable. When Bt crops no longer perform effectively, growers will need alternative control measures to control insect pests. Insecticides are the obvious choice but there are resistance issues there as well.

IMPACT

Problems with insecticide resistance and resistance to Bt cotton and corn increase the need for alternative controls. Researchers have previously documented the impact of row spacing, row orientation, and plant spacing on crop microclimate and control of *H. zea*. One current project is examining the use of okra-leaf cotton to create a crop canopy that is less suitable for *H. zea* producing lower survival. Data to date indicates that okra-leaf cotton generally has less than half the hatch rate of *H. zea* eggs exposed for only 48 hours. As resistance to Bt cotton becomes a greater issue okra-leaf cotton can be considered a viable alternative to help control *H. zea* as well as a new incoming pest *H. armigera*. This project provides growers with more tools for managing insect pests without added costs.

FUNDING ACKNOWLEDGMENT:

NMSU Agricultural Experiment Station and Cotton Incorporated (19-312)

COLLABORATING AGRICULTURAL SCIENCE CENTERS:

Leyendecker Plant Science Center



Sentinel eggs on cotton leaf, sentinel eggs in cotton with datalogger

BIOLOGICAL CONTROL OF KEY PESTS IN NEW MEXICO

Investigators: Jane Breen Pierce (japierce@nmsu.edu) and Ivan Tellez

PROJECT OVERVIEW

New Mexico is fortunate in having high levels of biological control; however, it is highly variable depending on the landscape. Higher damage is expected from the loss of effectiveness of Bt crops and the incursion of new pests such as *H. armigera* in cotton and pecan weevil in pecan. Thus, it is becoming increasingly important to develop management techniques to maximize biological control in our major crops. In 2023, we focused on the impact of temperature and canopy architecture on biological control in cotton.

MEETING THE NEEDS OF NEW MEXICO

With developing resistance to Bt genes, it is critical to develop alternative tools for controlling insect pests. In 2023, we further evaluated the impact of okra-leaf cotton to be used as a tool in cotton IPM in New Mexico.

IMPACT

Maximizing biological control will save New Mexico growers money from reduced insecticide applications, reduce environmental impacts, and enhance worker safety. Good biological control of alfalfa weevil will save NM growers \$1.2 Million per year in reduced insecticide applications and reduced yield losses. Biological control of pecan nut casebearer could save growers up to \$1.6 Million/year. We continue to work on identifying key predators of insect pests and conservation methods. Identification of ghost spiders as a key predator in pecan, providing up to 84% predation of eggs will be increasingly important as we identify factors affecting its distribution. Biological control of insect pests in cotton will be increasingly important with resistance to Bt genes. Our focus in 2023 was to determine if okra-leaf cotton was a viable tool to control insect pests while preserving benefits.

To ensure that growers are using effective insecticides when necessary while reducing any impact on beneficials we continued working with faculty and staff at the ASC in Los Lunas in 2023 to determine if Steward, an effective insecticide has less impact on beneficial predators. This knowledge will also help growers justify the higher cost of this insecticide as it will help them avoid a second application by reducing populations to where predators can keep alfalfa weevils under control.

FUNDING ACKNOWLEDGMENT:

NMSU Agricultural Experiment Station, Cotton Incorporated (19-312), and USDA/NIFA EIP-IPM program, award number 2021-70006-35765

COLLABORATING AGRICULTURAL SCIENCE CENTERS:

Agricultural Science Center at Los Lunas (Steward insecticide compatibility with biocontrol) and Leyendecker Plant Science Center (collecting alfalfa weevil parasitoids for release throughout New Mexico)



Ladybug larva feeding on a sugarcane aphid (Photograph by Patricia Monk – NMSU)

LANDSCAPE IMPACTS ON BIOLOGICAL CONTROL OF INSECT PESTS IN NEW MEXICO

Investigators: Jane Breen Pierce (japierce@nmsu.edu) and Ivan Tellez

PROJECT OVERVIEW

Alfalfa hay is a major crop in New Mexico. Our data from 2022 and 2023 indicates hay serves growers as a source of predators and parasitoids that can control insect pests in crops that are less attractive to beneficials. We have examined the impact of alfalfa hay as a source of benefits and control of insect pests for cotton, pecan sorghum, and pecan, although it may affect numerous crops. We have evidence that cotton, in particular, benefits from regular emigration of beneficials from hay. Issues being examined include distance to cotton and the impact of cutting hay on predation in nearby cotton.

MEETING THE NEEDS OF NEW MEXICO

Issues with resistance to Bt corn and cotton make the identification of alternative management tools more imperative. A reduction of alfalfa hay acreage in much of NM means that we can't assume hay will be available to provide benefits to other, less hospitable crops. Data from commercial fields in 2022 and 2023 supports the importance of hay in providing benefits to other crops.

IMPACT

Bt corn and cotton are currently effective in managing numerous insect pests but there are increasing examples of resistance to Bt crops in the US. There have been concerning examples of damage in Bt corn in New Mexico. New Mexico is fortunate in often having high levels of biological control. Predation of bollworm eggs is generally at least 40%, but typically at least 60% and not infrequently 80-90%. When combined with desiccation/heat shock from high temperatures and low relative humidity we often see over 90% control. However, as we see less alfalfa acreage and resistance to Bt genes we will have more issues with control. Our data indicates that hay is extremely important in keeping high levels of biological control in other crops. Data also indicates staggered cuttings would be a more effective management technique, which might be a good strategy for northern NM growers with smaller and organic acreage.

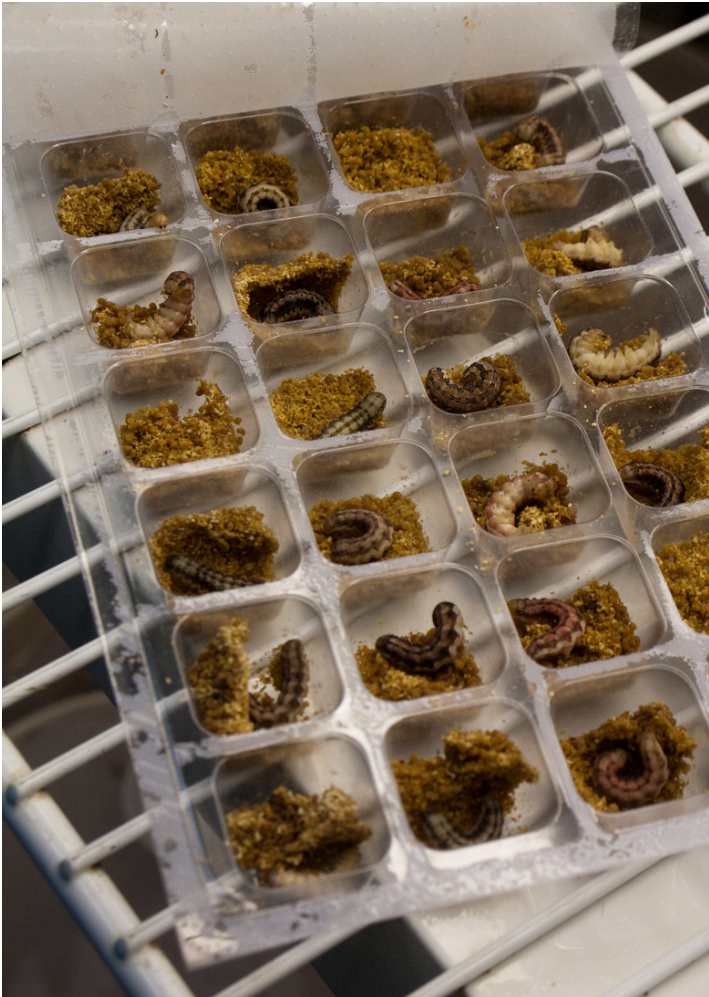
FUNDING ACKNOWLEDGMENT:

NMSU Agricultural Experiment Station and Cotton Incorporated (19-312).



Ladybug adult feeding on an aphid (Photograph by Patricia Monk – NMSU)

BY THE NUMBERS



RESEARCH PUBLICATIONS

- Creegan, E. F., **Flynn, R. P.**, Brewer, C. E., Heerema, R., Darapuneni, M. K., Velasco-Cruz, C. (2023). Pecan Biomass and Dairy Manure Utilization: Compost Treatment and Soil In-Situ Comparisons of Selected Pecan Crop and Soil Variables. *Processes*, 11(7), 2046 (1-14).
- Hargrove, W. L., Heerema, R., Samani, Z. A., Creegan, E., Preciado, J., Pierce, C., Sheng, Z., Ganjegunte, G., Granados, A., **Flynn, R. P.**, Fernald, A., Mokari, E., Torres, D. (in press). The Water Balance for Irrigated Pecans in Arid and Semi-Arid Environments: A Review. To appear in *Journal of the American Pomological Society*. Date Accepted: December 14, 2023.
- Lauriault, L. M., Ray, I., Pierce, C., Djaman, K., Flynn, R. P., Marsalis, M. A., Havlik, C., Martinez, G., West, M. (2023). The 2023 New Mexico Alfalfa Variety Test Report (pp. 13 pp.). Las Cruces, NM: Agricultural Experiment Station and Cooperative Extension Service, New Mexico State University.

NEWSPAPER ARTICLES/EDITORIALS

- **Pierce, J. B.** (2023). Local Bug Carries "Kiss of Death". Hobbs, NM: Hobbs News Sun
- **Pierce, J.B.** 2023. "Responding to Developing Pest Resistance to Bt genes". NMSU ACES Newsletter Viol. 2023. Issue 4. NMSU, ACES
- **Pierce, J. B.** (2023). Heads Up: Aphids and Cutworm in Hay.

REFERRED JOURNALS

- Vyavhare, S., Kerns, D. and **Pierce J.B** (In-Press). Conchuela Stink Bug (Hemiptera:Pentatomidae) Ecology, Biology and Management in Texas High Plains Cotton. *Journal of Integrated Pest Management*

PEER-REVIEWED CONFERENCE PROCEEDINGS

- Tellez, I., **Pierce, J. B.**, Monk, P. (2023). Influence of plant architecture of okra-leaf cotton on crop microclimate, solar radiation and *Helicoverpa zea* (boddie) egg hatch (pp. 333-338). *Proceedings Beltwide Cotton Conferences*, New Orleans, LA: National Cotton Council.
- **Pierce, J. B.** (2023). New Mexico Insect Losses. In D. Cook (Ed.), *Cotton Insect Losses Estimates* (pp. 401-403). New Orleans, LA: National Cotton Council., Date Submitted: December 2022, Date Accepted: 1/2023

GRANTS AND CONTRACTS

- **Flynn, R. P.** (Co-Principal), Ulery, A. L. (Principal), Sponsored Research, "Developing Canola as an Alternative Crop for Marginal Lands Irrigated with Brackish Waters in Southern Great Plains Regions", Sponsoring Organization: Texas A&M University, Sponsoring Organization Is: Other, Research Credit: \$75,000.00, PI Total Award: **\$100,000.00**, Current Status: Currently Active. (October 1, 2021 - September 30, 2025).
- **Flynn, R. P.** (Principal), "Healthy Soils Program", Sponsoring Organization: New Mexico Department of Agriculture, PI Total Award: **\$3,477.90**, Current Status: Active. (August 1, 2023 - May 31, 2024).
- Kerns, D, J Pierce and P. Ellsworth. Field resistance to Bt genes in populations of H. zea by the Arizona New Mexico border. SEIPM Center. \$35,000 (Funded)
- Kersten, M. L. (Principal), **Pierce, J. B.** (Co-Principal), Beck, L. L. (Co-Principal), P. Lujan (Co-Principal), Sponsored Research, "Expanding IPM Extension and Education in NM", Sponsoring Organization: US Department of Agriculture/National Institute of Food and Agriculture NIFA (Formerly USDA CSREES), Sponsoring Organization Is: Other, Research Credit: \$135,000.00, PI **Total Award: \$480,000.00**, (Final award funded). (September 1, 2021 - August 31, 2024).
- Pierce, J. 2022-2023 Migration of resistant southwestern corn borer in Southwestern NM. Corteva Corp. \$5,000 (funded Dec 2023-2024)
- **Pierce, J.B.** "Evaluating Insect Pest Management Tools for Cotton with Adaptive Insect Populations in a Semi-Arid Environment," Cotton Incorporated, **Total Award \$38,000.00**, Status: Funded, Effective Start Date: January 1, 2023 Effective End Date: December 31, 2024.

OUTREACH ACTIVITIES

WORKSHOPS ON ENTOMOLOGY/IPM/FIELD RESEARCH

- Pierce, J. B. and Flynn, R., La Semilla Ag Fellows, NMSU ASC, Artesia ASC, Field Entomology: Insect identification and biological control, Scope: Regional. (June 30, 2023). · Pierce, J. B., Zoo Camp, Living Desert Zoo and Gardens, Carlsbad, NM, "Beneficial Insects, Bees and Kissing Bugs", Scope: Regional. (July 19, 2023).
- Pierce, J. B., Zoo Camp, Living Desert Zoo and Gardens, Carlsbad, NM, "Insect identification, Life Cycles, Metamorphosis, Camouflage", Scope: Regional. (July 19, 2023).
- Pierce, J. B., Zoo Camp, Living Desert Zoo and Gardens, Carlsbad, NM, "Beneficial Insects, Bees and Kissing Bugs", Scope: Regional. (July 12, 2023).
- Pierce, J. B., Zoo Camp, Living Desert Zoo and Gardens, Carlsbad, NM, "Insect identification, Life Cycles, Metamorphosis, Camouflage, ", Scope: Regional. (July 12, 2023).
- Pierce, J. B., NMSU ASC Artesia Field Day Workshop, NMSU ASC, Artesia ASC, "Insect Safari", Scope: Regional. (September 7, 2023).
- Pierce, J. B., NMSU ASC Artesia Field Day Workshop, NMSU ASC, Artesia ASC, "Construct a Mason Bee House", Scope: Regional. (September 7, 2023).
- Pierce, J. B., NMSU ASC Artesia Field Day Workshop, NMSU ASC, Artesia ASC, "Metamorphosis and Camouflage", Scope: Regional. (September 7, 2023).

FIELD DAY PRESENTATIONS

- Garnett, D and J Pierce, NMSU ASC Artesia Field Day, NMSU ASC Artesia, Artesia, NM, "Cotton IPM", (September 7, 2023).
- Pierce, J. B., NMSU ASC Artesia Field Day, NMSU ASC Artesia, Artesia, NM, "Okra-Leaf cotton impacts on predation of bollworm eggs and hatch", (September 7, 2023).
- P. Lujan, J. Pierce, P. Monk. and R. Flynn, NMSU ASC Artesia Field Day, NMSU ASC Artesia, Artesia, NM, "Verticillium Wilt in 40 year continuous cotton". (September 7, 2023).
- Flynn, R., NMSU ASC Artesia Field Day, NMSU ASC Artesia, Artesia, NM, "Can Nutrien's Carb-N Yield Better Cotton?". (September 7, 2023)
- Flynn, R., NMSU ASC Artesia Field Day, NMSU ASC Artesia, Artesia, NM, "Healthy Soils". (September 7, 2023)

OUTREACH ACTIVITIES

PESTICIDE APPLICATOR TRAINING PRESENTATIONS

- Pierce, J. B., Pesticide Applicator On-demand Training, NMSU, (statewide/online), "Insect Update 2023"
- Pierce, J. B., Insect Identification and Control in Eastern NM. Portales December 7, 2023
- Pierce, J. B. IPM of Alfalfa Pests Ft Sumner, NM (November 2023)

OTHER EXTENSION PRESENTATIONS

- Flynn, R. P., Pierce, J. B. (Other), NMSU ACES Open House, NMSU ACES, Las Cruces, NM, "NMSU ASC at Artesia Overview and Impacts", Scope: State. (April 1, 2023).
- Pierce, J. B., ASC Update, NMSU, Artesia NM, "Entomology Update", Invited. (February 3, 2023).
- Flynn, R., ASC Update, NMSU, Artesia NM, "Agronomy Update", Invited. (February 3, 2023).
- Pierce, J. B., 4-H judging practice, NMSU CES, Artesia NM, "Entomology FCS Judging Practice". (April 9,- June 20 2023). Nine training sessions during this time frame.
- Pierce, J. B., Cottonwood 4H Meeting, NMSU CES, Artesia, NM, "Mock Entomology Competition", Scope: State. (January 2, 2023).

PEOPLE



COOPERATORS AND COLLABORATORS

NMSU

- Leyendecker Farm
- ASC Clovis
- ASC Los Lunas
- ASC FarmingtonJames Vinyard – Lea County Extension Agent
- Drew Garnett – Chaves County Extension Agent
- Patrick Kircher – Roosevelt County Extension Agent
- John Garlisch – Bernalillo County Extension Agent
- Bonnie Hopkins – San Juan County Extension Agent
- Will Jaremko-Wright – Taos County Extension Agent
- John Idowu – Extension Agronomist
- Miranda Kersten – Sr Program Specialist
- Mark Marsalis – Extension Forage Specialist
- Leslie Beck – Extension Weed Specialist
- Stephanie Walker - Extension Vegetable Specialist
- Leonard Lauriault - Superintendent and Forage Crop Management Scientist
- Ian Ray – Alfalfa Breeder
- Jinfa Zhang – Cotton Breeder
- April Ulery – Soil Specialist
- Marisa Thompson – Urban Horticulture Specialist
- Richard Heerema – Extension Pecan Specialist
- Wayne Shockey – Eddy County 4-H Agent
- Steve Hanson – Molecular Biologist
- Phillip Lujan – Extension Plant Pathologist
- Scott Bundy – Entomologist
- Rebecca Creamer – Plant Pathologist
- Jacki Beacham – Nematologist
- Soum Sanogo – Fungal Plant Pathologist
- Lynda Garvin – NMSU Master Gardner Program
- Gabriel Zinik – USDA/Phoenix
- SC Alcalde

COOPERATORS AND COLLABORATORS

STATE

- Wade Cavitt - Southeastern NM Agricultural Research Association Chair
- Carlsbad Soil and Water Conservation
- Yucca CowBelles and Wool Growers
- Cottonwood 4-H
- Valle de Oro National Wildlife Refuge
- Stephen Baca, NMDA
- Traci Curry - Ag in the Classroom
- Living Desert Zoo and Gardens
- Rio Mora National Wildlife Refuge
- Xerces Society

OTHER UNIVERSITIES

- Montana State University
- Texas A&M University
- University of Arizona
- University of Arkansas
- University of Idaho
- University of Nevada
- Utah State University

INDUSTRY

- Cotton Incorporated
- Bayer- US Crop Science
- Warner Seeds
- DynaGro
- Phytogen
- Gowan Seeds
- BASF
- Corteva
- S & W Seed
- Bayer- DeKalb
- Barkley Seed
- Browning Seed
- Mojo Seed
- Brownfield Seed
- Pioneer Corp

ADVISORY COMMITTEE

SENMARA - SOUTHEASTERN NEW MEXICO AGRICULTURAL RESEARCH ASSOCIATION

- Wade Cavitt
- Drew Garnett
- Alisa Ogden
- Troy Thompson
- James Vinyard
- James Waltersheid

ASC PERSONNEL

CHRISTOPHER HILL

Ag Science Center Laborer, Sr.

DAVE LOWRY

Interim Research Director

JANE PIERCE

Associate Professor,
Research and Extension Entomologist

JESSICA HILL

Ag Science Center Laborer
Temporary

LEOPOLDO HINOJOS

Ag Science Center Laborer
Temporary

PATRICIA MONK

Research Assistant, Sr.

ROBERT FLYNN

Associate Professor,
Research and Extension Agronomist

ROBERT SCOTT

Assistant Farm Manager

STEPHANIE TILTON

Administrative Assistant, Associate