

2022 Report

2022 ANNUAL REPORT

AGRICULTURAL SCIENCE
CENTER AT ARTESIA

The NMSU Agricultural Experiment Station supports research that addresses real-world problems. Research is at the core of NMSU's mission to improve the lives of people globally.

<https://artescasc.nmsu.edu>

**NM
STATE**

Notice to Users of this Report

This report has been prepared to aid Science Center staff in analyzing the results of various research projects from the past year and to record data for future reference. These are not formal Agricultural Experiment Station Report research results. The reader is cautioned against drawing conclusions or making recommendations as a result of the data in this report. In many instances, data represents only one of several years' results that will ultimately constitute the final formal report. Although staff members have made every effort to check the accuracy of the data presented, this report was not prepared as a formal release.

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

Any reference in this report to any person, organization, activities, products, or services related to such person or organization is solely for informational purposes and does not constitute or imply the endorsement or recommendation of New Mexico State University or any of its employees or contractors. NMSU is dedicated to providing equal opportunities in areas of employment and academics without regard to age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, serious medical condition, sex, sexual orientation, spousal affiliation, or protected veteran status as outlined in federal and state anti-discrimination statutes. The College of Agricultural, Consumer, and Environmental Sciences is an engine for economic and community development in New Mexico. ACES academic programs help students discover new knowledge and become leaders in environmental stewardship, food and fiber production, water use and conservation, and improving the health of all New Mexicans. The College's research and extension outreach arms reach every county in the state and provide research-based knowledge and programs to improve the lives of all New Mexicans.

Agricultural Science Center Locations Map

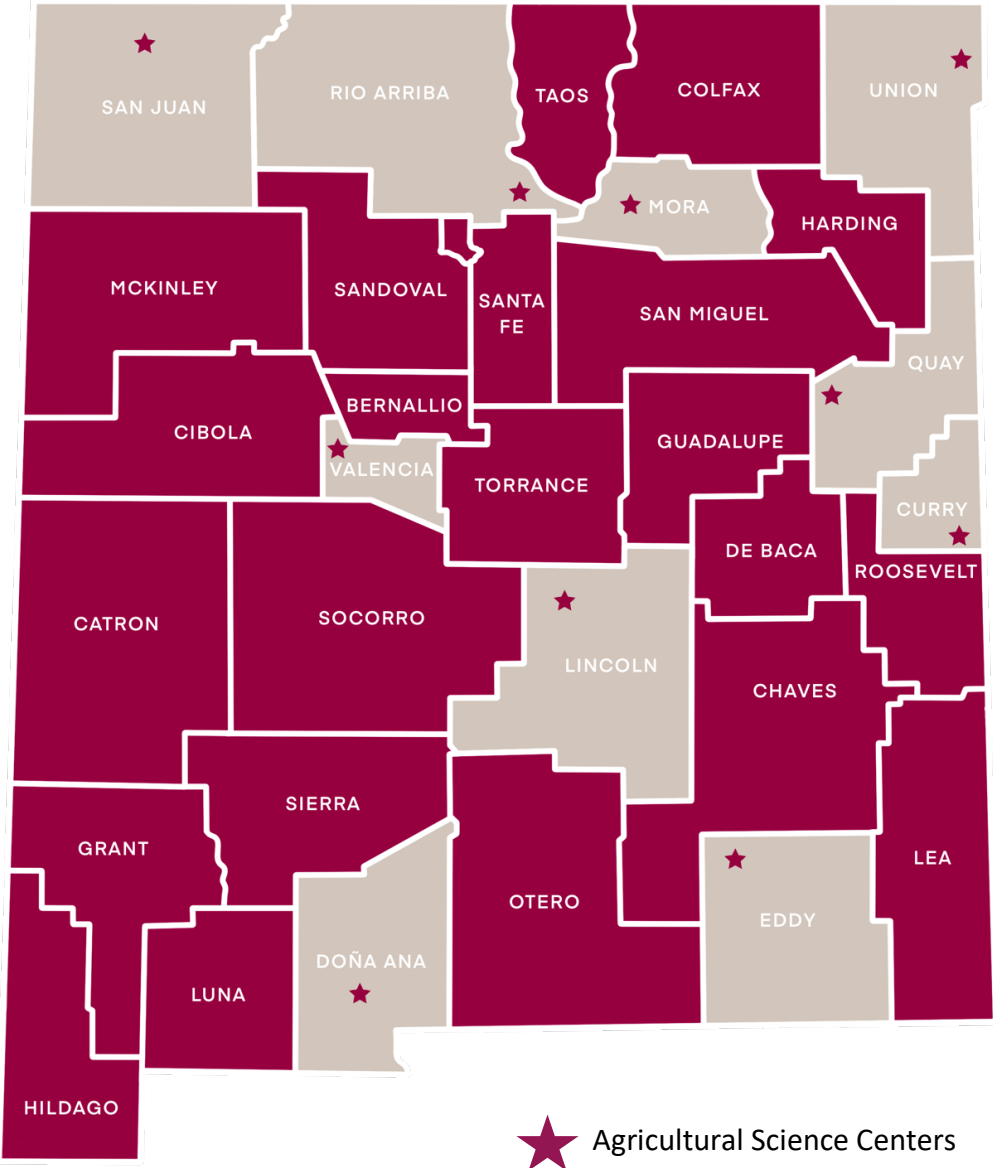


Table of Contents

<i>Notice to Users of this Report</i>	2
<i>Agricultural Science Center Locations Map</i>	3
<i>Research Projects</i>	5
<i>Grants and Contracts</i>	12
<i>Research Publications</i>	13
<i>Cooperators and Collaborators</i>	15
• NMSU	15
• State/Federal/Other Universities	15
• Industry	15
<i>Outreach Activities</i>	16
<i>Advisory Committee</i>	18
<i>Personnel</i>	18

Research Projects

Developing canola as an alternative crop for marginal lands irrigated with brackish waters in the Southern Great Plains Region

Insecticide and Bt Resistance in New Mexico pests – Investigator: Jane Breen Pierce

Distribution of kissing bugs and infection rates with T cruzi in NM – Investigators: Jane Breen Pierce and Steve Hanson

Mimicking natural environmental controls under irrigated conditions and development of NM specific cultural control measures for insect pests – Investigator: Jane Breen Pierce

Biological control of key pests in New Mexico - Investigator: Jane Breen Pierce

Landscape impacts on biological control of insect pests in NM - Investigator: Jane Breen Pierce

Developing canola as an alternative crop for marginal lands irrigated with brackish waters in the Southern Great Plains Region

Project Overview: A multi-disciplinary (agronomy, soil science, plant physiology, engineering, and economics), multi-institutional (TAMU and NMSU) study to evaluate potential for increasing canola acreage using marginal waters in the Southern Great Plains. We are evaluating (i) canola performance under saline water irrigation, (ii) soil properties including salinity, (iii) irrigation use efficiency, and (iv) canola crop economic feasibility. Several canola cultivars will be evaluated for salinity tolerance by measuring germination, seedling mortality, emergence percentage and emergence index, biomass, and salt accumulation in the greenhouse and in field plots at El Paso, TX and Artesia, NM.

Meeting the Needs of New Mexico: New Mexico farmers in the Southern Great Plains region are facing limited water quantity and quality to grow crops. This project will help them expand their crop selection options to maintain a profitable business.

Impact: Canola cultivars have been tested under controlled conditions, but field trials in Artesia and El Paso will provide further details on successful agronomic practices and also serve as demonstrations of crop growth for regional farmers.

Collaborating Agricultural Science Centers: Artesia ASC is collaborating with Texas A&M AgriLife in El Paso, but this work could also be extended to Clovis, Tucumcari, and other NMSU ASCs focused on limited or marginal irrigation water supplies.

Funding Acknowledgement: This project is funded by NIFA award number 2021-38624-35737 to TAMU with NMSU as a subcontractor to TAMU.

Insecticide and Bt resistance in New Mexico pests

Investigator: Jane Breen Pierce (japierce@nmsu.edu)

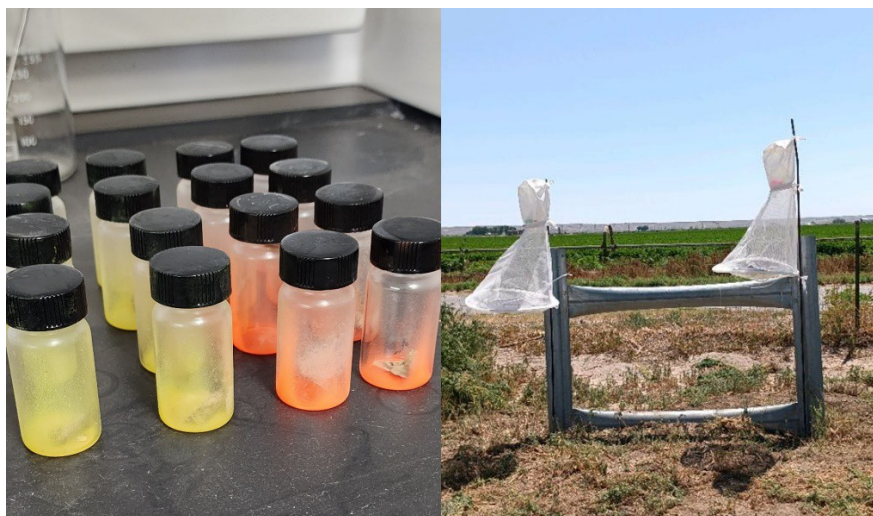
Project Overview: Resistance to insecticides and Bt proteins is an increasing problem in New Mexico, particularly since there are few additional insecticides and Bt genes in the pipeline. We have collected bollworm/corn earworm throughout New Mexico to evaluate resistance to Bt genes and resistance to pyrethroid insecticides. Bioassays of insect populations collected from Artesia, Farmington and Clovis indicated moderate resistance in cotton bollworm/corn earworm to a pyrethroid insecticide, confirming the need for alternative controls.

Meeting the Needs of New Mexico: As we see more resistance to Bt cotton and corn, growers will look for alternative control measures, including immediate controls with insecticides. Unfortunately, the most obvious choice, pyrethroids also has issues with performance. In 2022, we evaluated three populations of bollworm/corn earworm from Artesia, Farmington and Clovis and discovered moderate resistance to cypermethrin a common pyrethroid. This insecticide resistance and developing resistance to Bt prompted us to develop alternative control measures.

Impact: Determining that there is resistance to insecticides and field resistance to Bt genes will prompt growers to closely monitor performance of these products. Ultimately it will save money when growers do not purchase products when they no longer provide adequate control. Confirmation of resistance issues is prompting us to look at alternative means of controlling lepidopterous pests, including biological control and the use of okra leaf cotton, in addition to other management practices investigated earlier.

Collaborating Agricultural Science Centers: Farmington, Clovis, Artesia. Leyendecker (grew non Bt corn where we could collect *H. zea* for bioassays)

Funding Acknowledgement: This project is funded by Cotton Incorporated, award number 19-312 and NIFA EIP-IPM, award number 2021-70006-35765.



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 2011-2014 kissing bugs were collected in the Pecos Valley. We worked with Steve Hanson, molecular biologist in EPPWS to determine infection rates. In 2022, we revisited this project with Dr Hanson, and other EPPWS faculty, and expanded collections to a broader 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.

Meeting the Needs of New Mexico: Chagas disease is considered rare to non-existent in New Mexico by most medical providers. Our initial survey indicated 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 as dogs 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.

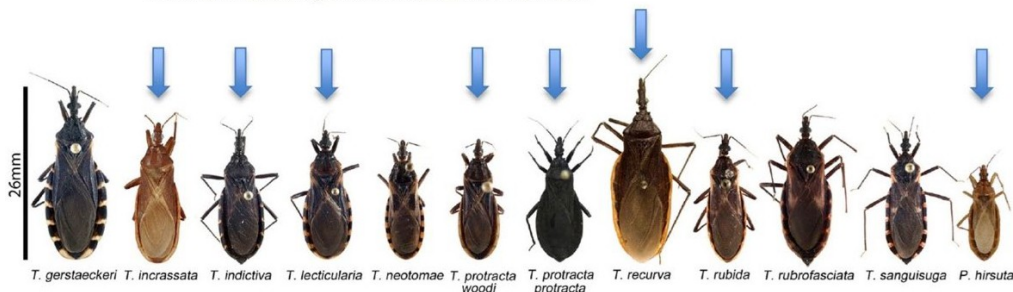
Impact: Awareness of risks associated with kissing bugs will prompt citizens to mitigate risks by controlling kissing bugs or making homes more secure from kissing bugs. Understanding risks to dogs will also cause the public to reduce risk to dogs with simple measures such as not keeping dogs kenneled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

Collaborating Agricultural Science Centers: Alcalde ASC collaborated with us this year in our collecting efforts as well as Santa Fe and Grant County extension offices.

Funding Acknowledgement: In our earlier efforts we received some help with the Howard Hughes Scholars Program. This year we received some support in the EIP-IPM program, award number 2021-70006-35765.

Chagas Disease in SE New Mexico?

2022: Over 100 kissing bugs collected throughout NM
T. rubida and *T. protracta* collected in 2021 in central and SW NM
Closest to NE NM is *T. protracta* collected near Tucumcari



Mimicking natural environmental controls under irrigated conditions and development of New Mexico specific cultural control measures for insect pests

Investigator: Jane Breen Pierce (japierce@nmsu.edu)

Project Overview: New Mexico growers benefit from high levels of natural controls from our desert environment and high biological control. Our 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. We are examining this issue to develop management tools to approximate our 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. Our objective is to avoid the cost and environmental impact of insecticide applications by using other control measures. We 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. We 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.

Collaborating Agricultural Science Centers: Leyendecker Plant Science Center has collaborated in the past in planting okra-leaf cotton.

Funding Acknowledgement: This project is funded by Cotton Incorporated, award number 19-312.



Biological control of key pests in New Mexico

Investigator: Jane Breen Pierce (japierce@nmsu.edu)

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. Our focus on control is on key pests in major crops, cotton bollworm/corn earworm, in cotton, corn and sorghum, pecan nut casebearer and pecan weevil in pecan, and alfalfa weevil in alfalfa hay.

Meeting the Needs of New Mexico: Many growers underestimate the impact of biological control despite the fact that 80-90% predation in 48 hours is not unusual. Identifying key predators and factors that affect populations of key predators will help growers with strategies to conserve beneficials. *Hibana incursa*, a ghost spider, for example was identified as a key predator in pecan and work in progress to determine what strategies can be used to enhance ghost spider populations. Establishing field insectaries with parasitoids of alfalfa weevil results in direct control and savings from reduced insecticide applications and increased yields. The impact of numerous management practices on beneficials has also been quantified.

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 spider as a key predator in pecan, providing up to 84% predation of eggs will be increasingly important as we identify factors affecting its distribution.

To ensure that growers are using effective insecticides when necessary while reducing any impact on beneficials we began working with faculty and staff at the ASC in Los Lunas to determine if Steward, an effective insecticide has less impact on beneficial predators. The first year of data suggests Steward has little impact on beneficials. 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.

Collaborating Agricultural Science Centers: ASC Los Lunas (Steward insecticide compatibility with biocontrol) Leyendecker Plant Science Center (collecting alfalfa weevil parasitoids for release throughout NM)

Funding Acknowledgement: This project is funded by NMSU AES State funding and EIP – IPM program, award number 2021-70006-35765



Landscape impacts on biological control of insect pests in New Mexico

Investigator: Jane Breen Pierce (japierce@nmsu.edu)

Project Overview: Alfalfa hay is a major crop in New Mexico. Our data 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 beneficials and control of insect pests for cotton, pecan and 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: Unlike California our data suggests that in New Mexico there is no increase in predation in cotton after cutting hay. In fact, some data suggests that predation in cotton often decreases after hay is cut. 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 beneficials to other, less hospitable 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 Acknowledgement: This project is funded by Cotton Incorporated State Funding



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).
- 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).
- Flynn, R. P. (Principal), Cooperative Agreement, "Assessing Nitrogen Fertilizers for High Ph Soils", Sponsoring Organization: Cotton Incorporated, Sponsoring Organization Is: Private Profit, Research Credit: \$100.00, PI Total Award: \$3,000.00, Current Status: Active. (January 1, 2022 - December 31, 2022).
- Pierce, J.B. "Evaluating Insect Pest Management Tools for Cotton with Adaptive Insect Populations in a Semi-Arid Environment," Cotton Incorporated, Total Award \$19,000.00, Status: Funded, Effective Start Date: January 1, 2022 Effective End Date: December 31, 2022.
- Pierce, J. B. "Impact of Alfalfa on Predation in Adjacent Cotton Fields", Sponsoring Organization: Cotton Incorporated, Sponsoring Organization Is: Private, Research Credit: \$6,000.00, PI Total Award: \$3,000.00, Current Status: Funded. (January 1, 2022 - December 31, 2022).

Research Publications

- Books
 - Allen, C. T., Pierce, J. B., et al. (2022). Cotton in the United States of America and Mexico. In G. Matthews (Ed.), *Pest Management in Cotton: A Global Perspective*. London: CABI., Item applies to Promotion and Tenure criteria: Scholarship and Creative Activity
- Referred Journals
 - Creegan, E., Flynn, R. P., Torell, G., Brewer, C. E., VanLeeuwen, D., Acharya, R., Heerema, R., Darapuneni, M. K. (2022). Pecan (*Carya illinoensis*) and dairy waste stream utilization: properties and economics of on-farm windrow systems. *Sustainability*, 14(5), 2550., Abstract/Synopsis: Abstract: Improper management of organic waste can lead to unnecessary carbon dioxide and methane emissions, and groundwater contamination. In this study, organic waste materials from two of New Mexico's top agricultural industries, pecan (*Illinoensis*) and dairy were used to evaluate the feasibility of an on-farm compost program. Pecan woody residues (P) served as the primary carbon source; dairy manure (M) served as the primary nitrogen source. Additional inputs from a compost consulting company (PM/A) and green waste from community landscaping and on-farm harvested legumes (PMG/A) were employed, both of which required additional labor and material inputs. Finished composts were analyzed for macro, secondary and micronutrients, pH, sodium adsorption ratio (SAR), electrical conductivity (EC), total carbon (TC) and organic matter (OM) content, bulk density (bd), and microbial composition. The PM alone treatment showed similar or significantly higher amounts of macro, secondary and micronutrients compared to the PM/A and PMG/A treatments. Total microbial biomass and total salinity was highest for the PM treatment. The total cost of the PM treatment was approximately 1/5 the cost of the lowest cost addition compost production scheme, indicating that simpler, lower-input production methods may be more advantageous for on-farm compost program development., Date Submitted: December 5, 2021, Date Accepted: January 25, 2022.
 - Idowu, O. J., Zhang, J., Flynn, R. F., Pierce, J. B., Wedegaertner, T. *AGRONOMY & SOILS*. *Sierra*, 107, 30027.
- Peer Reviewed Conference Proceedings
 - Pierce, J. B., Tellez, I., Monk, P. (2022). Influence of Plant Architecture of Okra Leaf Cotton on Crop Microclimate, Solar Radiation and *Helicoverpa zea* Egg Hatch. Carey, NC: National Cotton Council., pp 496-500. Date Submitted January 2022, Item applies to Promotion and Tenure criteria: Extension, Outreach, Scholarship and Creative Activity, Teaching and Advising, Item applies to Boyer scholarship(s): Discovery.
 - Pierce, J. B., Tellez, I., Monk, P. (2023). Alternatives to Bollworm Control in the Southwest: Okra Leaf Cotton Impacts on Predation and *H. Zea* Egg Hatch. In *Beltwide Cotton Conference*. National Cotton Council. Carey, NC: Date Submitted December 2022, (in press)
- Extension Publications

- Sutherland, C. A., Skidmore, A., Lauriault, L. M., Marsalis, M. A., Pierce, J. B. (2022) Circular 659), Whitefringed Beetle in New Mexico Alfalfa. Las Cruces, NM: Agricultural Experiment Station and Cooperative Extension Service, New Mexico State University., Date Submitted: October 16, 2020, Date Accepted: January 27, 2021, Published November 2022. 13 pp.
- Lauriault, L. M., Ray, I., Pierce, C., Djaman, K., Flynn, R. P., Marsalis, M. A., Havlik, C., Martinez, G., West, M. (2022). The 2022 New Mexico Alfalfa Variety Test Report (pp. 12 pp.). Las Cruces, NM: Agricultural Experiment Station and Cooperative Extension Service, New Mexico State University.
https://pubs.nmsu.edu/variety_trials/alfalfa_2022.pdf, Item applies to Promotion and Tenure criteria: Extension, Outreach, Scholarship and Creative Activity.
- Marsalis, M. A., Flynn, R. P., Lauriault, L. M., Mesbah, A., Djaman, K. (2022). New Mexico 2021 Corn and Sorghum Performance Tests. Las Cruces, NM: Agricultural Experiment Station and Cooperative Extension Service, New Mexico State University.

Cooperators and Collaborators

- **NMSU**
 - Ivan Tellez – Eddy County Extension Agent
 - Drew Garnett – Chaves County Extension Agent
 - Patrick Kircher – Roosevelt 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
 - Carol Sutherland
 - Phillip Lujan – Program Manager
 - Woods Houghton
 - Insook Ahn – Fashion Merchandising and Design
 - Sam Smallidge – Extension Wildlife Specialist
 - Leyendecker Plant Science Center
 - ASC Clovis
 - ASC Los Lunas
 - ASC Farmington
- **State/Federal/Other Universities**
 - Wade Cavitt - Southeastern NM Agricultural Research Association Chair
 - Carlsbad Soil and Water Conservation
 - Yucca CowBelles
 - Cottonwood 4-H
 - Texas A&M University
- **Industry**
 - Cotton Incorporated
 - Bayer- US Crop Science
 - Warner Seeds
 - DynaGro
 - Phytogen
 - Gowan Seeds
 - BASF
 - S & W Seed
 - Bayer- DeKalb
 - Barkley Seed
 - Browning Seed
 - Mojo Seed
 - Brownfield Seed Co

Outreach Activities

- Pierce, J. B. New Mexico Pesticide Training CEU's. Roosevelt County Cooperative Extension Office, Portales, NM, "Insect Pest Management in Eastern New Mexico", Scope: Local. (December 7, 2022).
- Pierce, J. B. New Mexico Pesticide Training CEU's. Colfax County Cooperative Extension Office, Raton, NM, "Insect Pets Management in Northeastern New Mexico", Scope: Local. (November 17, 2022).
- Pierce, J. B., STEM night. Ocotillo Elementary, Carlsbad, NM. "Intro to Entomology ", Scope: Local, Invited or Accepted? Invited. (November 15, 2022)
- Pierce, J. B. New Mexico Pesticide Training CEU's. Chaves County Cooperative Extension Office, Roswell, NM, "Insect Pest Management in Southeastern New Mexico", Scope: Local. (November 3, 2022).
- Pierce, J. B. (Presenter), Monk, P., Yucca CowBelles, ASC Artesia, "Insect Pests and Beneficials. (September 27, 2022) Scope: Local, Invited., Extension, Outreach.
- Flynn, R.P., NMSU Pesticide Applicators Series, Hobbs, NMSU, "Soil Health", Scope: State. (September 8, 2022). Item applies to Promotion and Tenure criteria: Extension, Outreach, Teaching and Advising, Item applies to Boyer scholarship(s): Teaching.
- Pierce, J. B., NMSU Pesticide Applicators Series, Hobbs, NMSU, "Insect Pest Management", Scope: State. (September 8, 2022). Item applies to Promotion and Tenure criteria:Extension, Outreach, Teaching and Advising, Item applies to Boyer scholarship(s): Teaching.
- Pierce, J. B. (Co-Organizer/Presenter) IPM Workshop. NMSU AES and NIFA EIP IPM Program and Cotton Inc. "Demonstration of Field Sampling for Insect Pests and Beneficials", (Field Workshop) Scope: Local. (August 30-31, 2022).
- Pierce, J.B. IPM of Forage Insects In Forage IPM Workshop, NMSU AES and NMSU EIP Program. Los Lunas, NM August 30-31 2022.
- Flynn, R.P. (Discussant), La Semilla Agriculture Fellows, Artesia, NM, " Soil Fertility in New Mexico", Scope: Local, Invited. (August 26, 2022). Item applies to Promotion and Tenure criteria: Extension, Scholarship and Creative Activity.
- Pierce, J. B. (Discussant), La Semilla Agriculture Fellows, Artesia, NM, " Insect Pests and Beneficials in New Mexico", Scope: Local, Invited. (August 26, 2022). Item applies to Promotion and Tenure criteria: Extension, Scholarship and Creative Activity.
- Pierce, J. B. New Mexico Pesticide Training CEU's. Rex E. Kirksey Agricultural Science Center at Tucumcari, NMSU, Tucumcari, NM, "Insect Pests and Beneficials of New Mexico", Scope: Local. (August 2, 2022).
- Pierce, J. B. Rex E. Kirksey Agricultural Science Center at Tucumcari Field Day, NMSU, Tucumcari, NM, "Mozema Bug a Concern in New Mexico and Texas Cotton.", Scope: Local. (August 2, 2022).
- Pierce, J. and P. Monk. 4-H Entomology Contest Workshops. Artesia, NM. (7 workshops April through June 2022)
- Pierce, J. B. (Discussant), Artesia Intermediate/Jr High STEM summer workshop. Artesia, NM, " Biological Control in Southeastern New Mexico ", Presentations and Field Collections
- Flynn, R.P, Agriculture Career Day, Park Junior High, Artesia, NM, "Soil Fertility ", Scope: Local, Invited or Accepted? Invited. (May 4, 2022)
- Pierce, J. B., Tellez, I (Presenter), Monk, P., Agriculture Career Day, Park Junior High, Artesia, NM, "Intro to Entomology ", Scope: Local, Invited or Accepted? Invited. (May 4, 2022)
- Pierce, J. B., Monk, P. (Presenter), Cottonwood 4H Monthly Meeting, Artesia, NM, "Entomology Contest", Scope: Local, Invited or Accepted? Invited. (April 2022).
- Pierce, J. B., Lujan, Phillip, NMSU Open House, NMSU, Skeen Hall, Las Cruces, NM, "Insect and Plant Diagnostics". April 9, 2022).

- Pierce, J. B., Lujan, Phillip, NMSU FFA Workshop, NMSU, Skeen Hall, Las Cruces, NM, "That Bug Us". April 8, 2022).
- Flynn, R.P. (Discussant), ASC - Artesia Annual Farm Planning Meeting, Artesia, NM, "Effects of CarbyN in cotton", Scope: Local, Invited. (April, 5, 2022). Item applies to Promotion and Tenure criteria: Extension, Scholarship and Creative Activity.
- Pierce, J. B. (Discussant), ASC - Artesia Annual Farm Planning Meeting, Artesia, NM, "IPM of Insects Developments in New Mexico", Scope: Local, Invited. (April, 5, 2022). Item applies to Promotion and Tenure criteria: Extension, Scholarship and Creative Activity.
- Pierce, J. B., Tellez, I., Monk, Eddy County Insect Pinning Workshop, NMSU, Eddy County Fairgrounds, Artesia, "Insect Collection and Pinning". March 23-24, 2022).



Yucca CowBelles Insect Pests and Beneficials. ASC Artesia. September 2022



Eddy County Cottonwood 4-H Entomology Team 1st Place SE District Contest. Alamogordo, NM 2022



Artesia Intermediate Summer STEM Workshop. Soil Heath. ASC Artesia June 2022

Advisory Committee

- SENMARA-
 - Wade Cavitt
 - Alisa Ogden
 - James Waltersheid
 - Troy Thompson
- Drew Garnett
- Ivan Tellez

Personnel

- Robert Flynn Associate Professor, Extension and Research Agronomist
- Jane Pierce Associate Professor, Research and Extension Entomologist
- Patricia Monk Research Assistant, SR
- Ruben Pacheco Interim Farm Manager/Research Assistant, SR
- Robert Scott Assistant Farm Manager
- Christopher Hill Laborer, Sr.
- Stephanie Tilton Administrative Assistant, Associate
- Leopoldo Hinojos Laborer (Temporary)
- Jessica Hill Laborer (Temporary)
- Misty Fuentes Custodial Worker