Plains Pest Management

Mid Texas High Plains and Upper Rolling Plains Integrated Pest Management Program

2025 Annual Report

Prepared by:

Blayne Reed

Program Specialist III-IPM

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2025 Plains Pest Management Newsletters available at: https://hale.agrilife.org/newsletters/newsletter-ipm/

Acknowledgements

A successful Extension IPM program hinges upon dedicated support, active participation, and a desire to advance and improve IPM practices from area producers, agribusiness, gardeners, and homeowners. Appreciation is extended to the participating members of the Plains Pest Management Association for their cooperation, support, and participation in the 2025 Plains Pest Management Program:

Ronald Groves	Jimie Reed	Jeff Reed	Jimmy Sageser	Mike Goss
Johnie Reed	Joe Reed	Joe McFerrin	Steve Fortenberry	Shelley Berry
Wayne Johnson	Shane Berry	Jeremy Reed	Jerry Rieff	Michael Masters
Sammy Shannon	Jayton Borrego	Seth Berry		

Acknowledgment is extended to the following members of Texas A&M AgriLife Extension and Research for their support:

Andy Hart	Livestock CEA Hale County
Kristi Keys	Agronomy CEA Hale, Lamb, Castro
John Thobe	Program Specialist IPM, Muleshoe
Tyler Gilrith	Extension Entomologist, Amarillo
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Gregory Wilson	Program Specialist IPM, San Angelo
Jose Santiago Gonzalez	Extension Entomologist, Corpus Christi
Tyler Mays	Program Specialist IPM, Hillsboro
Rebel Royal	District Extension Administrator, Lubbock
Danny Nusser	Regional Program Leader, Amarillo
Pat Porter	Extension Entomologist, Lubbock
Suhas Vyavhare	Extension Entomologist, Lubbock
Jourdan Bell	Extension Agronomist, Amarillo
Kevin Heflin	Field Extension Agronomist, Amarillo
Ken Lege	Extension Cotton Agronomist, Lubbock
Calvin Trostle	Extension Agronomist, Lubbock
Wayne Keeling	Research Agronomist, Lubbock
Peter Dotray	Extension Weed Specialist, Lubbock
Megha Parajulee	Research Entomologist, Lubbock
Dana Porter	Extension Irrigation Specialist, Lubbock
Casey Hardin	Station Manager, Halfway
David Kerns	State IPM Coordinator and Associate Department Head, Entomology, College Station
Phillip Kaufman	Department Head, Entomology, College Station

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Adan Vargas	Plains Pest Management, Field Scout
Spencer Adkins	Plains Pest Management, Field Scout
Denise Reed	Plains Pest Management, Field Tech

Plains Pest Management 2025 Advisory Committee

Ronald Groves	Mike Goss	Jerry Rieff
Jeremy Reed	Jimmy Sagaser	Joe McFerrin

Plains Pest Management Ag & Research IPM 2025

Blayne Reed, Program Specialist-IPM, Mid High Plains and Upper Rolling Plains

RELEVANCE

Production agriculture is the foundation of the economies of Hale and Swisher Counties. Pests continually threaten production agriculture and persistently develop to overcome existing control measures. Integrated Pest Management (IPM) is an affective and sustainable approach to pest management that uses a combination of evolving control practices to maintain economic and environmental sustainability in production agriculture. The Hale & Swisher IPM Program is an educational program that strives to educate producers in Hale and Swisher County about the latest IPM principles and help implement sound IPM control strategies into producer's operations. Sorghum Pest IPM education is an annual educational effort.

RESPONSE

The Plains Pest Management Association, made up of 22 participating grower members and steered by a chairing committee and the IPM agent, made informing the producers in Hale and Swisher Counties about the latest agriculture IPM principles, control methods and options a priority in 2025.

PPM Field Scouting Program and Weekly Educational Outlets:

Weekly field scouting for insect, weed, and disease problems of the 22 participating grower member's production fields with IPM education for each field scouted.

CROP	ACRES
Corn (grain & silage)	1,049
Cotton	3,217
Sorghum (grain & silage)	652
Alfalfa	15
TOTAL	**4,933**

In addition to IPM education for the PPM Producers, information from the scouting program are utilized for IPM alerts and producer education.

Unique Educational Outlets Highlights

- Plains Pest Management Newsletter.
  - 14 Editions, 327 subscribers with additional social media views.
- Plains Pest Bugoshere (blog), Facebook, X, and Linkin with social media releases
- 5 mass media interviews and articles (3 radio, 2 newspaper)
- High Plains IPM Updates
  - 18 updates with radio replay on All Ag, All Day Radio
  - 227 weekly text subscribers plus additional social media releases and the potential of 10,500 radio listeners

VALUE

Producer and Consultant responders to the 2025 survey were asked if they could assign a per acre crop production $ value to all the efforts of the IPM Program and with how many acres their work in agriculture represent?

Producers and Independent Crop Consultant Acres Responded with:

$54.42/Acre

For

126,498 Acres

$6.88 MILLION

In Producer and Independent Crop Consultant surveyed value of the Mid High Plains and Upper Rolling Plains IPM Program

AGRILIFEEXTENSION.TAMU.EDU

Response Highlights

Research Highlights

- Wireworm Seed Treatment Efficacy trial
- Wireworm In-Furrow Product Efficacy Trial
- Entomopathogenic nematode for wireworm control in cotton
- Bollworm Bt Resistance Sentinel Plot
- Grain and Cotton Moth Pest Population monitoring
- Phytogen Cotton Variety Trial
- Cotton Seed Bug Distribution Study
- CLH Monitor Team

PPM Scouting Program (Hale, Swisher, & Floyd

- 68 fields
- 2 field scouts
- 1 technician
- 3 new cooperating PPM members

Presentation Highlights

Adult Presentations

- AgriLife Producer Meetings (120 contacts)
- Co-Hosted Field Scout School (14 contacts)
- Hosted Field Day (16 contacts)

Professional Presentations

- 2 Posters (Co-Author)
- 2 Presentations (1 Author, 1 Co-Author)

2025 Field Day

Evaluation Strategy

A retrospective post evaluation instrument was distributed online to the subscribers of the Plains Pest Management Newsletter and was posted for all viewers of the Plains Pest Bugoshere (blog) and other social media outlets to respond to. In addition, a retrospective post survey was distributed at the Mid-Plains Crops Conference, Mid Plains Field Day, and active listeners to the IPM Audio Updates.

RESULTS

Responders to the 2025 end of season PPM survey indicated:

- 100% of responders indicated adopting a new recommended IPM practice this year with 64.71% indicating an improved economic result.
  - 74% indicated this improvement came from timelier pest control, 53% from improved pest life cycle understanding and alerts, 42% from reduced pesticide use, 32% from timely agronomic information, 26% for reduced agronomic inputs, and 26% for new practice implementation.
- 100% of responders said the program met their expectations or better (32% met, 37% exceeded, 32% far exceeded).
- **$54.42 per acre value** of the IPM Program with **126,498 producer and consultant acres** represented for **an impact of $6,884,021 by the program**.

Responders to the Mid-Plains Ag Expo retrospective survey indicated:

- An 89.2% improvement in corn leafhopper identification ability.
- 80.6% intentioned to adopt improved fleahopper thresholds in cotton
- Expected a **$9.83 return** on the education offered representing **37,400 acres**. This calculates to an **impact of $367,642 for this event.**

Responders to the 2025 Mid-Plains Field Day survey indicated:

- 100% learned new IPM practices and information with 67% intending to apply the new information.
- They expect a **$13.50 per acre return** on attendance representing **16,058 acres**. This calculates to an **impact of $216,783 for this field day**.

Responders to the 2025 IPM Audio Update survey indicated:

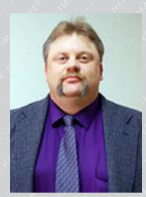
- 91% indicated they implemented a new IPM practice from recommendations.
- An **$18.62 per acre value** for a **represented 324,984** acres for an **impact of $6,051,202 impact for the team effort**.

Summary

These results indicate that the IPM Program is proving to have both positive economic impacts and is advancing IPM education and ag sustainability in the area. If the survey $54.42 per production acre estimate of the value of the IPM Program is multiplied by the 126,498 survey represented production acres, a **$6,884,021 IPM Program impact** figure emerges.

The Program is proving not only important to the area agriculture economy but is a significant in its maintenance, function, and advancement.

"Texas A&M AgriLife is the UL of Production Agriculture. I do not use a recommendation or product unless they, especially Blayne, has tested and tried it first."
Ronald Groves, PPM President



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2025 IPM Education for Homeowners, Gardeners, and Youth

Blayne Reed, Program Specialist-IPM, Mid High Plains and Upper Rolling Plains

RELEVANCE

Pests affect all aspects of human life. Pests continually threaten production agriculture, stored grain, human health, households, and even the stored foods in our pantries. Meanwhile, these same pests persistently develop to overcome existing pest control measures. Integrated Pest Management (IPM) has a forty plus year history of proven environmentally sound and effective approaches to pest management by utilizing a combination of established principles and evolving specific control practices to maintain pest control. The Plains Pest Management IPM Program is an educational program that strives to educate the producers and citizens of Hale and Swisher Counties about the IPM principles and the latest IPM control methods to help implement IPM into our daily pest control strategies.

RESPONSE

- The Plains Pest Management Association, made up of 22 participating grower members and steered by a chairing committee and the IPM Program Specialist, made informing the general populace of the Mid-High Plains and Upper Rolling Plains about IPM principles and implementation into our daily pest control habits one of the IPM Program's focus in 2025. The year's activities included:

Unique Regional Educational Outlet Highlights

- **1-on-1 Educational Interactions Solving Local Home and Horticultural IPM Issues :**
  - 29 site visits for IPM questions.
  - 18 office visits.
  - 27 insect photo or specimen identifications.
  - 19 phone calls
- Plains Pest Bugoshere (blog), Facebook, X, and Linkin with social media releases Specific to home and garden IPM education
  - 14 articles or releases (1,736 views)
    - 2 original articles written
    - 12 shared IPM information
- 2 articles/interviews (Plainview Daily Herald & Swisher News)
  - 1 mosquito article written
  - 1 interview about pests in the backyard
- Plains Pest Newsletter
  - 3 articles, sections, or links dedicated to home and garden IPM
    - Grasshopper (July 18) original
  - Mosquito / West Nile (July 18)
- Hale County Ag Fair
  - 203 4th grade youth introduced to entomology
  - 23 teachers & parents
- 1 PPM Intern Trained in IPM weekly.
- Leadership Plainview interpretation and "Bed Bug Prevention" presentation.
  - 38 Adult Contacts

Economic Impact of Homeowner and Gardener IPM Education

Economic and Health Impacts of the IPM Educational efforts of the program were attempted in the 2024 PPM End of Year Survey. The Producer, Consultant, Ag Industry, and homeowner responders to the Survey indicated:

$27.46 / Adult 1-on-1 Contact Hour of Value

Hale County 4th graders being introduced to entomology at the 2025 Hale County Ag Fair.

4-H Entomology Highlights

- **Insect Photography Contest**
  - Superintendent and Judge
  - 30 entries
  - Remote, State-wide Contest
- **4-H Entomology ID Contest**
  - District 2 Contest Assistant Superintendent
  - Hale, Swisher, & Floyd Counties coach
  - 7 Youth competitors trained (11 practices)
  - Hale County Sr. Team
    - State Competing
    - 1st Place District Individual
  - Hale County individual
    - 1st Place District Individual
  - Hale County Jr. Team
    - 1st Place District Team
    - 3rd Place District Individual
- **Reviewer and 3rd Coauthor of 2025 Revision of the State 4-H Entomology Competition**

Brady Baker, Hale County Sr. 4-Her, placed 1st at the District Insect ID contest and 3rd in the State Insect Photography Contest

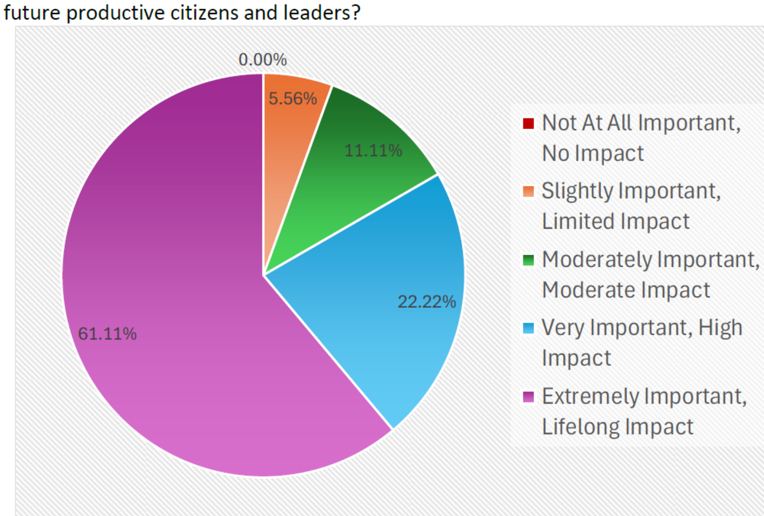
Evaluation Strategy

A retrospective post evaluation instrument was distributed online to the subscribers of the Plains Pest Management Newsletter and was posted for all viewers of the Plains Pest Bugoshere (blog) and other social media outlets to respond and the Leadership Plainview attendees were surveyed about the new IPM Education learned

RESULTS

Responders to the 2025 end of season PPM survey were asked:

- How important and impactful are the efforts in training youth in natural science to be future productive citizens and leaders?

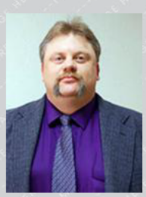


  - 100% Indicated some importance and positive impacts with 61.1% indicating the youth education as extremely important with a lifelong impact.

- Leadership Plainview attendees indicated:
  - That 100% indicated intentions to adopt newly learned Bed bug and mosquito IPM practices at home and when traveling.

Summary

The IPM Program's efforts in horticulture, homeowner, gardening, and youth IPM education received high marks from the predominantly agriculture sector responders and the Leadership Plainview attendees. While agriculture remains the focus of the program, benefits are being made in terms of IPM education to the general public with impacts ranging from improved human health through training youth to be the leaders and scientist of tomorrow.



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Grain Crop Pests 2025

Blayne Reed, Program Specialist-IPM, Mid High Plains and Upper Rolling Plains

RELEVANCE

Production agriculture is the foundation of the economies of the Mid High Plains and Upper Rolling Plains region, and grain crops are an important crop of the region. Pests, both known and invasive, continually threaten production agriculture and persistently develop to overcome existing control measures. Integrated Pest Management (IPM) is an affective and sustainable approach to pest management that uses a combination of evolving control practices to maintain economic and environmental sustainability in production agriculture. This IPM Program strives to educate producers in the region about the latest IPM principles and help implement sound IPM control strategies into producer's operations. Grain Pest IPM education is an annual educational effort but found added relevance with new grain pests to the region and new diseases transmitting through area crops that are both little understood.

RESPONSE

The Plains Pest Management Association, made up of 22 participating grower members in Hale, Swisher, and Floyd Counties and steered by a chairing committee and the IPM agent, made informing the producers in the region about the latest grain pest IPM principles, control methods, invasive species, and options a priority in 2025.

PPM Field Scouting Program Grain Crop Pests Weekly Education and Pest Status Updates:

Weekly field scouting for insect, weed, and disease problems of the 22 participating grower member's production grain fields with IPM education for each grain field scouted. During the 2025 season, 26 grain fields were included in the scouting program representing 1,701 intensely scouted grain crop acres with an additional 560 wheat survey scouted acres with education and IPM recommendations for each field, each week directly to the producers.

In addition to IPM education for the PPM Producers, data from the scouting program relating to pests status are utilized for region wide IPM alerts and producer education throughout.

Unique Regional Educational Outlets Highlights

- Plains Pest Management Newsletter.
  - 14 Editions, 327 subscribers with additional social media views. All with sections focused on grain pest status, scouting tips, threshold information, and pests to watch for the upcoming week and crop stages.
- High Plains Weekly IPM Audio Updates, all with Grain Crop Pest information generated from the local scouting program and crop status
  - 18 updates with radio replay on All Ag, All Day Radio
  - 227 weekly text subscribers plus additional social media releases and the potential of 10,500 radio listeners
- Plains Pest Bugoshere (blog), Facebook, X, and Linkin with social media releases of the PPM Newsletter, IPM Updates, and additional IPM Grain Crop Educational materiel.
- 5 mass media interviews and articles (3 radio, 2 newspaper)

VALUE

Producer and Consultant responders to the 2025 survey were asked if they could assign a per acre crop production $ value to all the efforts of the IPM Program and How many acres they represent?

Producers and Independent Crop Consultant Acres Responded with:

$54.42/Acre

For

- **66,347 Corn,**
- **22,830 Sorghum**
- **24,742 Wheat**

Acres

$6,202,889.55

value of Grain Crop Pest Education for 2025

Grain Crop Teamwork Highlights

- **External Teamwork Highlights**
  - Invasive wheat pest monitoring grant proposal – coauthor
  - Adult Moth Grain Pest Population monitoring
    * Texas Corn Producers
- **Internal Teamwork Highlights**
  - Corn Leafhopper Audio Update Sharing
  - High Plains IPM Audio Update participation with weekly grain crop inputs
  - Texas Wheat Pest Guide revision inputs as co-author inputs
  - Grain crop disease vector search, field work, and paper efforts-coauthor
- **Adult Grain Pest Team Presentations**
  - Mid-Plains Ag Expo, Plainview
  - TAIA, Dumas
  - 2025 Mid-Plains Field Day, Tulia

2025 CLH in Hale County

Evaluation Strategy

A retrospective post evaluation instrument was distributed online to the subscribers of the Plains Pest Management Newsletter and was posted for all viewers of the Plains Pest Bugoshere (blog) and other social media outlets to respond. In addition, a retrospective post survey was distributed at the Mid-Plains Crops Conference, Mid Plains Field Day, and active listeners to the IPM Audio Updates.

RESULTS

<u>Responders to the 2025 end of season PPM survey indicated:</u>

- 100% of responders indicated adopting a new recommended IPM practice this year with 64.71% indicating an improved economic result.
  - 74% indicated this improvement came from timelier pest control, 53% from improved pest life cycle understanding and alerts, 42% from reduced pesticide use, 32% from timely agronomic information, 26% for reduced agronomic inputs, and 26% for new practice implementation.
- 100% of responders said the program met their expectations or better (32% met, 37% exceeded, 32% far exceeded).
- **$54.42 per acre value** of the Total IPM Program's 2025 efforts.

<u>Responders to the Mid-Plains Ag Expo retrospective survey indicated:</u>

- Expected a **$9.83 return** on the education offered representing **37,400 grain acres**. This calculates to an **impact of $367,642 for this event.**
- **89.2% indicated an improvement on their ability to identify corn leafhoppers.**

<u>Responders to the 2025 Mid-Plains Field Day survey indicated:</u>

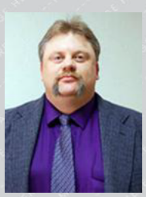
- 100% of responders indicated learning new grain crop IPM information during that section.

<u>Responders to the 2025 IPM Audio Update survey indicated:</u>

- A **$26.96 corn** per acre value, **$15.71 sorghum** per acre value, and **$11.07 wheat** per acre for the Audio Updates
- They represented 99,546 acres of corn, 68,165 acres sorghum, and 40,020 acres of wheat.

Summary

Economic forces moved grower interest towards grain crops this year at the same time regional grain experienced new pests and disease challenges. Texas A&M AgriLife's responsibility as lead educators and problem solvers was tested. Through the program's teamwork from throughout the AgriLife system, the sharing of State level information, and locally generated data proved to better guide the growers in the Mid-Plains and Upper Rolling Plains through these challenges to an improved economic impact. This Program, as a portion of the AgriLife system, proved not only important to the area agriculture economy but is a significant in its maintenance, function, and advancement.



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Crop Scouting Education 2025

Blayne Reed, Program Specialist-IPM, Mid High Plains and Upper Rolling Plains

RELEVANCE

Production agriculture is the foundation of the economies of the Mid-High Plains and Upper Rolling Plains. Pests continually threaten production agriculture and persistently develop to overcome existing control measures. Integrated Pest Management (IPM) is an affective and sustainable approach to pest management that uses a combination of evolving control practices to maintain economic and environmental sustainability in production agriculture. Crop scouting, conducted properly, is critical to implementing IPM plans and applying control measures. The Mid-High Plains and Upper Rolling Plains IPM Program is an educational program that strives to educate producers in the region about the latest IPM principles and help implement sound IPM control strategies into producer's operations. Educating early career professionals, county agents, and youth seeking careers in agriculture about proper field scouting techniques is viewed as critical to the future and sustainability of the ag industry in the area.

RESPONSE

The Plains Pest Management Association, made up of 22 participating grower members and steered by a chairing committee and the IPM agent, made educating early career professional about the latest crop field scouting techniques, agronomic principles, insect pest and beneficial identification, and sustainable IPM management principles a priority in 2025 for the region.

- **Field Crop Scout School for Cotton, Corn, Sorghum.**
  - Held and co-hosted in rotation between Plainview (Reed), Muleshoe (Thobe), and Lubbock (Vyavhare/Porter) with pathology training (Obasa).
    - Muleshoe May 29, 2025
    - 14 attendees (7 field scouts, 5 AgriLife personnel, 2 Industry personnel
    - Introduction level training for Insect pest, beneficial, agronomic growth habits, weed, and disease identification for cotton, corn, and sorghum
- **PPM Field Scouting Program**
  - Weekly scout training for 2 2025 PPM employees.
    - Trained weekly.
    - Agronomic stage training for stage specific target insect pests, beneficials, weeds, agronomic measurements and staging, irrigation scheduling, and disease identification.
    - 4,933 acres of cotton, corn, sorghum, and alfalfa
- **Plains Pest Management Newsletter.**
  - 14 Editions, 327 subscribers with additional social media views.
    - Each edition highlighted pest status, expected pests for current crop stages, shared threshold education from the Texas A&M AgriLife Guides, and utilized photos to aid in scouting
- **High Plains IPM Updates**
  - 18 updates with radio replay on All Ag, All Day Radio
    - Short and practical instructions included with each crop discussed on helpful scouting hints.

VALUE

Responders to the 2024 Field Scout School Survey indicated a per acre value to the school at:

$41-50/acres

For the responders estimated

91,100 Acres

they expected to scout for the season

2025 PPM Field Scout at work

Response Highlights

- **Scout School Presentations**
  - Cotton Agronomy and Pests 101
    - Reed / Lege
  - Corn and Sorghum Agronomy and IPM
    - Porter / Reed

- **PPM Scouting Program (Hale, Swisher, & Floyd)**
  - 2 Field Scouts Trained weekly on cotton corn, sorghum, & alfalfa scouting
    - Next generation of likely IPM/agricultural professionals

Future Goals

- Continue established South Plains Field Scout School rotation
- Expand Field Scout Schools to Rolling Plains to meet additional needs in Hall, Motley, Cottle, and Childress Counties
- Add Wheat Scout School to meet Randal and Armstrong Counties
- Open PPM biweekly and stage specific field scout training to early career professionals

Evaluation Strategy

A retrospective post evaluation instrument was distributed at the 2024 field scout schools and training impact questions were included in the retrospective post evaluation 2025 annual PPM Survey.

RESULTS

Responders to the 2025 end of season PPM survey indicated:

- 100% of responders indicated adopting a new recommended IPM practice this year with 64.71% indicating an improved economic result.
  - 74% indicated this improvement came from timelier pest control, 53% from improved pest life cycle understanding and alerts, 42% from reduced pesticide use, 32% from timely agronomic information, 26% for reduced agronomic inputs, and 26% for new practice implementation.

Responders to the 2024 Scout School Surveys:

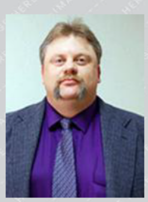
- 100% indicated learning impactful new skills from the scout school
- 100% of responders expected an economic impact from the scout schools.
- The responses averaged $41-51 / Acre for 91,100 acres for an impact of an estimated minimum of $3,735,100 for this one event.

Summary

Proper field scouting with accurate issue identification and beneficial impacts are essential to proper implementation of sustainable IPM. These results indicate the impact of training professionals in properly scouting fields and highlight a desperate need to expand. More early career professionals need this practical training that can be found few places outside of AgriLife Extension. This effort should be expanded to more hands-on education so that these professionals can gain the experience to apply these important skills.

Training Professionals to scout for SCA

"I never really understood how cotton plants grow until I attended one of AgriLife's (Blayne's) scout schools."
David Graf, Former CEA



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2025 Educational Activities

Farm and Site Visits	1,424
Number of Newsletters Released	14
Newsletter Recipients	4,578
Direct Contacts	11,382
IPM Audio Updates / AgriLife Podcasts	19
Blog Posts and Social Media Releases	57
Ag Professionals, Consultants, CEA, and Field Scouts Trained	14
Newspaper / Magazine / online Magazine articles (written or interviewed)	6
Radio Interviews / Programs	3
Research Trials Initiated	7
Research Trials Supported	6
Professional Presentations	4
Publications Authored and Co-Authored	4
Professional Symposia Organized	1
Symposia Moderated	3
Presentations / Programs / Field Days Made for Adults	12
Presentations Made to Youth	11

2025 Activity Highlights

PPM Scouting Program (4,933 acres)
Applied Research Projects
Radio Programs
4-H Youth Entomology ID Team Coach
Insect and Weed ID
Hale County Youth Ag Fair
High Plains Association of Crop Consultants
CEU training & County Meeting Support
Texas Pest Management Association
Newspaper Press Releases and Interviews
Southwestern Cotton Physiology
Leadership Plainview
Beltwide Cotton Conference
Hale County LAB
Cotton Incorporated CORE Projects

Plains Pest Management Newsletter
PPM Bugoshere (blog) & Social Media
Mid-Plains Ag Expo
Field Scout Schools
Pest Patrol Hotline
4-H Entomology ID Teams
High Plains IPM Audio Updates
Mid-Plains Field Day
Southwestern Branch ESA
4-H Insect Photography Contest-Superintendent
Texas State Support Committee Report
Grant Writing
Professional Leadership Activities
Entomology Department Committees

TEXAS A&M AGRILIFE EXTENSION
Integrated Pest Management

TPMA Texas Pest Management Association
PO Box 16523, Lubbock, Texas 79490

2025 at a Glance

The following is a brief overview of the 2025 growing season and pest populations in Hale, Swisher, and Floyd County agricultural crops. Copies of the Plains Pest Management Newsletters published in 2025 are available at https://hale.agrilife.org/newsletter-ipm/ for a more in-depth look at specific pest pressure, weed situations, crop conditions, and environmental conditions at any given week of the growing season. Each growing season is unique, and the weather and pest of 2025 on the High Plains were no exception.

The 2025 year started with an increase in local wheat acres due to market forces that were favorable to cattle, cattle grazing, and feeds and depressed for cotton while most input prices skyrocketed. Wheat, a very versatile crop that includes uses such as seed grain, feed grain, hay, cover crop, and silage uses locally and with potential for low input costs was planted above average levels and in areas farther south in Hale & Floyd County. These acres are typically reserved for higher input summer crops and not low input wheat.

Through January the lingering drought situation persisted that had lasted since the early fall when moisture had broken a lengthy drought spell. This aided in establishing wheat stands and the decision to plant a higher percentage of wheat. As winter moved into spring, timely moisture aided in wheat development and eased some typical virus disease issues. These diseases, usually transmitted by piercing-sucking insects in the fall that show symptoms in the spring once jointing begins, were just as prevalent in 2025 but the timely and lengthy period of moisture eased symptoms that often plague and decimate a decent amount of acres when combined with drought stress issues.

Typical wheat spring pests such as green bugs, Russian wheat aphids, numerous other aphids, Lepidopteran pests were present but very few fields developed into economic pest issues. Fungal diseases such as rust of multiple species were also very light. Resulting yields, for most wheat uses, were very good but not record breaking per acre. Very little additional inputs were added to the crop with high input costs limiting interest in expenditures. Resulting differences in irrigated and dryland yields were not as large as usual with irrigated fields typically only receiving 4-8-inches more moisture per acre than dryland and typically timed more to ensure establishment early in the year rather than to increase yields during head formation and grain fill. For grain yields, most dryland averaged 18-40 bushels, which is up from the typical 8-24 for the area. Irrigated yields tended to only be 10-45% higher. Yields for the other uses of wheat were similarly increased with very little wheat failure during the season, with a few hail issues acknowledged. This resulted in a large increase in the volume of wheat grain, hay, silage, and grazing for the region from this crop.

The spring and early summer moisture also aided the planting and establishing of most summer crops to varying degrees, with variable amounts of moisture streaking across the region from multiple weather events. With irrigation ground water resources declining and the addition and impact of invasive corn leafhopper, it was expected that the heavy irrigation requiring corn acres would decrease in 2025. This was expected to result in a larger shift to other grains that included sorghum and wheat to an even larger extent. Market forces and the availability of spring rainfall amended this prediction, and the area actually experienced an increase in corn acres in 2025 from 2024 and only a slight increase in sorghum acres. Cotton, while down in acres, still represented the largest component of summer crop acres as the most technology dependable and least thirsty for dryland acres and as a main stay for crop rotation.

Due to seed and other input costs being high and lint price low, many producers reduced seeding rates to the bare minimum in an effort to save funds. The use of insecticidal seed treatments was also dropped by many producers in an effort to reduce input costs. Rainfall helped most fields with seed bed quality and cotton established near minimum plant per acre stands despite some challenges. Wireworms and false wireworms were active in all of the PPM scouting program fields and impacted stands across the region. The lack of insecticidal seed treatments was a leading cause for fields that failed to establish. On average, 54% of all seed planted into our PPM fields across the 3 counties emerged as viable cotton seedlings which depressed the established stand counts even lower, caping yield potential for many area cotton fields below expected yield return levels. Many fields were kept due to replant costs. Some hail did farther fail a minority of additional fields as the weather systems streaked the area.

During cotton's early 2025 development, thrips were a more widespread issue than usual. They were not particularly heavier than an average year, but more widespread as the thrips population developed on the wheat acres that had been planted on more acres in the typically lower wheat acre areas. Combined with the overall reduction of seed treatment usage and growers had to treat economic levels of thrips and experienced some developmental delays in the early true leaf stages from the thrips.

Early corn and sorghum fared much better in the moist spring and early summer moisture. Wireworm damage can be absorbed due to the developmental means of these grass crops. There were very few other economic pest issues in these crops in the early vegetative growth stages. The area was on high alert during the critical V2-8 stages for the arrival of the corn leafhopper and the diseases they transmit, but none were found until just after these stages were completed by most fields.

The few alfalfa fields in the area experienced prolonged and heavy alfalfa weevil pressure through March, April, and even through most of May. This was the heaviest and most long-lasting pressure for this pest in this area ever recorded. Several fields required multiple treatments to maintain yields and quality. Some area alfalfa growers opted to ignore the pest due to input costs or missed identifying the issue and severely lost yield and hay quality to the first 2 cuttings. Control was not optimal for fields treated with the cheaper pyrethroid option but there was not major evidence of the recorded pyrethroid resistance that plagues other alfalfa production areas.

As cotton developed into squaring stage, it was slightly behind its average calendar date development due to thrips damage and a fewer accumulation of heat units from cloudy, moist weather. Surprisingly seedling disease, unless spurred by wireworm feeding, was very light. Plant bugs, namely Fleahoppers, moved into cotton shortly after pinhead square stage and began reproducing. This high pressure infested all PPM fields and was likely a continuation and extension of the high pressure from the previous two growing seasons aided by the additional moisture that promoted the active growing of the fleahopper's more preferred host plants. As those preferred host plants, typically silver leaf nightshade and Canadian thistle, were controlled as weeds in and around the cotton field environment, the fleahoppers began moving into cotton and establishing. This movement continued for extended periods of time as additional environments with the preferred host plants in the area were mowed, sprayed, hoed, or began to dry down or matured out. Beneficial populations did have solid impacts on the fleahopper population and resulting damage but 100% of the PPM fields eventually reached threshold levels for the fleahopper pest over a longer than usual month-long window. Many area producers used cheaper products in their fields with less residual, were not target pest specific, and harsher on beneficials. Some even opted not to treat the Fleahoppers at all, refusing to send unexpected funds in the poor market situation, hoping for the plants to recover lost fruit set later in the summer.

As cotton developed closer to 1st bloom, and the cut-off for fleahopper economic damage, Lygus began to merge with the fleahopper population and added to the plant bug damage. By 5 NAWF stage, around 60% of all PPM fields had also reached threshold levels for Lygus triggering a rare 2nd plant bug treatment. Boll set and fruit development were outstanding in fields that received timely plant bug treatment but was very light for those that were untreated with prolonged plant bug pressure preventing fruit load replacement.

In vegetative stages for corn and sorghum, typical pests were present but limited in threat. High beneficial populations kept most early season pests at low levels. Fall armyworm populations and whorl damage was noted and relatively high in all non-Bt plants, refuge, and fields. While unsightly, this damage was not economic with no field experiencing above 10% foliage loss with 25-30% being threshold. Aphid populations, of several noted species, were notable in alfalfa fields following weevil treatments of late spring and early summer. While these populations were a concern, few actually reached treatable levels.

Much was learned in the early summer by producers, consultants, and industry about the CLH and scouting corn for them. The corn leafhopper did arrive in the area just about the time earlier planted corn fields were starting to tassel and passed the critical V8 stage. It was a few more weeks, around stage R1-2 for most early fields, before populations became notable in most fields. Data from CLH native corn producing areas indicated that protecting corn through the R2 stage was probably best. Most fields were treated with the high threat of disease transmission at the first sign of the pest in the area or at first sight of them in their fields. About half PPM fields were treated for CLH at least once. The late planted corn in the area and program was about V4-6 stage at this time and was also treated. Several fields that had reached R2 as the CLH was found in that field held off on treatment. Very little disease symptoms were noted in any early planted corn in the area whether treated for them or not.

Most of the later planted corn only required one treatment but did express about 3-5% of the plants exhibiting disease symptoms by R4-5 stages. Those late fields in the area that were not treated exhibited as high as 60% symptom rates. Research trials conducted in Lubbock by Dr. Pat Porter of the disease impact if symptoms are present indicate a 67% yield loss. Field's yields tended to follow these results from fields with a high number of infected plants.

As fields matured into peak water use stages, 5 NAWF for cotton, tassel for corn, and bloom for sorghum, rainfall stopped and most fields experienced some level of drought stress at and shortly after these critical stages again in 2025. Irrigation systems were not late in responding to need but capacity has diminished over the years and a larger shift to dryland production of multiple types is underway for many acres. Dryland summer crop acres suffered the most during this yield setting time, but field abandonment was low and yield, while lowered, was not at disaster levels.

Sorghum midge arrived slightly early for the area, late July, and began infesting sorghum of all types during bloom stage. The midge population, while in most fields, never developed into an economic problem for most fields and only 5-10% of the area fields required treatment for the mostly early maturing sorghum in the area.

The bollworm / corn earworm / sorghum headworm population was high compared to recent years. The PPM moth trap numbers in Hale County reached pre-Bt levels of 300-500 moths per week when 3-30 moths per week had become normal over the past 15 years. This population mostly attacked corn where they are of limited economic importance. Both the early and late corn fields had ample egg lay pressure, but damage was not noted beyond typical tip feeding. This hinted that there were no major signs of an increase in Bt resistance in corn fields with only 2-Bt traits. In recent years feeding from corn earworm has become typical in 2-traited fields as worms tend to lose their cannibalistic traits as mobility inside the ear is reduced. This then allows multiple worms to feed on the same ear, which then results in higher and unacceptable yield loss and a very difficult control situation. Our local cotton Bt Sentinel plot field shown trait performance holding steady which agrees with Statewide resistance work conducted in the lab by Dr David Kerns at College Station. Thus, this higher than the new normal bollworm population was not an issue in our area corn, a few vegetable sweet corn fields aside, despite heavy corn infestation.

In our area cotton, only conventional non-Bt cotton fields of any trait type and not near a corn field had to be treated for worms. This was only 4.2% of the PPM cotton fields but was the first instance since 2018 that any PPM cotton field required bollworm treatment. In sorghum, the pest's second most preferred host behind corn, a handful of fields had to be treated. The large beneficial population continued to impact the bollworms in the easier to access sorghum panicum, preventing a widespread sorghum headworm outbreak.

In sorghum of all types the sorghum aphid arrived just before boot stages but was slower than typical in population increase due to good beneficial activity. About 85% of the PPM sorghum fields eventually required treatment for SCA but the pest population developed very slowly under the predator pressure with most fields not reaching threshold levels until soft dough stages, if treatment was required.

In late summer and early fall some rainfall returned to the area. These events were too late to aid the summer crop's yields, but did not hinder harvest, some silage chopping delaying aside. These rainfall events gave aid and hope to early fall wheat planting for the producers prepared to drill opportunistically but was not consistent enough to reliably establish dryland alone and left most irrigated wheat requiring pumping to successfully emerge. As of the end of December 2025, many to most of the dryland wheat fields remain unestablished regardless of planting date due to lack of germinating moisture for the remainder of 2025. Those fall rain events did aid in alfalfa's fall hay cuttings. Some area fields during mid-fall experienced heavy blister beetle infestations and required a very rare treatment to maintain hay quality and feed safety.

Cotton yields, as discussed earlier, were solid and above average, if pests were controlled timely and effectively and / or if the rainfall amounts that streaked through earlier in the year. Dryland lint yields ranged between 120 pounds per acre up to 840 pounds with most falling around 300 pounds. Irrigated lint yields came in between 600 pounds and 2,100 pounds with yields averaging around 1,100 pounds with very few fields actually performing at that median but rather 200 pounds on either side of that average. Most summer grain, silage, and hay crops were below average yields but not so light as to be considered poor, mostly reflecting peak water use drought stress. Equivalent corn yields for all uses (grain & silage) should average around 160 bushels per acre (all acres were irrigated) and slightly below average. Irrigated sorghum yield equivalent grain yields for all uses (silage & hay) should come in around 4,200 pounds per acre. Dryland sorghum was the true disappointment with equivalent yields around 800-1,400 pounds per acre. Alfalfa hay yields for the year were actually up in tons resulting from an average one additional cutting above average from a typical year. The early cuttings did have quality issues and some of the late cuttings from some fields had blister beetle concerns.

2025 Applied Research & Pest Monitoring Published Projects

2025 Plains Pest Management Corn Earworm/Bollworm Population Monitoring of Hale & Swisher

2025 Plains Pest Management Adult Corn Pest Population Monitoring

2025 Texas High Plains Bt Sentinel Plot

2025 Efficacy of In-Furrow FMC Products for Control of Wireworms in Cotton

Two years of Evaluating Insecticidal Seed Treatments for Wireworm Control on Texas High Plains Cotton

Phytogen Variety Trial 2025 Swisher County

2025 Plains Pest Management Corn Earworm/Bollworm Population Monitoring of Hale & Swisher

Blayne Reed, Program Specialist – IPM Mid High Plains & Upper Rolling Plains

Texas A&M AgriLife Extension Service
Texas Plains Region
Cooperators: Mike Goss, Kress, Texas, Shane Berry, Cotton Center, Texas

Objective

This effort was made to monitor the adult bollworm (corn earworm, sorghum headworm) population trends throughout the summer growing season in Hale & Swisher County both for immediate and historical use.

Abstract

Bollworm moth trap numbers for Hale County were abnormally high compared to recent years' trap numbers while Swisher trap numbers were very light, much more in line with recent years' numbers. Adult Lepidopteron pest monitoring is not a guarantee of pest presence or economic problem predictability. The high numbers in Hale County were likely due to the planting of corn for the 2025 growing season adjacent to the Hale Traps static location while cotton, sorghum, and peas have been near the trap for many of the previous seasons. This does not account for all of the increase in moth catches as an increase in bollworm pressure with the economic need to treat several non Bt cotton and sorghum fields in the area for the first time since the high bollworm year of 2018. This bollworm issue was still cannot be considered widespread for Hale County proving that while the monitoring of adult moths can be helpful in predicting pest numbers, it cannot replace field scouting for absolutely accurate crop decision making.

Materials and Methods

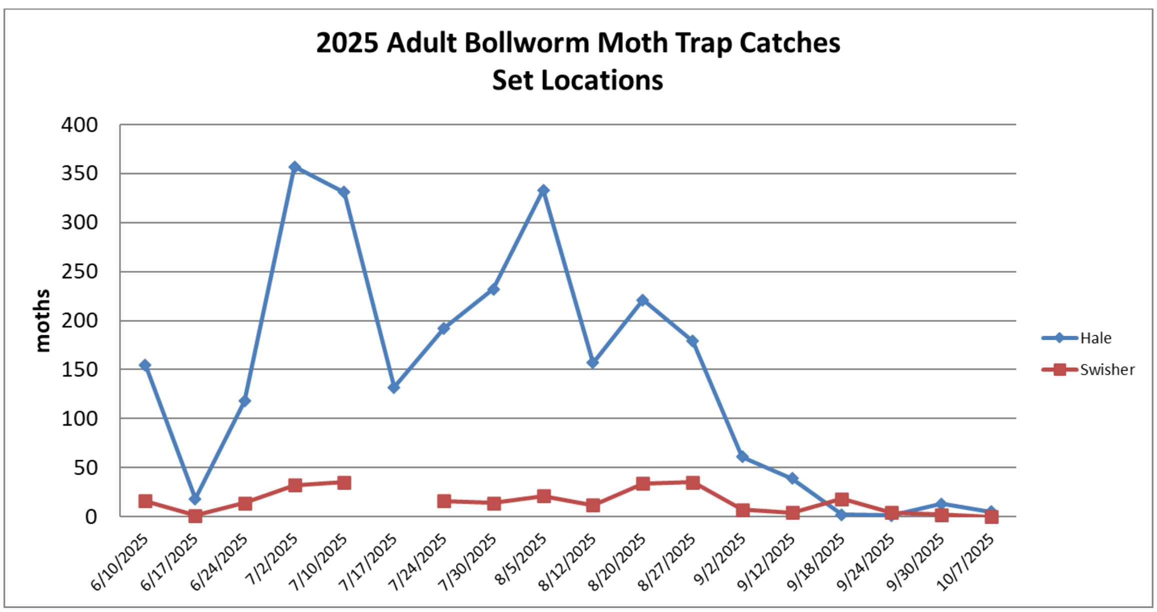
Standard wire-framed Lepidopteran cone traps and *Helicoverpa zea* specific pheromone lures were utilized in this effort. Traps were suspended upon rebar posts at a height of roughly 4 ½ feet to the top of the trap. Traps were checked, moths counted, recorded, and traps emptied weekly, and pheromone was changed bi-weekly.

Two trapping sites were utilized, one for each county served. These are the same locations utilized every year for this effort since 2013. The Swisher trap was in central Swisher along the Middle Tule Draw on the Mike Goss Farm (34 26 29.65N -101 44 27.33W) to capture overwintering moths and moths migrating from the east up the Caprock escarpment. The Hale trap was in southwestern Hale near Cotton Center on the Shane Berry Farm (33 59 43.59N -101 58 31.39W) to capture overwintering moths and immigrant moths moving from the south. Traps were counted weekly and species-specific pheromone lures changed bi-weekly. All traps were set during the first week of June centering on 3 June and concluded the first week of October centering on 7 October.

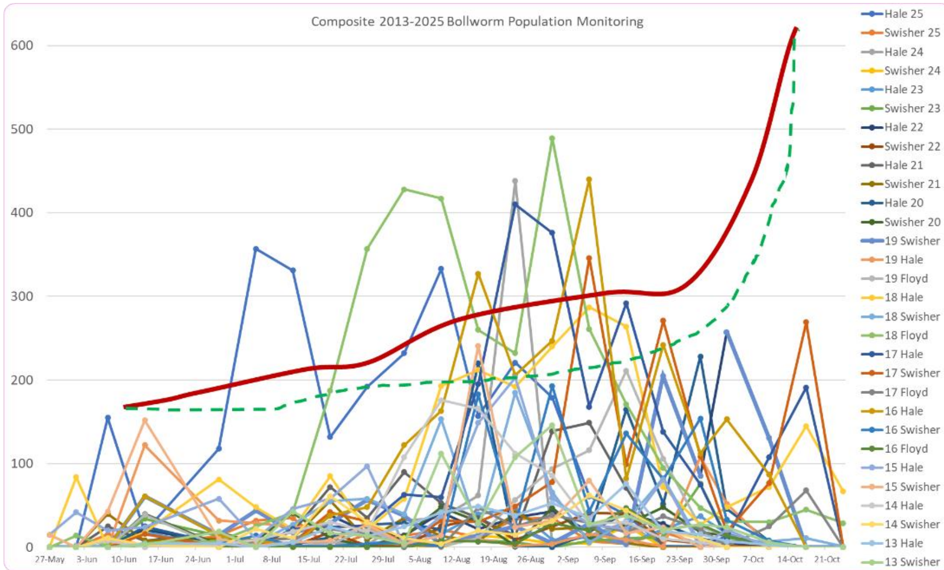
Figure 1. Hale Trap during August 2025.

Results and Discussion

The population from the Hale County trap were quite high in 2025 compared to recent year's moth trap populations and more indicitive of pre Bt moth numbers of the 1990's and earlier with multiple weeks collecting over 200 moths and peaks over 300 per week. The Swisher trapped population remained very low, much more typical of recent year's trapping numbers never capturing above 35 moths for any week.



Both locations trap numbers tapered off in early September and remained low with no late season flights noted in 2025. The 2025 Hale trap catches were among the highest recorded since 2013 and alerts for the pest were released for the area. For the first year since 2018, bollworm several treatments were justified in the area in non-Bt cotton.



Conclusions

While the Hale numbers were substantially increased for 2025, a portion of the increase may be in some part be related to the proximity of corn, the pest's preferred host crop, to the stationary trap's location. This does not account fully for the high numbers. The amount of moths trapped in each location did seem to mirror the amount of bollworm pressure the Plains Pest Management Scouting Program noted in fields near the trap areas shortly following peak moth number catch dates. This did relate to multiple non-Bt cotton fields and sorghum fields requiring treatment for bollworms in the area in 2025. This was the first time since 2018 numerous fields in the area reached economic levels. Still this outbreak was not widespread. These results indicate that moth trapping is useful in predicting moth pest movement but cannot guarantee or predict widespread outbreaks and cannot replace field scouting for truly accurate pest decision making.

Acknowledgements

This work is supported by Crops Protection and Pest Management Competitive Grants Program from the USDA National Institute of Food and Agriculture. I would like to extend thanks to our cooperating producers Mike Goss and Shane Berry for working with us to gather this data. I would like to thank the 2025 Plains Pest Management team for data collection and labor associated with this work: Adan Vargas, Denise Reed, and Spencer Akins. Thank you all.

2025 Plains Pest Management Adult Corn Pest Population Monitoring

Blayne Reed, Program Specialist – IPM Mid High Plains & Upper Rolling Plains and Texas Corn Producers

Texas A&M AgriLife Extension Service
Texas Plains Region
Cooperators: Texas A&M AgriLife Research, Halfway, Texas, Sammy Shannon, Edmonson, Texas

Objective

This effort was made to monitor all major Lepidopteran corn pest populations of concern for trends throughout the summer growing season in Hale & Swisher County for immediate alerts, historical use, and to be shared with the Texas Corn Producers supporting the associated monitoring effort across the majority of the corn producing counties in Texas to give a comprehensive view of the pests on a weekly alert basis.

Abstract

The target corn pest species for monitoring were the corn earworm (CEW), fall armyworm (FAW), western bean cutworm (WBCW), and southwestern corn borer (SWCB). Three locations, all near production corn, were utilized for this moth trapping and population monitoring effort. Two were in Hale County (H1 -Halfway & H2 -Finney) and one in southwestern Swisher (S1 - Center Plains). The traps were counted weekly. CEW numbers for 2025 were high for all locations with all sites following the same population trend but peaked at S1 with almost 700 moths in the 3rd week of July corresponding with peak attractiveness of pollinating corn. FAW were even higher with all sites following similar trend to each other again with peak numbers coming from S1 at over 1000 moths captured during mid-August but peaks in late June and late-August almost reached similar levels. It is not known where the later summer FAW moths went but the late June flight resulted in pre-boot sorghum damage in July. The numbers for SWCB and WBCW were very light with only 10 and 4 moths caught for the entire season for these species respectively. While these numbers were low, the threat that these two species represent to corn regionally, monitoring for the adult flights remains important. This data confirms that adult Lepidopteron pest monitoring is not a guarantee of pest presence or economic problem predictability but can be useful for detecting potential issues and a need to scout fields closely for each pest.

Materials and Methods

The target corn pest species for monitoring were the corn earworm (CEW), *Helicoverpa zea*, the fall armyworm (FAW), *Spodoptera frugiperda*, the western bean cutworm (WBCW), *Striacosta albicosta*, and the southwestern corn borer (SWCB), *Diatraea grandiosella*.

Three locations were utilized for this moth trapping and population monitoring effort. All were adjacent to production corn fields in areas of high corn producing acres within each county, with all species trapped at all locations. Two were in Hale County and one in southwestern Swisher. The first Hale group of traps, H1, was located on the Texas A&M AgriLife Center in Halfway- Helms farm near breeding corn plots (34.092781. -101.570928). The second set of Hale traps, H2, were near a production field belonging to Sammy Shannon Farms west of Finney, Texas (34.164745, -101.455228). The third trap group, S1, in southwestern Swisher was also placed near a production field belonging to Sammy Shannon Farms between Edmonson and Center Plains, Texas (34.191707, -101.562149).

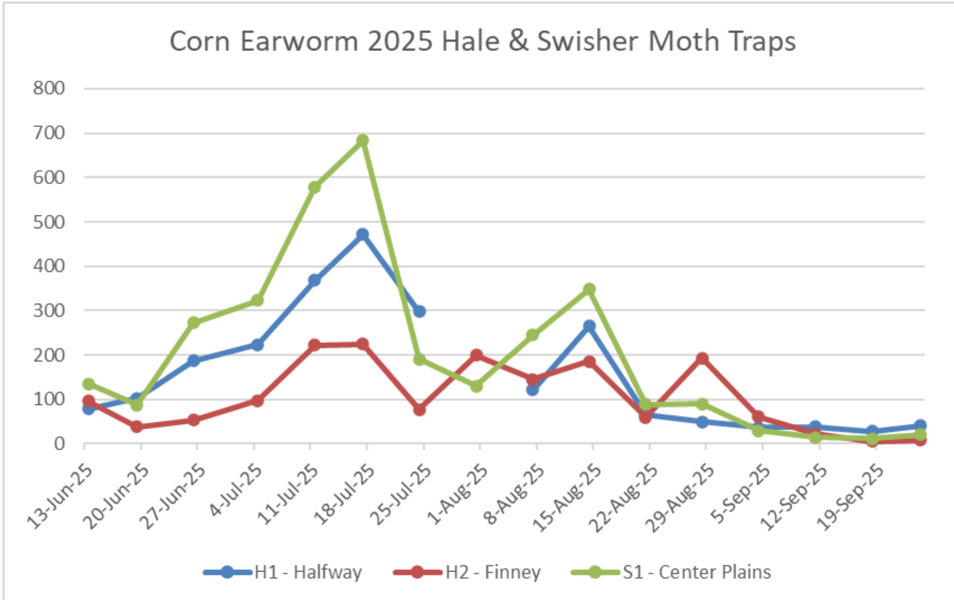
All traps were of the green, two-piece Uni-trap hanging trap design with pheromone cap placers. All Pheromone lures utilized were from Trece and supplied by Texas Corn Producers. All traps utilized kill strips in the collection bucket portion of the traps. All traps were hung within 75 feet of corn fields to be near fields to capture insects attracted to the fields and those leaving but not closer than 20 feet to prevent competition from the field. All traps were hung from spring metal trap holders with the traps about 3 to 4 feet above the ground and placed nearby some structures, poles, or equipment to offer some protection from physical damage from traffic or farming procedures. Traps were counted weekly with all captured insects removed and fresh pheromone lures were placed every two weeks. Most trap catches were counted on site but due to the nature of the western bean cutworm pheromone lure also attracting some fall armyworms, the WBCW captures were placed into Ziplock bags and transported back to the Plains Pest Management Lab in Plainview for full identification by the Entomology Program Specialist.

All traps were placed on 6 June with data recorded weekly through 24 September. This end date was passed the TCP minimum required end date of 1 September to better monitor these populations for the amount of late corn planted in the area. The only exception to the weekly recording differences were for a 31 July check date for a damaged CEW trap at H1 and the 24 September date for the H2 and S1 location due to a shortage of pheromones.

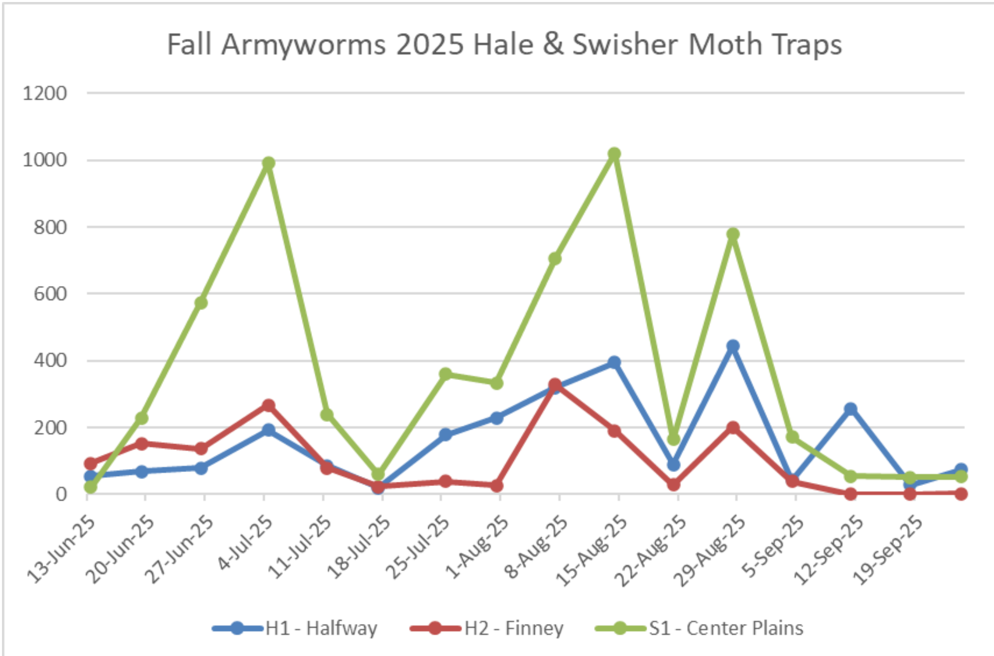
Results and Discussion

Corn earworm and fall armyworm populations were generally high for the 2025 summer while the southwestern corn borer and western bean cutworm populations were barely noticable.

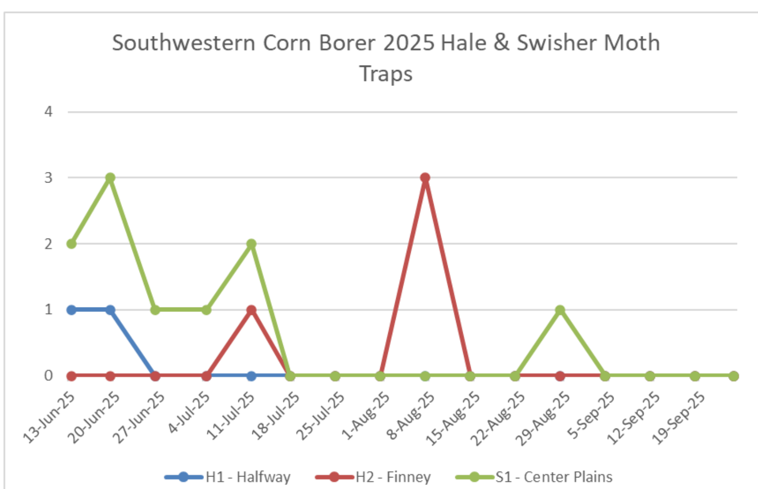
The CEW peak was at S1 on 3rd week of July and all locations tended to follow the same peak and lull pattern of CEW flights. These loselly corresponded with weather patterns (southern fronts bringing moths north to the THP) and important plant stages for early planted corn. The largest flight occurring in that 3rd week of July corresponded with tassel stage and the most attactive stage and host for CEW. This brought adults to the field for egg lay in high numbers. This egg lay was confirmed the following week of the high trap numbers by the Plains Pest Management Scouting program with dozens of eggs lain per corn plant. The later peaks then occurred in conjunction with dent and the maturing of the ear and the moths leaving the field as the host becomes impossible for the CEW to feed upon. This too was confirmed by the PPM scouting program in nearby cotton or late corn and sorghum fields. The last peak flight occurred in late August as the area's late corn reached maturity and began drying down. There were no late or fall CEW flights in 2025. This trapping effort was the source for multiple timely pest alerts for those crops and for sweet corn for human consumption. But this pest is rarely an issue for silage or corn for grain.



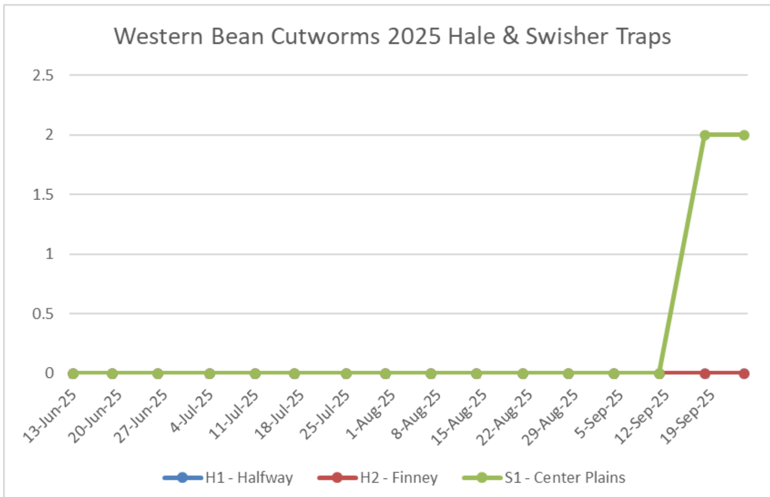
The fall armyworms had a much wider range of fluctuations in peaks and lulls and much different timings and likely reasons for those peak flights. These peaks were much higher than any other species trapped in 2025 and likely represented an influx of moths from farther south in Texas where they had been a major pest in grass, hay, and other summer crops. S1 again had the highest peak for FAW at well over 1000 moths caught in mid August but all sites had similar population trend timings. It is not as clear as to where most of these flights went, or even if they stayed in the area. Following the peak in late June, there was a sharp increase in fall armyworm larvae in sorghum and no-Bt corn in the area but it was not likely to represent a flight this large. Following the other two main peak flights of FAW in early and late August not major infestations of larvae were noted in any major summer crop. Some were found in headed sorghum, late corn, and even a few in non-Bt cotton, but these finds were small compared to the trapped moth numbers. It should be noted that the beneficial population in all of the summer crops was elevated and could have aided in keeping the FAW larva numbers down and some early planted wheat could have been a suitable host as could have been green pasture and CRP in the area.



The southwestern corn borer numbers were miniscule compared to the FAW and CEW in 2025. At one time in the past, the SWCB was the most serious pest on Hale and Swisher corn. Over the past 30-years the Bt traits have controlled the pest so well that finding them can be rare in these counties, even near non-Bt fields. With confirmed resistance to several Bt traits in SW New Mexico and a stable SWCB population in the counties just to the west of Hale and Swisher, there has returned serious concerns about SWCB and any established population or pressure does warrant alerts for scouting. All three trapping locations found some SWCB in 2025 but never more than 3 per week with most weeks returning zero adult captures for all traps. For the entire season H1 only caught 2 moths, H2 only caught 4 moths, and S1 only caught 10 moths. Most of these catches were during late pre-tassel stages. With few catches in the late season, likely speaks well about the performance of the Bt traits for this pest locally. However, there were 4 captured very late in the trapping season which causes concern either for migration into the area or survivability threats.



Western Bean Cutworms are a major pest in the northern Texas Panhandle but are slow to migrate to the Hale & Swisher area. Beginning about 10 years ago, some of the first confirmed WBCW were found in the area and alerts and training on how to scout for this unique pest were made. For the 2025 season, all locations recorded no WBCW until S1 caught 4 individuals in mid to late September and the end of the season. It is not known why this pest is having issues establishing in Hale & Swisher but corn producers should remain vigilant as the pest continues to move into the area.



Conclusions

Adult Lepidopteron pest monitoring is not a guarantee of pest presence or economic problem predictability. It can however be utilized usefully for alerts to begin scouting for a certain pest or that there can be potential economic issues growing, as this data suggests. 2025 was a high CEW number trap year and there was a concurrent increase in egg lay in multiple crop following the peak CEW flights. Not all of this increase in egg lay was economic, in fact, most was not, crop and situation depending. Mortality, predation, pest movement, and even field niche management come into play. This adult monitoring can return good information for the amount of effort required, but it should not be used as a stand-alone pest management decision tool, also supported by this data.

Acknowledgements

This work is supported by the Texas Corn Producers. Portions of this work is funded by Crops Protection and Pest Management Competitive Grants Program from the USDA National Institute of Food and Agriculture. I would like to extend thanks to our cooperating producer Sammy Shannon and the Halfway Research Station for working with us to gather this data. I would like to thank the 2025 Plains Pest Management team for data collection and labor associated with this work: Adan Vargas, Denise Reed, and Spencer Akins. Thank you all.

2025 Texas High Plains Bt Sentinel Plot

Blayne Reed, Program Specialist – IPM Mid High Plains & Upper Rolling Plains, John Thobe, Program Specialist – IPM Western Plains, and Tim Culpepper, BASF

Texas A&M AgriLife Extension Service
Texas Mid-Plains Region
Cooperator: Bobby Byrd, Hale Center, Texas

Objective

Evaluate field efficacy and level of economic return of all Bt trait technologies on bollworms in West Texas commercial cotton and contrast these results to confirmed resistance levels proven from field generated populations from across the US Cotton Belt by lab work in College Station. This effort is the THP portion of field efforts for sentinel resistance monitoring to Bt traits from bollworms across the nation.

Abstract

A Fibermax large plot cotton variety trial in Hale County was utilized for this Sentinel Plot Trial. A non-Bt line, FM 765AX, a TwinLink (Cry1AB+Cry2Ae) line, FM 2498GLT, and a TwinLink Plus (Cry1AB+Cry2Ae+Vip3A) line, FM 868AXTP were chosen. Data collection began, based on whole plant inspections and percent damaged harvestable fruit, at first bloom and continued until 2 weeks after absolute cut-out. While bollworm pressure was low and no trait reached economic levels, the non-Bt held the most accumulated worm damage and worm populations, TwinLink offered bollworm suppression in both damage and numbers, while the TwinLink Plus held the least damage and no live worms found. This confirms for 2025 expected levels of control offered by each trait type.

Materials and Methods

A Fibermax large plot cotton variety trial near Hale Center, Texas, in a Central Hale drip irrigated field was utilized for this Sentinel Plot Trial Purposes in 2025. All planting, agronomic and IPM inputs were managed by the cooperating producer. A non-Bt line, FM 765AX, a TwinLink (Cry1AB+Cry2Ae) line, FM 2498GLT, and a TwinLink Plus (Cry1AB+Cry2Ae+Vip3A) line, FM 868AXTP were chosen for this bollworm resistance monitoring effort.

Figure 8. Some of the data collection taking place in 2025.

Data collection began with weekly counts of 50 whole plant inspections, 100 boll inspections, 100 square inspections, and 50 white flower inspections per technology beginning at first bloom and continuing weekly until final bloom for a total of seven weeks of data collection. The first count date occurred on 26 July and the last on 6 September.

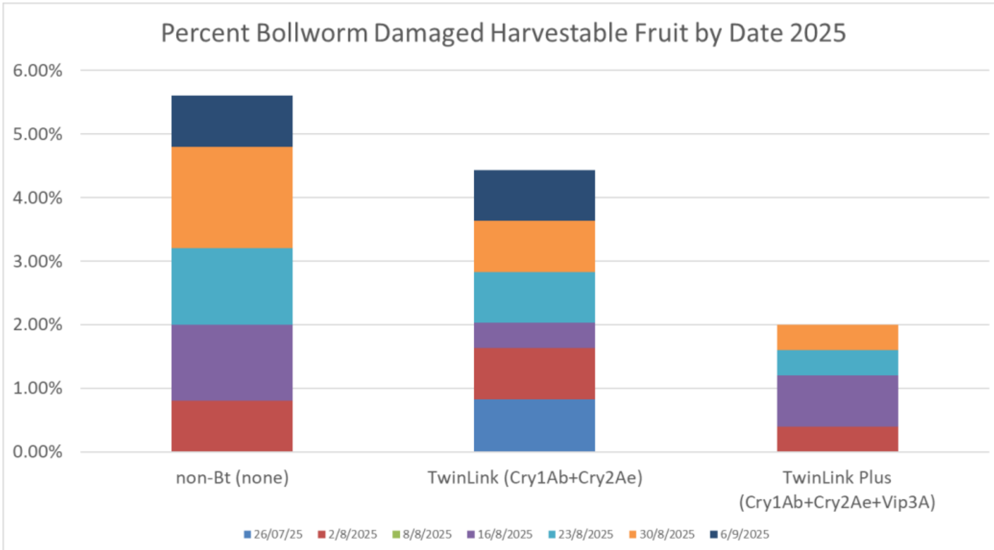
Field stand counts in terms of plants per acre were taken from 1/1000th of an acre from all lines utilized were taken on the first check date which resulted in 23,000 PPA. For commonality with local bollworm ET standards and in sharing resulting data with producers regionally, all resulting bollworm whole plant inspection data was converted calculated with the plants per acre data and converted into bollworms per acre. Other foliar feeding larva species such as cabbage loopers, beet armyworms, true armyworms and others were also recorded in terms of larva per acre. All resulting damaged fruit data was also converted into percent damaged fruit for commonality with the new Cotton Beltwide ET of 6% harvestable fruit damage. Due to light pressure in the sentinel plot field, all check dates were compiled to be large enough of a sample size to make note of percent fruit feeding and damaged fruit trends.

Results and Discussion

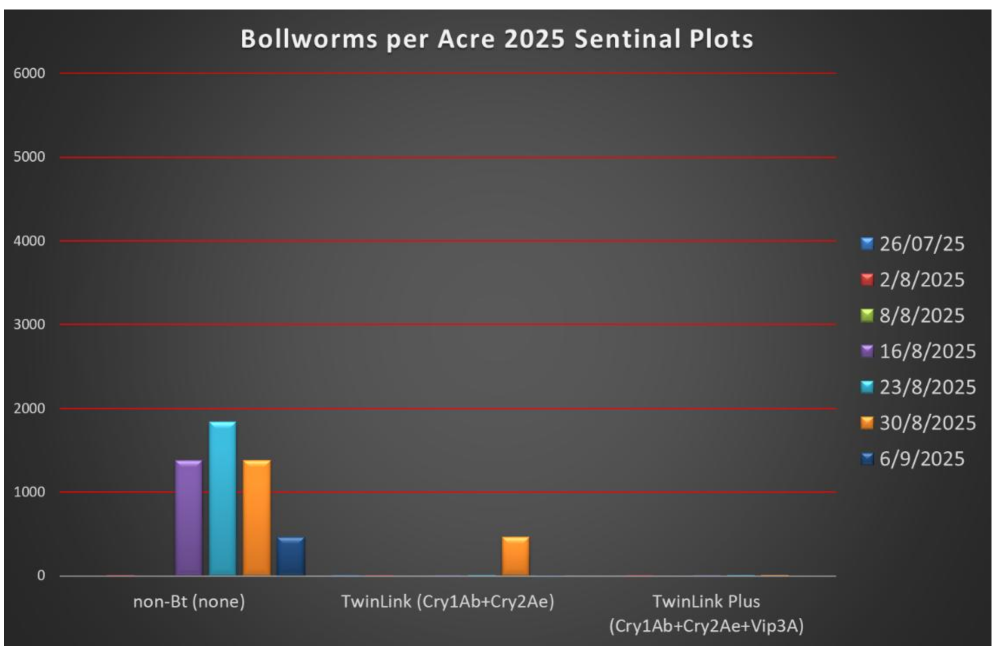
Despite a heavier bollworm pressure year, pressure in this particular field was again too light for individual date pressure evaluation. All harvestable fruit damage for each Bt trait has been compiled to have enough data for comparison. As some feeding is necessary from the larva for ingestion of the toxin that should control the bollworms, some damage for all traits is expected.

Figure 9. Bollworm found on non-Bt cotton in 2025

The non-Bt accumulatively had the most bollworm feeding damage, followed by TwinLink, and TwinLink Plus had the least. Proportionately, these accumulated results, when compared to other regions and the lab results are very similar to all individual check days from other locations and are what should be expected to be found in field given the most recent lab results.



In terms of bollworms per acre, there were similar results. The worms per acre method, all worms were living and actively feeding upon each trait type. Again because the pressure was low, no trait at any time reached economic levels (8-10,000/acre). For the last 4 weeks of check dates, live worms of some level were found on the non-Bt cotton. For the TwinLink cotton live worms were only found on 1 check date and no live worms were found on the TwinLink Plus.



The only foliage feeding Lepidopteran pest found for the entire data collections season was one beet armyworm in the non-Bt plot on the first check date. This resulted in 460 BAW per acre for the week shortly after first bloom stage.

Conclusions

Lab results from College Station indicate that bollworm resistance to two trait Bt is real and the level of resistance to the added VIP trait is growing, the worms remain susceptible to VIP. They also indicate that there is some slight benefit to varieties with 2 Bt traits for other Lepidopteran pest control and some bollworm suppression. These local field results confirm those hypotheses. For 2025 there is substantial bollworm suppression with TwinLink and decent control with TwinLink Plus.

Acknowledgements

This work is supported by BASF with portions of this work funded by Crops Protection and Pest Management Competitive Grants Program from the USDA National Institute of Food and Agriculture. I would like to extend thanks to our cooperating producer Bobby Byrd and the full FiberMax team for working with us to gather this data. I would like to thank the 2025 Plains Pest Management team for data collection and labor associated with this work: Adan Vargas, Denise Reed, and Spencer Akins. Thank you all.

2025 Efficacy of In-Furrow FMC Products for Control of Wireworms in Cotton

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John Thobe, Program Specialist – IPM Western Plains, Dr. Holly Davis, FMC

Texas A&M AgriLife Extension Service
Texas Plains Region
Cooperator: Mike Goss, Kress, Texas

Objective

Evaluate selected liquid FMC insecticidal products for efficacy in controlling wireworms in cotton, their associated damage, and for potential aid in reliably establishing cotton stands under wireworm pressure when used in-furrow at planting.

Abstract

In 2025, 2 FMC products, both at a low and high rate, were selected for potential in-furrow wireworm control options in seedling cotton. Vanticor at 1.7 oz./ac. and 2.5 oz./ac, Elevest at 5.6 oz./ac. and 7.4 oz./ac., alongside an untreated check were arranged into a small plot design CRBD with 4 replications into a Texas High Plains Drip Cotton Field in Swisher County. With planting and in-furrow treatments being applied simultaneously on 14 May, seedling damage on a 0-10 scale was rated at 8 days after planting or (DAP) and again at 31 DAP and data on PPA seedling counts were taken on the same 31 DAP date. Yield estimates in terms of lint per acre were taken via boll count method in September. At the 8 DAP damage rating date and in the PPA stand counts there were no significant differences between treatments but there were numeric differences with slight advantages to the treatments above the UTC. At the 31 DAP damage ratings there were significant differences for both rates of Vantacor and the light rate of Elevest from the UTC (P=0.0211). There were no significant differences in yield estimate data but the UTC was the lowest yielding treatment. These results hint that these products may have some impact on wireworm damage but that they do not represent a guarantee of control if utilized. While not tested against the existing insecticidal seed treatment options for wireworm control, these results are very similar in result to the use of those products on the Texas High Plains.

Materials and Methods

During the spring of 2025, 2 liquid products from FMC were identified as candidates for in-furrow wireworm control options based upon previous experiences, control of similar pests, and / or previous unpublished data that hinted at potential in aiding cotton stand establishment under wireworm pressure. These products were Vanticor and Elevest, both a high labeled rate and low rate for each product were selected as treatments. Vanticor at 1.7 oz./ac., and at 2.5 oz./ac. and Elevest at 5.6 oz./ac. and 7.4 oz./ac. alongside an untreated check were arranged into a small plot design CRBD with 4 replications. A drip irrigated minimum till field belonging to Mike Goss Farms in south-central

Swisher County with consistent wireworm populations was selected to house the trial. The plots were designed to be 4, 30-inch rows wide and 38-feet long with 4-foot alleys between replications. The PPM CO2 liquid in-furrow research applicator was rigged to the left outside 4 rows of the Goss Farm's 16 row planter and calibrated to put our 16.5 GPA in-furrow as 40,000 untreated seed of PHY 400 W3FE were planted in the field.

Planting occurred on 14 May 2025 with each replication occupying a 4 row 'through' of the planter with all other planting units turned off with subsequent 'throughs' of the trial were made with the Goss planter maneuvering back into the position for the next replication through the field. At each alley area, the planter was raised leaving the 4-foot area unplanted, and the treatment bottles were changed with lines cleared and rinsed in the alley area before placing the planter back into position to plant the next plot of each rep.

Data collection from the plot started before stand establishment to capture wireworm damage as it was occurring and to analyze quickly any impacts on plants per acre stands. From the outside two rows of each plot, 5 germinated seedlings were dug from the soil and evaluated for wireworm damage pre-emergence 8 days after planting. All damage was placed on a 0-10 damage rating scale with 0 representing no damage and 10 representing a dead or dying plant. Following establishment data was collected 31 days after planting, 5 additional established seedlings from the outside two rows were dug up and evaluated for wireworm damage on the same 0-10 rating system.

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Vantacor 1.7 FL OZ/A;NIS 1 % V/V
3		Vantacor 2.5 FL OZ/A;NIS 1 % V/V
4		Elevest 5.6 FL OZ/A;NIS 1 % V/V
5		Elevest 7.4 FL OZ/A;NIS 1 % V/V

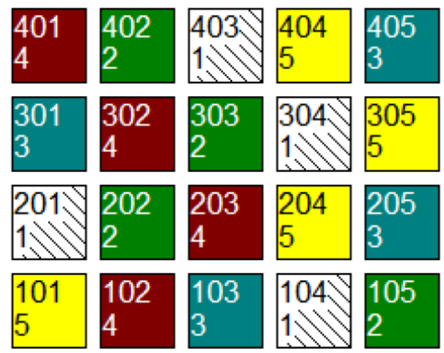

Figure 10. 2025 In-Furrow Trial treatments and plot map.

Figure 11. Examples from the 0-10 wireworm damage rating system use to rate the seedings in the trial.

On the same post-establishment date, 1/1000 of an acre sample from the middle two rows was measured and plant stand counts were taken and multiplied by 1000 for representative plant stand counts per treatment. For the 2024 trial year, pre-emergence wireworm damage was taken at 14 days after planting while in 2025 data was collected at 8 days after planting. Dry field conditions postponed pre-emergence data collection in 2025 until a rainfall event aided in seed germination. Weeds in the

Figure 12. The research team gathering wireworm damage ratings at the 8 DAP check date.

no-till trial area were also an issue in 2025 impacting the amount of germinating seed for most replications, resulting in weak stand counts.

All agronomic inputs for the trial and field were managed by Goss Farms with recommendation inputs from the Plains Pest Management Field Scouting Program. End of season yield data was taken by counting bolls from a representative 1/1000-acre sample from the one of the middle two rows from each plot. Boll counts were adjusted to lint pounds per acre basis. All data were tested using ANOVA in ARM to the *P*=0.05 level.

Results and Discussion

At the 8 DAP data collection date, there were no significant differences between the untreatecheck and any of the treatments. There was a notable numeric difference with higher damage averages in the untreated check, but the number of damaged seedlings per plot, while not a data collection criterial, were noted to be roughly equal with most damage being wildly varied but averaging numerically less in the treated plots (*P*=0.1366). All treatment average damage ratings can be found in Figure 4.

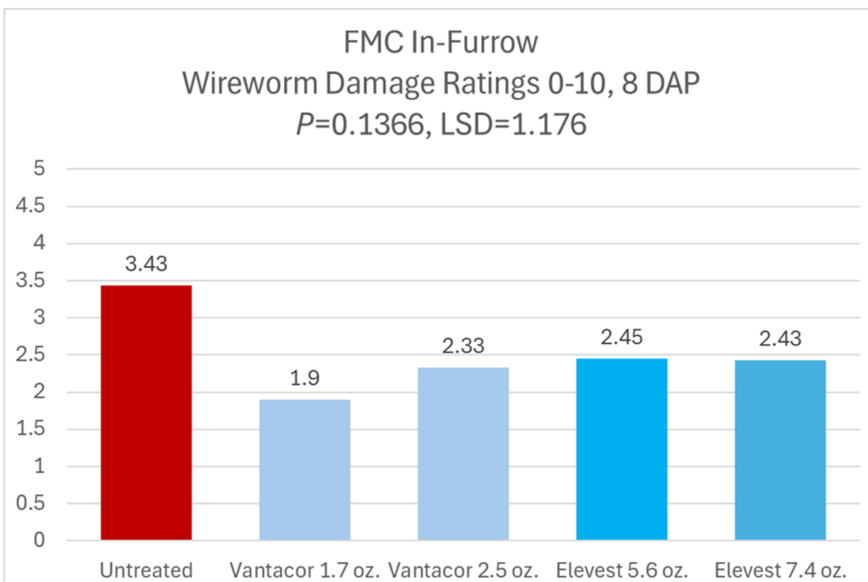

Figure 13. 8 DAP Seedling damage ratings.

By the 31 DAP data collection date, some significant differences were found. Both rates of Vantacor and the light rate of Elevest were significantly different from the UTC (*P*=0.0211). The high rate of Elevest did not separate from any treatment in the trial at this date. All treatment average damage ratings can be found in Figure 5.

7.

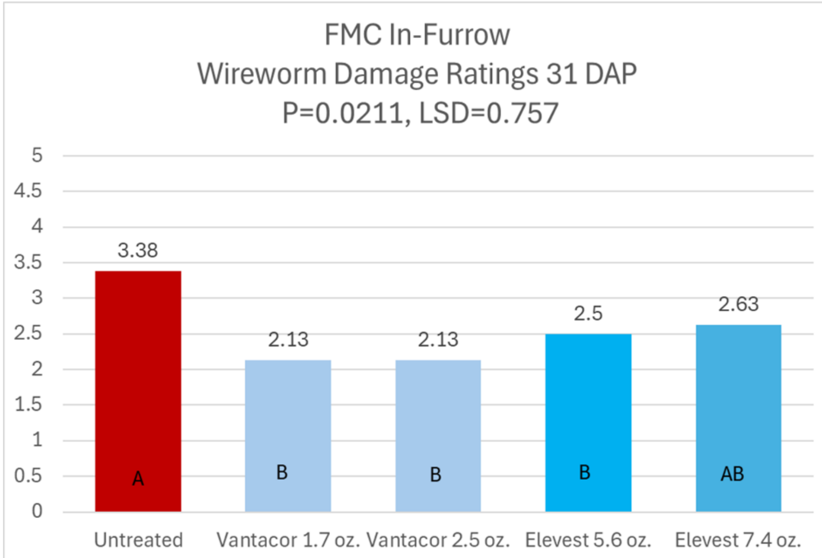

Figure 14. WIreworm damage ratings on the 31 DAP date.

There were no significant differences in plant per acre stand counts at the 31 DAP data collection date. There were some hints at numeric differences in the Vantacor treatments but stand counts varied wildly between reps and plots, muddied by weed and moisture issues hindering germination awkwardly in the test. All resulting PPA stand count averages by treatment can be found in figure 6.

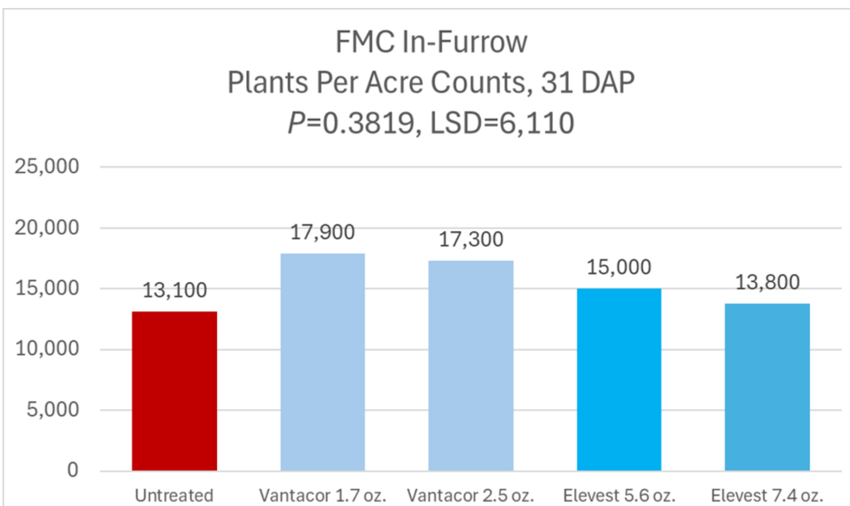

Figure 15. Established Cotton Plant Per Acre averages by treatment.

Yield estimate data taken in September does not show any significant differences between these treatments but does trend numerically in favor of all the treatments slightly. This also was impacted by weed and moisture situations in the trial plot area. Yield estimates can be found in figure 7.

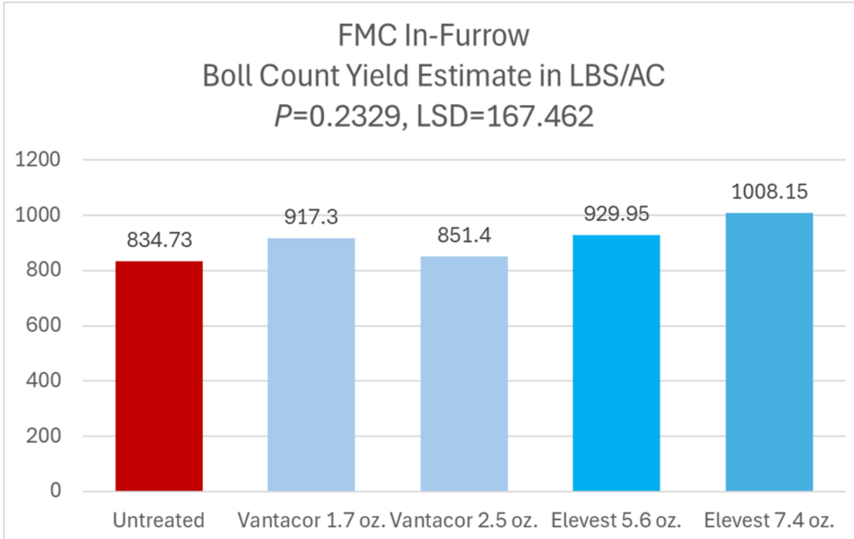

Figure 16. Yield Estimate data in terms of pounds lint per acre.

Conclusions

The numeric trends shown in wireworm damage to seedlings at 8 DAP in figure 3, in plant per acre stand counts in figure 5, and significant differences shown in damage at 31 DAP in figure 5 hint that these products may have some impact on wireworm damage and stand reducing issues associated with them. These results are far from proving a guaranteed beneficial impact for producers when dealing with wireworm issues in their seedling cotton fields. There were no clear indications that the use of these products at either treatment rate will guarantee aid in reducing wireworm damage, impact, or population. While not compared directly to already available and used insecticidal seed treatment options, these results do not represent an improvement over those also not guaranteed result products.

The presence of weeds and lack of moisture certainly muddied resulting stand counts and seed germination for damage evaluation. A clear control treatment option should show through these common field situations and none of these treatments shown this tendency in these results. It is also not known if these products will perform better than the hints shown here if applied field scale and without the pest potentially moving between untreated areas and treatment plots. It is also not known if these products will actually kill wireworm larvae or simply repel them similarly to the insecticidal seed treatment options currently do. Deeper study is needed to better understand these treatments ability to control wireworms in cotton but today, these results do not reflect an improvement above available control options.

Acknowledgements

This work is supported by FMC with portions of this work funded by Crops Protection and Pest Management Competitive Grants Program from the USDA National Institute of Food and Agriculture. I would like to extend thanks to our cooperating producer Mike Goss. I would like to thank the 2025 Plains Pest Management team for data collection and labor associated with this work: Adan Vargas, Denise Reed, and Spencer Akins. Thank you all.

Two years of Evaluating Insecticidal Seed Treatments for Wireworm Control on Texas High Plains Cotton

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Abstract

In 2024 and 2025 3 commercially available seed treatments for cotton were compared to an untreated check in a RCBD small plot trial within a commercial field belonging to Mike Goss in southern Swisher County with consistently moderate to heavy wireworm pressure issues. In 2024 Gaucho 600, Avicta Elite, Trio were the insecticidal seed treatments utilized, and in 2025 Gaucho 600, Avicta Elite, and Acephate were the seed treatments. During both years seedlings were evaluated for wireworm feeding damage 8-14 and 28-35 days after planting and counted for established plants per acre at 28-35 days after planting. In 2024 the 3 insecticidal seed treatments were not significantly better than the UTC at 14 days after planting (P=0.6913) in terms of feeding damage but were better at 28 days (P=0.0168). At the 28 DAP mark, all seed treatments held numerically more plants per acre but not at a significant level (P=0.2287). In 2025 there were no significant differences in feeding damage despite numeric groupings at 10 DAP (P=0.0742). By 31 DAP Gaucho 600 and Avicta Elite had significantly less feeding damage (P=0.0464) and more plants per acre (P=0.0339) than the to the UTC while Acephate did not separate from any treatment in either category. These findings indicate that Gaucho 600, Avicta Elite, and Trio insecticidal seed treatments might prove helpful in controlling wireworm damage and establishing cotton stands but their use will not guarantee consistent significant improvement.

Introduction

Since the early 2000's wireworms have been a common cotton pest in the Mid Texas High Plains region (Reed unpublished data and observation). Since then they have spread across the whole of the Texas High Plains (Vyavhare & Kerns 2017). This pest is made up of two types of wireworms, true wireworms and false wireworms and not exclusively any specific species. True wireworms are also known as click beetles, members of the Elateridae family (Order: Coleoptera) and false wireworms contain multiple members of at least the Tenebrionidae family (Oder: Coleoptera). The damage between the two types of wireworms is indistinguishable and typically done to cotton seedlings interfering with stand establishment before seedlings emerge from the soil. This damage includes feeding to the root, hypocotyl, and cotyledon with the most severe feeding killing plants with the hypocotyl severed and most visible being holes in the cotyledon post emergence. The adoption of no-till and min-till cotton production, which includes the use of cover crops and crop rotations with heavy crop residue, are likely aiding the expansion of the wireworm problem (Texas IPM team observations) as these techniques are adopted for pressing agronomic benefits. Wireworms are generalist feeders, most with variable multi-year lifecycles, that flourish on grain crops and weeds as likely preferred hosts shifting to cotton exclusively under production situations (Metcalf etal. 1962). Wireworms are subterranean larvae and accurate sampling techniques to predict pest populations in cotton fields are untrustworthy and established economic thresholds based on populations do not exist yet. Best management practices for controlling wireworms have proven to be preventative in nature based upon field history of wireworm damage and likelihood of pressure that includes field agronomic management practices, rotation, and environmental factors. Rescue treatments targeting sub-soil larvae often result in no economic gain, even if efficacy can be proven, with seedling damage and stand loss having already occurred. Insecticidal seed treatments and labeled in-furrow insecticides at planting have proven beneficial in establishing cotton stands under wireworm pressure but are not guaranteed to reliably be effective. Under heavy wireworm pressure, more levels of control may be needed. Commercially labeled insecticidal seed treatments available for wireworm control vary by season, cost, availability and commercial need. Labeled MOA, rates applied to seed, and even fungicidal or fertilizer commercially paired with insecticides on seed treatments has and will change over time as has the availability of some granular at planting in-furrow insecticide treatments. This research is conducted to both test and monitor the benefit and economic viability of available insecticidal seed treatments for wireworm control on the Texas High Plains as the primary standard front line preventative treatment in cotton against wireworms.

Materials and Methods

In both 2024 and 2025, 3 commercially available insecticidal seed treatments were tested in small plot Randomized complete block designs on a commercial drip cotton field belonging to Mike Goss Farms, between Kress and Tulia Texas (34.28.37.05N, -101.28.37.46W). The commercial field was chosen was no-till, made use of cover crops and crop rotation, and exhibited a long history of light to heavy wireworm populations depending on the season and life stages of the pest. In 2024 Gaucho 600, Avicta Elite, Trio were the insecticidal seed treatments utilized at standard labelled rates. All seeds for the trial was supplied by Phytogen and consisted of the variety PHY 411 W3FE from the same production lot. The Trio treatment was a commercial standard supplied by Phytogen while the Avicta and Gaucho treatments were applied to untreated black seed at Dr. Suhas Vyavhare’s laboratory at the Texas A&M AgriLife Station at Lubbock. All plots were planted in 4, 30-inch row plots by 30-feet on 20 May by utilizing Mike Goss 16 row vacuum planter. For each replication, all 16 seed boxes were vacuumed and cleaned clear of all seed before adding 1 cup of the appropriate treatment seed for each plot’s randomly assigned placement into the appropriate row. Seed was planted at 53,000 seed per acre in 2024 for all treatments by the commercial planter and at 40,000 seed per acre in 2025.

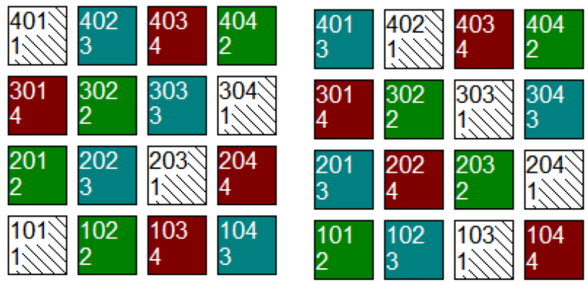
In 2025 Gaucho 600, Avicta Elite, and Acephate were the seed treatments utilized with Acephate replacing the active ingredient similar Trio for the most economical insecticide option. The 2025 trial was planted on 14 May with utilizing the exact same procedures and variety as 2024.

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Gaucho 0.375 mg AI/Seed
3		Avicta Elite 0.375 mg AI/Seed
4		Trio 0.375 mg AI/Seed

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Gaucho 600
3		Avicta Elite
4		Acephate

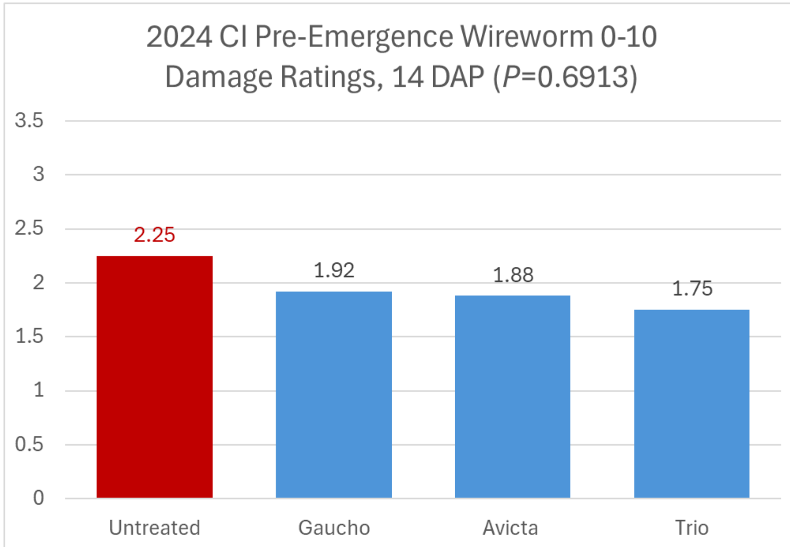


2024 and 2025 Treatments and Plot Maps

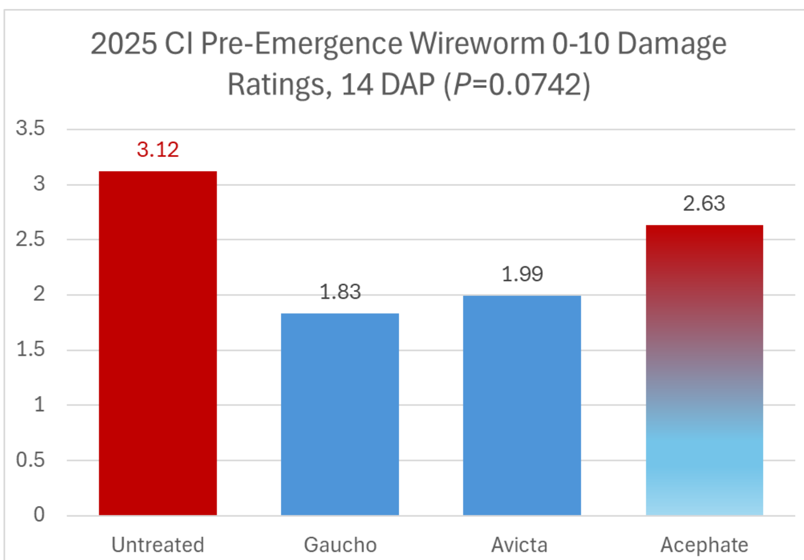
Targeted data collection for both trial years was identical. From the outside two rows of each plot, 5 germinated seedlings were dug from the soil and evaluated for wireworm damage pre-emergence. All damage was placed on a 0-10 damage rating scale with 0 representing no damage and 10 representing a dead or dying plant. Following establishment, 5 additional established seedlings from the outside two rows were dug up and evaluated for wireworm damage on the same 0-10 rating system. On the same post-establishment date, 1/1000 of an acre sample from the middle two rows was measured and plant stand counts were taken and multiplied by 1000 for representative plant stand counts per treatment. For the 2024 trial year, pre-emergence wireworm damage was taken at 14 days after planting while in 2025 data was collected at 8 days after planting. Dry field conditions postponed pre-emergence data collection in 2025 until a rainfall event aided in seed germination. Weeds in the no-till trial area were also an issue in 2025 impacting the amount of germinating seed for most replications. In 2024 stand counts and the post-emergence damage ratings were taken at 28 days after planting and in 2025 this data was collected at 31 days after planting. All agronomic inputs for the trials were Following the growing seasons were managed by Goss Farms with recommendation inputs from the Plains Pest Management Field Scouting Program. End of season yield data was taken by harvesting a representative 1/1000-acre sample from the one of the middle two rows from each plot. Samples were weighed and adjusted to lint pounds per acre basis.

Results and Discussion

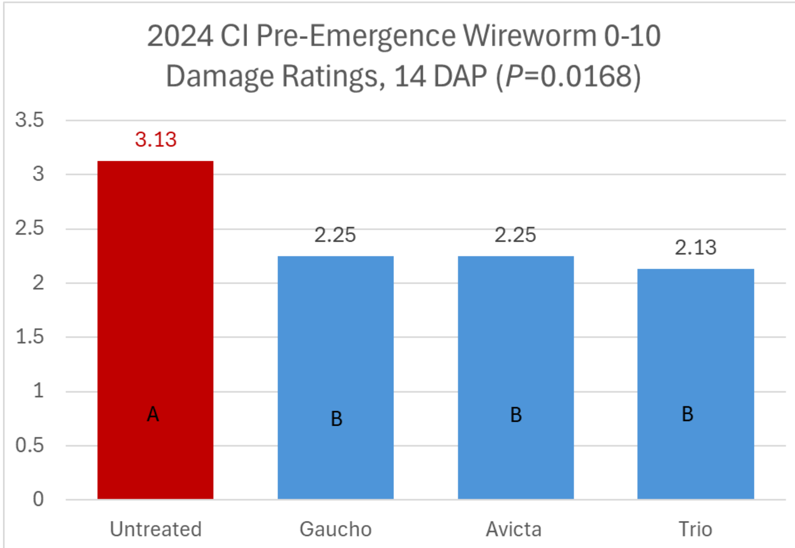
During 2024 the pre-emergence wireworm damage ratings were not significantly different for the treatments compared to the untreated check (P=0.6913) with considerable variation between seedlings. Numerically, the treatments were less than the untreated check with the only heavily damaged seedlings coming from the UTC, but damage was highly variable under lighter than expected pressure from the pest.



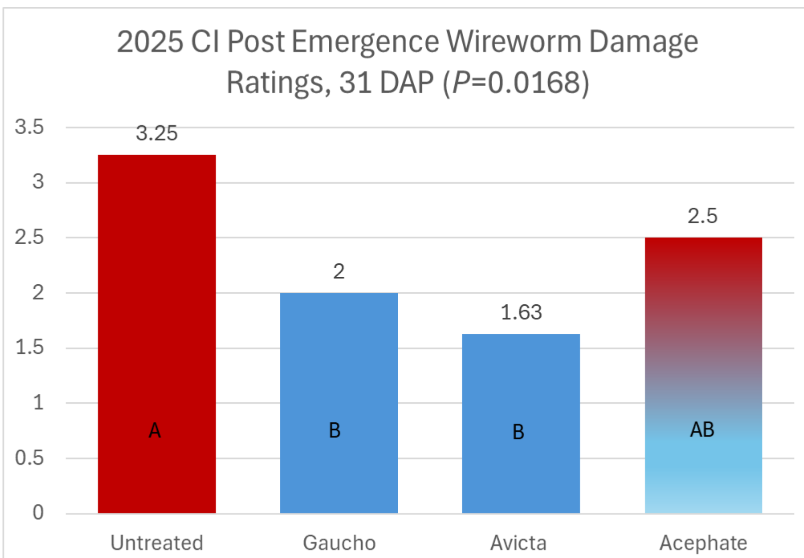
In 2025 the pre-emergence damage ratings was again nonsignificant at the .05 level but the numeric differences remained with the longer residual product treatments holding an advantage (*P*=0.0742). Wireworm pressure for the trial was again lighter than expected but increased from 2024 but the trial also had drought and weed pressure issues muddying the results.



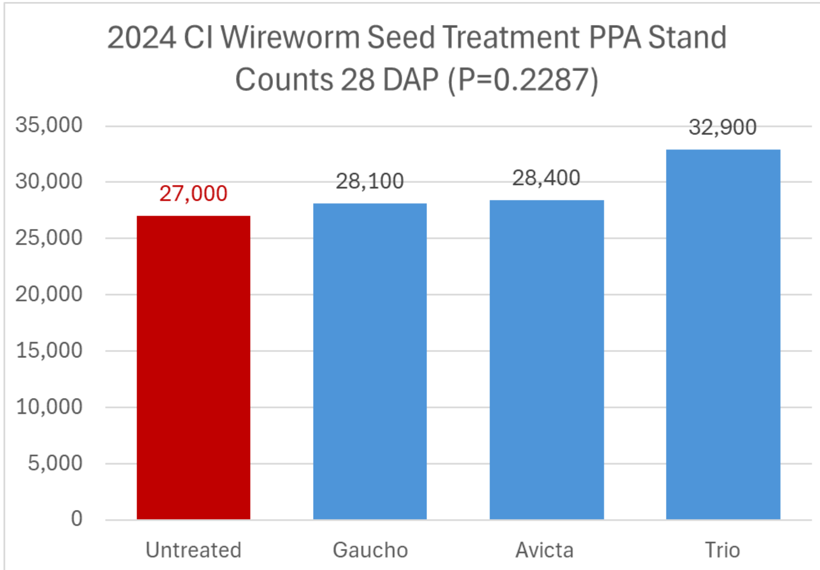
In 2024 the 28 days after planting wireworm damage ratings were significantly different along the same numeric lines hinted by the 14 days after planting data. Damage became more consistent with an increased number of seedlings damaged for all treatments over time with the insecticidal seed treatments exhibiting less wireworm feeding per damaged plant.



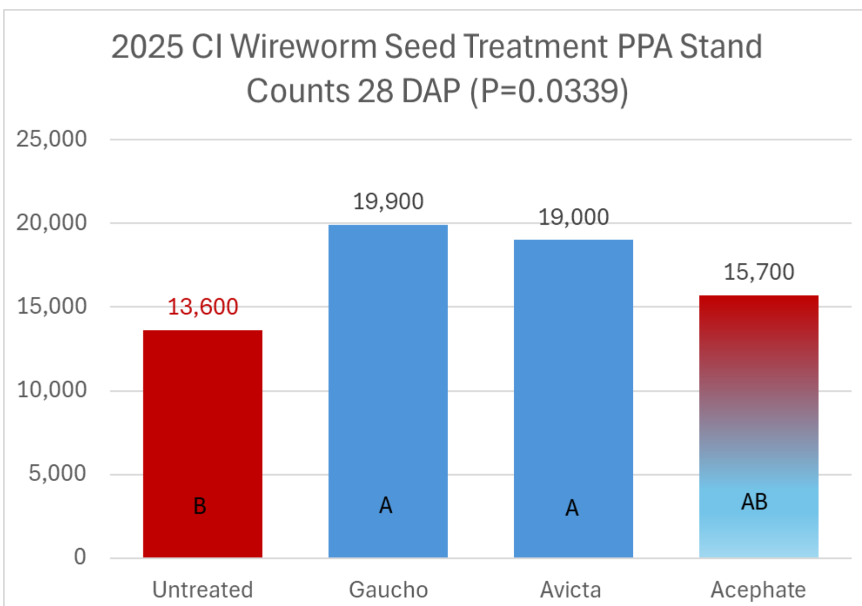
The 2025 post emergence wireworm damage ratings also increased from the pre-emergence ratings and held significance with the longer residual insecticide treatments being superior to the UTC and the short-residual Acephate not separating from any treatment.



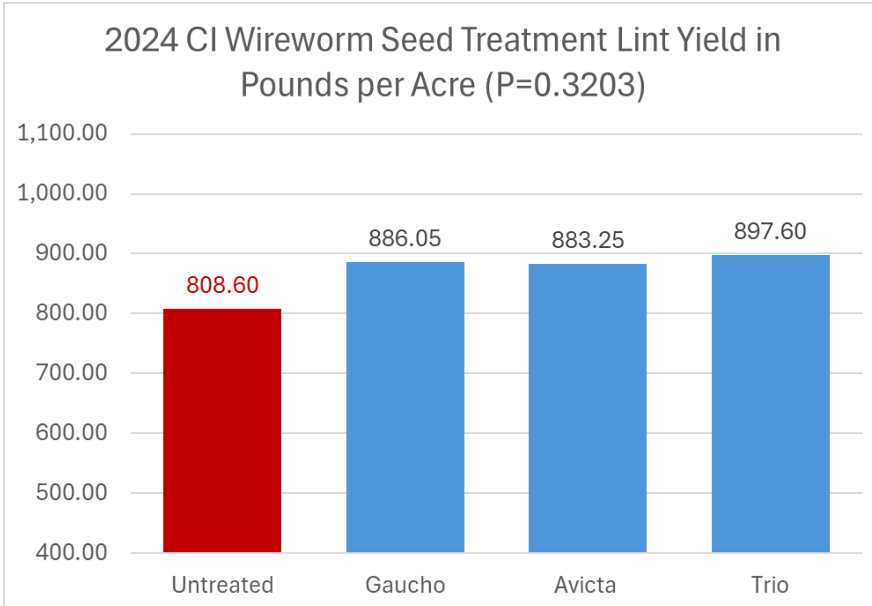
The 2024 plants per acre counts were shown no significant differences either, likely a result of light pest pressure in the field. Numeric differences did offer a slight advantage to the seed treatments but were very slight in resulting plants per acre.



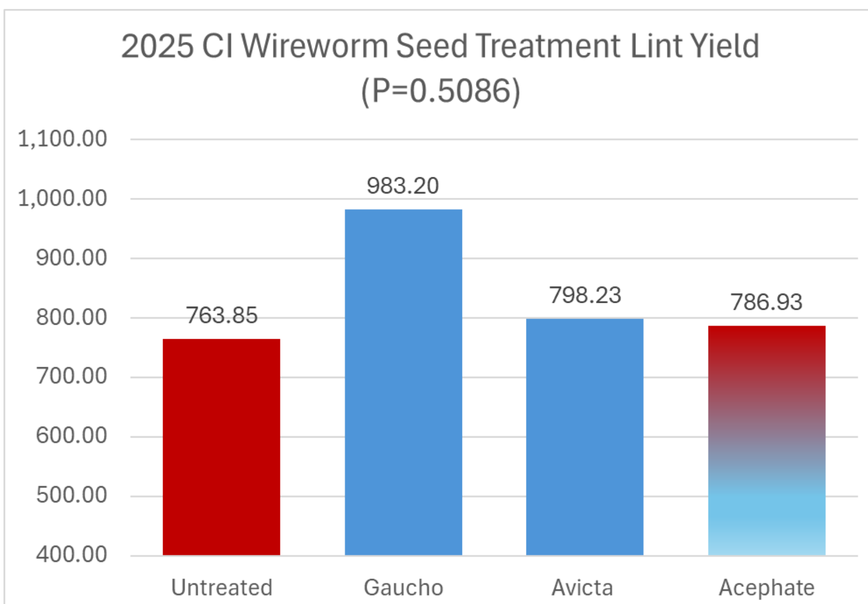
The 2025 stand counts did result in significant differences with the Gaucho and Avita treatments separating from the UTC while the Acephate treatment was similar to all treatments (*P*=0.0339). It should be stated that all treatments resulted in plant populations too low to be acceptable for irrigated cotton on the Texas High Plains, but the longer residual insecticidal seed treatments did have an impact in aiding more of the germinated seedlings to emerge compared to the UTC.



Lint yields in 2024 followed the previous data metrics and was not significantly different between treatments but did show a numeric advantage for the insecticidal seed treatments in terms of lint per acre (*P*=0.3203).



Yield from the 2025 trial was also not significantly different between treatments (*P*=0.5086). Numeric differences could be argued for this trial but weed pressure issues certainly had impacts on the end of season yield results.



These results indicate that while insecticidal seed treatments are not guaranteed to return economically or substantially aid in cotton stand establishment they can help when used under wireworm pressure and under many situations. The evaluation of more economical Acephate did not show as much potential to aid in wireworm management as the longer residual products.

Acknowledgements

Thanks to Cotton Incorporated and the Texas CORE funding for sponsorship of this work. This work is also supported in part by Crops Protection and Pest Management Competitive Grants Program from the USDA National Institute of Food and Agriculture. Thanks to the Plains Pest Management Field Scouts, Interns, and Technicians, Adan Aldana Vargas, Denise Reed, and Spenser Adkins for aiding in data collection and the crew at Mike Goss Farms for hosting the trial.

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Phytogen Variety Trial 2025 Swisher County

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Dr. Randy Bowman, WinStar Gins

Texas A&M AgriLife Extension Service
Texas Plains Region
Cooperator: Mike Goss, Kress, Texas

Objective

Determine the value of selected Phytogen Cotton Seed varieties in the Texas Mid-High Plains region under typical agronomic area situations and management.

Abstract

Eight Phytogen Cotton varieties, PHY 136 W3FE1, PHY 137 W3FE1, PHY 205 W3FE, PHY 332 W3FE, PHY 400 W3FE, PHY 411 W3FE, and two experimental lines F331 W3FE and F360 W3FE were planted on 14 May 2025 at 42,000 seed per acre in a large plot trial with 3 replications in a section of a drip irrigated field at Mike Goss' Harris Farm. Plots were 8-rows wide with a row width of 30-inches and a plot length of 1852 feet. Data on stand counts, leaf stage, and vigor ratings were taken on 14 June and end of season agronomic data was collected on 25 September. Harvest occurred on 19 November via self-modulating harvest equipment with onboard weight scales used to collect burr weights. Grab samples from each plot were taken and ginned at the Texas Tech University Fiber & Biopolymer Research Institute in Lubbock with all percent lint turnout and fiber quality measurements recorded.

Multiple significant differences and groups in agronomic data between lines were found in the differing metrics. With harvest data and yield data not replicated through the commercial gin, true yield and fiber quality results could not be statistically analyzed. Numeric data indicate that the experimental lines F331 W3FE and F360 W3FE were the trials top performers in terms of dollar per acre returns. These lines generally performed toward the middle of the statistical groupings in most agronomic metrics but were among the tallest lines that exhibited higher numbers of total nodes per plant. These factors considered together dictate that these lines should be considered as selected and planted varieties over the upcoming seasons but should be candidates for aggressive PGR management or best suited for dryland or seriously limited water production fields

Materials and Methods

Eight Phytogen Cotton varieties, PHY 136 W3FE1, PHY 137 W3FE1, PHY 205 W3FE, PHY 332 W3FE, PHY 400 W3FE, PHY 411 W3FE, and two experimental lines F331 W3FE (later designated PHY 357 W3FE) and F360 W3FE (later designated PHY 433 W3FE) were planted at 42,000 seed per acre on 14 May 2025. Organized by variety into 3 plots for each variety and randomized into in a large plot trial with 3 replications. The trial was placed into a production cotton field with light irrigation via drip system field at Mike Goss' Harris Farm in Swisher County. These Plots were 8-rows wide with a row width of 30-inches and a plot / field row length of 1852 feet or accounting for 0.85 acres per large plot. All field management was controlled by Goss farms with inputs from the Plains Pest Management Field

Figure 17. The PPM and Goss Farms teams cleaning planting boxes during a variety change during the planting of the 2025 Trial.

Scouting Program and scouted weekly for insect week and disease problems. The trial and larger production field was treated for an economic population of Fleahoppers in early July and was treated with plant growth regulators in late June and again in combination with the fleahopper treatment in July. All other management was standardly controlled by Goss Farms.

Data on plants per acre on stand counts (PPA), leaf stage, and vigor ratings were taken on 14 June by the Plains Pest Management Team and other researchers. For stand count data, 1/1000th of an acre were measured and all established and surviving plants within the area were counted for varietal comparisons. For the leaf stage data, each plot was blindly assessed by the researchers for the average leaf stage of the plot with rounding to the nearest 0.5 leaf stage. Seedling vigor was rated for each plot by the researchers on a standard 1-5 rating scale with 1 being strong seedling vigor and 5 being very weak seeding vigor.

End of season agronomic data was collected on 25 September by the Plains Pest Management team and other researchers. Data on plant height, 1st reproductive fruiting branch, uppermost cracked boll, uppermost harvestable fruit branch, total nodes per plant, and nodes above cracked boll were recorded from 10 randomly selected plants per plot.

Figure 18. The PPM Team collecting grab samples during harvest of the Trial.

Harvest occurred on 19 November. Before machine harvest started, all plots were rated on the standard 1-10 storm proof rating scale. Goss Farm's self-modulating harvest equipment with onboard weight scales used for harvest and to collect burr weights by plot. Resulting round bales were ginned through the Edcot Gin in Edmonson, Texas for actual production yield and fiber data by variety. Grab samples from each plot were taken during harvest and ginned at the Texas Tech University Fiber & Biopolymer Research Institute in Lubbock with all percent lint turnout and fiber quality measurements recorded by plot.

Results and Discussion

Significant differences in plant per acre stand counts, seedling vigor, and plot leaf stage all had significant differences between lines at the early season agronomic data collection date of 14 June. It should be noted that even the best performing variety in PPA stand counts only resulting in 59.5% seed to established plant ratio and significant wireworm pressure was present in the field. The worst performing lines were PHY 411 and F 360 while PHY 136, PHY205, PHY 400, and F 331 were among the best performing lines resulting in higher PPA counts (P=0.0001) with the full statistical results available in Table 1.

In terms of seedling vigor rating, PHY 205 numerically performed best was again among the better performing group while PHY 400 performed numerically worse and was among the poorer performing group (P=0.0319). Leaf stage data followed a similar result pattern with PHY 205 averaging over 4 true leaves per plant and was among the best performing group while PHY 411 only averaged 3.3

true leaves per plant and was among the worst performing group (*P*=0.0388). All early season data can be found in Table 1.

Table 1. PPA, Seedling Vigor, and True Leaf Stage result data. Figures followed by different letters are statistically significantly different at the significance level shown.

Variety	PPA	Seedling Vigor Ratings	True Leaf Stage
PHY 136 W3E1	24,600 a	3.00 bc	3.50 bc
PHY 137 W3E1	23,800 ab	3.17 abc	3.67 abc
PHY 205 W3FE	26,600 a	2.33 c	4.07 a
PHY 332 W3FE	21,400 b	3.50 ab	3.53 bc
PHY 400 W3FE	25,000 a	3.17 abc	3.57 bc
PHY 411 W3FE	17,900 c	4.00 a	3.30 c
F 331 experamental	24,400 a	3.33 ab	3.57 bc
F 360 experamental	18,000 c	3.83 ab	3.87 ab
	LSD @ 0.05 =29,200	LSD @ 0.05 =0.883	LSD @ 0.05 =0.415
	P =0.0001	*P* =0.0319	*P* =0.0388

The late season agronomic data also had several significant differences between the competing cotton varieties. There were strongly significant differences in plant height, 1st reproductive fruiting branch, total nodes, and in nodes above cracked boll (NACB). There were no significant differences in uppermost cracked boll and uppermost harvestable boll between lines but there were numeric trends.

The tallest cotton line was PHY 332 at an average 27.64-inches tall and the shortest was PHY 205 at an average 21.86-inches tall. There were strongly significant groupings between these varieties for this measurement (*P*=0.0001). PHY 411 had the earliest and youngest average fruiting branch at 7.1 while PHY 205 had consistently the latest and highest fruiting branch at an average of 8.3. There were also multiple significant differences between lines for this category also (*P*=0.0011). PHY 411 exhibited the most total nodes at 20.2 per plant while PHY 400 exhibited the least at 17.4 per plant with multiple groups statistically forming for this node counts (*P*=0.0004). For NACB counts, PHY 205 had the least at 4.7 NACB while PHY 400 had the highest count at 6.5 NACB with several statistical groups forming for this measurement also (*P*=0.0034). All late season agronomic trait data can be found in Table 2.

Table 2. Late Season Agronomic Data. Numbers followed by differing letters are statistically significantly different at least to the P=0.05 level.

Variety	Plant Hight	1st Fruiting Branch	Uppermost Cracked Boll	Uppermost Harvestable Boll	Total Nodes	NACB
PHY 136 W3E1	25.52 b	7.5 cde	9.1	15.2	18.8 b	6.0 ab
PHY 137 W3E1	25.14 b	7.7 bc	10.7	14.9	18.0 bc	4.8 c
PHY 205 W3FE	21.86 c	8.3 a	10.8	15.5	18.2 bc	4.7 c
PHY 332 W3FE	27.64 a	7.2 de	9.9	15.5	18.6 b	6.0 ab
PHY 400 W3FE	22.10 c	7.4 cde	9.1	14.8	17.4 c	5.7 b
PHY 411 W3FE	26.38 ab	7.1 e	9.6	16	20.2 a	6.5 a
F 331 experamental	27.21 a	7.6 bcd	9.8	15.4	18.6 b	5.7 b
F 360 experamental	25.17 b	8.0 ab	9.5	15.5	18.4 b	5.6 b
	LSD @ 0.05 =1.561	LSD @ 0.05 =0.45	LSD @ 0.05 = 1.32	LSD @ 0.05 = 1.03	LSD @ 0.05 = 0.83	LSD @ 0.05 = 0.81
	P =0.0001	*P* =0.0011	*P* =0.1177	*P* =0.2854	*P* =0.0004	*P* =0.0034

The storm proof ratings taken on the harvest date also indicate significant differences in varieties. PHY 205 had the best storm proof rating of 8/9 and PHY 137 had the worst at 5.17/9 but several statistical differences and groupings in the tested lines (*P*=0.0001). In terms of burr weight per plot there were no statistical differences between varieties but there were strong numeric trends with PHY 205 having the highest average bale weight and PHY 411 the lightest (*P*=0.0658). The full results from the field harvest date can be found in Table 3.

Table 3. Storm Proof Rating and Average Plot Burr Weight. numbers followed by differing letters are statistically different to at least the P=0.05 level.

Variety	Storm Proof Rating	Bale Burr Weight
PHY 136 W3E1	7.17 b	3511.7
PHY 137 W3E1	5.17 d	3605.3
PHY 205 W3FE	8.00 a	3687.7
PHY 332 W3FE	5.50 d	3448.0
PHY 400 W3FE	6.67 bc	3455.3
PHY 411 W3FE	6.17 c	3344.3
F 331 experamental	5.50 d	3552.3
F 360 experamental	5.50 d	3576.7
	LSD @ 0.05 = 0.528	LSD @ 0.05 = 203.61
	P =0.0001	*P* =0.0658

With harvest data and yield data not replicated through the commercial gin, true yield and fiber quality results cannot be statistically analyzed. All results shown are in numeric differences only and are available in Table 4.

Table 4. Yield and Fiber Quality Data. Varieties are arranged in terms of dollar return value per acre.

Variety	**Lint Yield** *(lbs/A)*	**Turnout** *(%)*	**Mic**	**Length** *(in)*	**Staple** *(1/32 in)*	**Strength** *(g/tex)*	**Uniformity** *(%)*	**Color Grades**	**Leaf Grade**	**Loan Value** *($/lb)*	**Lint Value** *($/A)*	**Gross Crop Value ($/A)**	**Net Return after seed cost/ac**
PHY357W3FE	**1534.56**	**35.89**	3.90	1.16	36.25	**32.50**	**83.90**	21-2	3	57.65	**884.67**	**1066.50**	**985.44**
PHY433W3FE	1475.22	34.30	3.64	**1.18**	36.84	32.40	83.30	21-1	3	57.70	851.20	1026.00	944.94
PHY400W3FE	1477.65	35.40	3.55	1.14	35.56	30.90	81.50	21-1	3	57.25	845.95	1021.04	970.64
PHY332W3FE	1445.14	34.83	3.93	1.14	35.50	30.40	81.30	11-2	2	**57.75**	834.57	1005.80	935.66
PHY136W3E1	1470.45	34.78	3.58	1.12	35.03	30.40	79.60	11-2	3	56.15	825.66	999.89	952.43
PHY137W3E1	1463.33	33.65	3.50	1.15	36.06	31.70	83.30	21-2	4	55.80	816.54	989.93	942.47
PHY205W3FE	1468.64	33.08	3.81	1.05	32.66	30.40	81.90	21-1	3	53.65	787.92	961.94	883.40
PHY411W3FE	1422.13	35.36	**4.19**	1.09	34.00	31.00	81.10	21-1	3	55.20	785.02	953.52	872.46
Trial Average	1469.64	34.66	3.76	1.13	35.24	31.21	81.99		3	56.39	828.94	1003.08	935.93

Seed value and return on that value also cannot be statistically analyzed. This data is available in Table 5.

Table 5. Seed Yield by variety and resulting seed value by variety.

Variety	Seed Yield	Seed Value
PHY357W3FE	**2167**	**181.83**
PHY400W3FE	2086	175.08
PHY433W3FE	2083	174.80
PHY136W3E1	2076	174.23
PHY205W3FE	2074	174.02
PHY137W3E1	2066	173.39
PHY332W3FE	2041	171.23
PHY411W3FE	2008	168.50
Trial Average	2075	174

Conclusions

Yield and net per acre returns are the primary standard by which varieties are and should be judged. By this standard the experimental lines F331 W3FE (later designated PHY 357 W3FE) and F360 W3FE (later designated PHY 433 W3FE) won this trial.

This should not be the only factors utilized when selecting varieties. Other factors, such as seedling vigor, proven stand establishment, plant growth patterns, etc. should be factored into any decision. Varieties with better vigor might be able to establish in heavy wireworm pressure and/or poor moisture environments better or overly growthy fields could be too long seasoned in years with early freezes as examples. The two top performing varieties in this trial, PHY 357 W3FE and PHY 433 W3FE generally performed decently by these other factors. Both of these lines did prove to be among the taller lines and those with the most total nodes, hinting that they could be prime candidates for aggressive PGR management on the Texas High Plains, but the returns indicate they should receive consideration for planting in the region.

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