IR-4 Project Management Committee Summer Meeting

July 9-11, 2024

Agenda and Handouts

AGENDA
IR-4 PROJECT MANAGEMENT COMMITTEE

2024 Summer Meeting (via Zoom)
July 9-11, 2024

July 9, 2024 11:00 AM to 4:00 PM EDT

1) Welcome / Introductions (Hengel)
2) Approval of minutes & new agenda items (Hengel)
3) Administrative Advisors Updates (NCR, NER, SOR, WR, ARS, HQ)
   - NRSP-4 Renewal (Lommel/Buhler/Baron)
     i) Funding Target/Strategies
     ii) Process and Steps
   - ARS Umbrella Account Funds (Munyaneza/Simmons)
     i) Impact of loss (QA inspections/audits of ARS field sites & UMES Environmental Hort research)
     ii) CLC/Friends of IR-4 activities
     iii) Contingency plans if cuts not reversed
4) NIFA Update (Goswami)
   - FY 2024 grant status
   - New grant in 2025
     i) Non-competitive grant process/Need for peer review
5) CLC & Friends of IR-4 Update (Scholz & Beaudreau)
   i) Appropriations 2025
   ii) Farm Bill
   iii) Other topics
   iv) New Members
6) Unit Updates (NCR, NER, SOR, WR, ARS & HQ)

July 10, 2024 11:00 AM to 4:00 PM EDT

7) Pesticide Program Dialogue Committee update (Wise)
8) Program/Platform/Committee updates
   - Food Program (Carpenter et. Al.)
     i) Field Residue Studies
     ii) Submissions
     iii) Laboratory activities
     (1) Backlog
     (2) Training (Hengel)
     iv) Quality Assurance Unit (Mazlo)
     v) Product Performance & Integrated Solutions (Axtell)
     vi) Biopesticide Regulatory Support Update (Braverman)
     vii) International/Minor Use Foundation (Drost & Gore)
   - Environmental Horticulture (Palmer)
   - Communications (Ross)
     i) Video
     ii) Status of Intranet
   - Training Committee and other training activities (Dineen & Welker)
   - Technology Committee (Peterson)
   - Network Expansion Project (Patel)

9) Proposed parameters of 2025 field research program (Axtell & Baron)
10) iAdvantage electronic Field Data Notebook update (Moore)
11) Crop Protection technology – trends/takeaways and challenges (Baron & Carpenter)
12) Ways of Working in the Food Program – Addressing partners issues (Carpenter & Baron)
13) Process improvements in the IS Platform (Axtell)
14) Biopesticide Regulatory Support Platform-detailed discussion (Baron)
15) Closing out the current grant (Chojnacki)
16) Future meetings
    - 2024 Food Use Workshop - Milwaukee; September 10-12, 2024
    - Fall PMC/NRPM-Raleigh; October 21-25, 2024
    - Spring joint PMC/CLC meeting - Washington; March 4-6, 2025
    - 2025 Food Use Workshop – Denver/TBD September 9-11, 2025
    - 2025 Environmental Horticulture Workshop – Raleigh/TBD October 2025
    - National Education Conference – TBD; February 1-5, 2026

July 11, 2024 11:00 AM to 4:00 PM EDT

17) Executive Session

Approval of Minutes, New Agenda Items

Presenter: Matt Hengel

MINUTES
Joint IR-4 Commodity Liaison Committee/Project Management Spring 2024 Meeting
March 5-7, 2024
Hybrid Meeting - Washington D.C.

MOTIONS AND ACTION ITEMS

Motions/Consensus Items:

1. A motion to approve the PMC minutes for the Fall 2023, Special Meeting of January 9, 2024, and Special Meeting of January 24, 2024 meetings was made by Liewi Gu, seconded by Todd Scholz; **unanimously approved.**
2. **CLC VOTE:** A motion was made to approve the "Track A" Commodity Liaison Committee membership list by Amy Upton; seconded by Zach Bagley; **unanimously approved.**
3. **CLC VOTE:** A motion was made to approve Todd Scholz as the Chair and Keith Pitts as the Vice Chair by Mike Bledsoe, seconded by Amy Upton; **unanimously approved.**
4. A motion to adjourn the regular session at 4:44 pm and to move to Executive Session was made by Alvin Simmons; seconded by Todd Scholz; **unanimously approved.**
5. A motion was made to adjourn the meeting at 11:22 am by Alvin Simons seconded by Jerry Baron; **unanimously approved.**

Motions/Consensus Votes Made Via Email In-Between Regular Meetings:

None.

Action Items:

- **Action Item (Baron/Braverman):** The Biopesticide Regulatory Support Program will establish an enhanced vetting process for projects and an enhanced database tracking system to present and demonstrate both to the PMC at the Summer Meeting.

Members:

Michael Aerts; CLC
Jerry Baron; IR-4 Executive Director
Zach Bagley; CLC
Michael Bledsoe; CLC
John Walk Boatright; CLC
Doug Buhler; Administrative Advisor-NCR
Maggie Elliot; CLC
William Frantz; CLC
Rubella Goswami, USDA-NIFA
Liwei Gu; Regional Director-SOR
Matt Hengel; PMC Chair; Regional Director-WR
Marcel Holyoak; Administrative Adviser – WR
Moses Kairo; Administrative Adviser – NER
Robert Kaldunski; CLC
Steve Lommel; Administrative Adviser- HQ
Armando Moterroso; CLC
Joe Munyaneza; Administrative Adviser - ARS
Pete Nelson; CLC
Rachel Pick (for Michael Martin); CLC
Steve Salisbury; CLC
Michelle Samuel-Foo; USDA-NIFA
Johnathan Saranger; CLC

Members Continued:

Todd Scholz; CLC Chair
Alvin Simmons; USDA-ARS
Barry Tanner; CLC
Amy Upton; CLC
Simon Zebelo; Regional Director - NER

Presenters:

Alice Axtell, IR-4 HQ
David Beaudreau; DCLRS
Michael Braverman; IR-4 HQ
Jimmy Byrtus; IR-4 HQ
Debbie Carpenter; IR-4 HQ
Krystal Chojnacki; IR-4 HQ
Christina Dineen; IR-4 HQ
Dirk Drost; MUF
Anna Gore; MUF
Johanna Mazlo; IR-4 HQ
Kimberly Nesci, USDA OPMP
Cristi Palmer; IR-4 HQ
Hannah Ross; IR-4 HQ
Billy Smith; US EPA
Dionne Toombs; USDA NIFA

Tuesday March 5, 2024 9:30 am to 4:30 pm ET

Matt Hengel called the meeting to order at 9:35 am.–

1. Welcome and comments from the current chairs: (Hengel & Scholz)
   - M. Hengel initiated introductions around the room and on zoom.

2. Approval of minutes, new agenda items. (Handout)
   - M. Hengel asked the PMC if there were any changes to be made to the minutes presented; none offered.
   - **A motion to approve the PMC minutes for the Fall 2023, Special Meeting of January 9, 2024, and Special Meeting of January 24, 2024 meetings was made by Liwei Gu, seconded by Todd Scholz; unanimously approved.**
   - A request to add a new agenda item was made by Todd Scholz
     - Preparation for lunch and learn.

3. 2023 IR-4 Year End Summary (Handout)
   - J. Baron presented the statistics from the 2023 Annual Report and Year End Summary document, reporting: that there were 211 New Tolerances for 18 active ingredients that supported 1613 new uses; IR-4 submitted 12 tolerance petition and 2 final reports for a label expansion or conditional registration that covered 92 unique requests; and that 23 data packages were completed but not submitted due to a registrant hold.
   - J. Baron reported that in the EHC program there was 1 new registration that contributed to 500 new crop uses; there were 657 field and greenhouse trials completed that contributed to 57 projects; and the priorities for the EHC Program were established at the Biennial Workshop. For the Performance program J. Baron reported: that there were 134 Product Performance reports and 47 Integrated Solutions reports provided to registrants. J. Baron reported that the Biopesticide program supported 2 new registrations.
   - J. Baron reported on the 2023 research conducted for the Food Program and the 2024 planned research program as a result of the Food Use Workshop.
   - A discussion was held regarding registrants imposing a moratorium on new project submissions to EPA due to concerns about the Endangered Species Act (ESA), PFAS endocrine disrupters, triazoles, and other .

4. CLC Report (Scholz)
    - Membership report (Handout + Presentation)
        - T. Scholz provided an update on: the CLC Charter; new CLC membership; reviewed a membership report; and shared the "Track A" members who needed a vote for renewal.
            - **A motion was made to approve the "Track A" Commodity Liaison Committee membership list by Amy Upton; seconded by Zach Bagley; unanimously approved.**
        - M. Bledsoe requested any additional nominations for the Chair and Vic Chair positions, hearing none, he reported that the Election committee nominated Todd Scholz to continue as Chair and Keith Pitts to continue to serve as Vice Chair.
            - **A motion was made to approve Todd Scholz as the Chair and Keith Pitts as the Vice Chair by Mike Bledsoe, seconded by Amy Upton; unanimously approved.**
        - T. Scholz reported on: the challenges of securing increased funding for the IR-4 Project and also ARS; that there may still be hope in the legislature; and shared the Board that was elected with the Friends of IR-4 Program.
    - Advocacy Plans
        - D. Beaudreau reported that: there is a delay in wrapping up the Farm Bill; Congressional offices have opened portals to submit FY 2025 requests; the President's Budget will be released at the State of the Union address; and that this week there are several meeting with Congressional staff and meetings with Senators to make these funding increase requests.
        - A discussion was held regarding it being a tough year to ask for increased funding and what percent of the Farm Bill is allocated to specialty crops (0.5%), how recognition of the IR-4 Project was growing among members of Congress, and that members has increased to 28 members to now also include registrants and individual members.

Break at 10:24 am. The meeting reconvened at 10:37 pm. –

5. Priority Setting/New Research
    - Debrief from 2023 Priority Setting Workshops and Plans for 2024 (Handout)
        - J. Baron introduced the topic and that he wanted to have an open discussion about our priority setting session.
        - A. Axtell provided an overview of the 2024 Research Plan for Product Performance and the process of getting to the agreed upon priorities; discussed the number of priorities and trials and causes for delays; resource allocations for Performance work. A. Axtell further reported on: Integrated Solutions priorities and trials; current field trial costs
        - A discussion was held regarding CDFA funding and how performance trail allocations come in and how the Product Performance, Integrated Solutions or Biopesticide platforms can help refocus ourselves due to the ESA restrictions and away from synthetics.
        - C. Palmer reported on: the EHC Priority Setting process and annual schedule and components of the priority setting program including agenda, handouts and purpose for biannual schedule; highlighted differences between the EHC and Food Programs; and reviewed research capacity and where researchers are located.

        - A discussion was held regarding the attendance of growers at the priority setting as well as trade and extension attendees; and where industry donations are housed.
    - Key Dates Associated with 2025 Priority Setting (Handout)
        - A. Axtell shared the important deadlines for the Food Program research cycle including an earlier deadline to submit new project requests for the Food Use Program.
    - Trends and Concerns and Rethinking Priority Setting (Handout)
        - J. Baron reported: that there are increasing trends and concerns that warrant discussion by the group including ESA review/Europe; chemical production and restrictions as well as EPA process changes; Biopesticide markets are changing and emerging technologies are on the rise. J. Baron also reported on: the existing workshop process and how engaging it is to stakeholders; the potential to rethink the timing and look at the Canadian model and plan for a year out and prioritizing a pest versus a product.
        - A discussion was held regarding: prioritizing a pest versus a product and how that might alleviate project cancellations or delays; the potential to refine the EPA red light process; the Australian Priority Setting process; support for moving the deadline earlier for to submit new project requests; and keeping a week or two weeks between the deadline and the Industry Technology Session.

Lunch and Learn Briefing

- M. Aerts led a discussion to develop final messaging to leave the staffers after the Lunch and Learn.
- A discussion was held regarding: Cost and time to conduct the performance and residue research; thank them all for the support for the level funding; reiterating our asks for FY 25 and the farm bill; key challenges for the specialty crop industry; how additional funding could help address those challenges; the return on investment; and what IR-4 is receiving is not competitive with what other countries are receiving for the same research.

6. Global Minor Use Summit/Minor Use Foundation (Presentation)
    - D. Drost announced that Anna Gore has been promoted to Executive Director of the Minor Use Foundation.
    - A. Gore presented on: the Minor Use Summit held in Madrid, Spain that had 170 participants from 41 countries; the 2024 Work plan that was determined at the summit; training and capacity building program for the year; and fundraising strategies.

7. USDA Assisting Specialty Crop Exports (ASCE) initiative (Handout)
    - J. Baron reported on: the Assisting Specialty Crop Exports (ASCE) grant initiative ($65,000,000) to support educational initiatives to support food safety systems and requirements (Europe); helping countries adopt international standards; supporting the MRL database; the proposals may be commodity focused versus general specialty crop focused and there may be opportunities for commodities to apply; and that there was one staff person will manage the new program.

Break for lunch at 12:16 pm. The meeting reconvened at 1:20 pm.--

8. Rethinking processes within Biopesticide Regulatory Support (Handout)
    - J. Baron reported: on the success of the Biopesticide program and the processes it uses to date and concerns of transparency and tracking; increasing trends in the Biopesticide pest management solutions and difficulty getting data waivers from EPA; efforts to enhance the

Biopesticide tracking database and project vetting process; and how best structure the program.
- A discussion was held regarding with the overlap with EHC Program and how will project be vetted; the program is already providing consulting services; handling confidentiality of companies; using public funds to compete with private consultants; and the registration process for Biopesticides;

9. Enhancement of Training (Handout)
    - J. Baron reported: current employee training taking place are from the Training and Education Committee, Regional Field Coordinators, and Quality Assurance Unit; reported on enhanced employee training as a result of the path forward including a new employee orientation, Leadership Development Program, mini sabbaticals, IR-4 developing standardized training, and that the HQ led program would be spearheaded by Rob Welker; and that the IR-4 Laboratories are working to implement a training program as well.

10. Upcoming Meetings (Handout)
    - Summer PMC Meeting: July 9-11
    - 2024 Food Program Workshop: September 10-12
    - Fall PMC/NRPM: October 21-25
    - 2025 Joint CLC/PMC Meeting: March 4-6
        - K. Chojnacki shared a brief presentation of the upcoming event dates.

Break at 2:50 pm. The meeting reconvened at 3:32 pm. –

11. Partner Updates
    - USDA Office of Pest Management and Policy (OPMP)
        - K. Nesci presented on: the staff that comprises the OPMP are mainly made up of former EPA staffers; they make suggestions and offer support for grower needs and try and serve as the voice of the grower about the implications of some of the proposed EPA mitigations; some successes were wind directional buffers, advocating for longer phase-outs of products; working to co-host mitigation workshops for the ESA to develop additional mitigation options; and interface with the states to keep them informed on what is happening.
        - A discussion was held regarding the potential for a staff person from OPMP to participate in reviewing Biopesticide projects and that there is a new office of agriculture and rural affairs at the EPA.
    - US EPA – Office of Pesticide Programs
        - B. Smith reported: on the registrations processed from the IR-4 Project in 2023 and three of them negated the need for Section 18 filings; that they appreciated the partnership with the IR-4 Project; discussed challenges such the stoplight analysis growing from three colors because of increased issues, antimicrobial resistance; on a work plan progress and settlement of ESA lawsuit; herbicide strategy was out for public comment and received many comments and a report is expected in August; insecticide strategy is also underway; vulnerable species pilot will be updated later this year and to develop better maps; mitigations need to be practical and enforceable; upcoming meetings to discuss elements of ESA; and are looking forward to continued collaboration with IR-4.
        - A discussion was held regarding distributor selling AGRI-Strep to the growers in FL by August; if there is any more information IR-4 can provide to get new uses through

(public interest findings and helping develop maps); antimicrobial resistance issues; and implications with greenhouses.

- USDA NIFA (Presentation)
  - D. Toombs, Associate Director for Programs, USDA NIFA reported: congratulated the IR-4 Project on 60 years; reviewed the mission of NIFA; reviewed USDA Priorities and grant program areas; and how NIFA is structured and rebuilding.
  - Pleasantries about the partnership were shared.

The meeting recessed for the evening at 4:45 pm. --

Tuesday March 6, 2024 8:30 am to 5:00 pm ET

Matt Hengel reconvened the meeting at 8:33 am. --

12. Management Reports
    - Administrative Advisors
      - D. Buhler reported: that on the mid-term review for NRSP they requested the IR-4 budget to come in at 15% less but the team is working on strategies to request the full allocation;
        - A discussion was held regarding the background of the proposed cut in off the top funding.
      - S. Lommel reported: that he is on the NRSP committee and was a part of the reduction discussion, but he supports the IR-4 getting full funding and are weighing options; that CALS really values hosting IR-4; State salaries continue to be an issue; NC State struggles with 100% off site, out of State workers; the State budget is in good shape and there has been a 7% increase split across 2 years; and that the synergies of locating to NC has been good for the IR-4 program.
      - M. Holyoak reported: that UC Davis switched to a new budgeting and financial system online and there have been delays such as purchasing as a result and that there are budget cuts at the college level.
      - M. Kairo reported: there is a renovation underway on a 1,000 sq. ft. greenhouse to support some IR-4 trials that have heating and cooling; broke ground on a research center with 7,000 sq. ft. of greenhouse that can support IR-4 work; there will be State land grant match from the Governor for extension and research; and that there was a listening session that UMES included IR-4 in to speak about the partnership.
    - NIFA Report and other topics
      - R. Goswami reported: due to the continuing resolution the funding has been coming in pieces and the funding is expected to be the same as last year; the awards management team is fully staffed but most are brand new; the IR-4 amendments have been straightened out and the program staff will be more involved in the award management for this award; NIFA is working to continue to get IR-4 as a non-competitive program starting next year; and that NIFA is extremely supporting of IR-4.
      - A discussion was held regarding the proposal needed for a non-competitive program (not much – directed RFA), preparing for the non-competitive format, the need to stay on top of reporting, and let NIFA know if there is anything that is not currently be reported on that would be helpful to communicate when reporting to congress (including underrepresented colleges and universities).
    - Regional/ARS Reports
      - NER: S. Zebelo provided a report on 2023 activities including: that they are getting their funding out smoothly to their researchers, subawards, and state liaison

representatives; received funding for ARS for trials and completing those; ordering and distributing sample bags for regions; completed 31 trials, the status of notebooks and quality assurance activities; and thanked the NER team for their work to run the project in the NER.

- SOR: L. Gu provided a report on 2023 activities including: John Davis has been promoted to Director of Experiment Stations; Janine Spies has moved to a different job after 6 years with IR-4 and Kristen is the interim RFC; a recent in-person training on the eFDB that 17 researcher in person; there is an upcoming meeting with the IR-4 program and the College of Agriculture crop protection professionals; lab submitted 14 ASRs last year; staffing set-backs in the lab; QA completed their assigned activities for 2023 but next year HQ will take over auditing the Homestead and Charleston site; and Jerry met with SOR personnel and drove a Uhaul with archive files up to NC from Florida.
    - A discussion was held regarding systems put into place to prevent issues with lab data inconsistencies.
- WR: M. Hengel provided a report on 2023 activities including: the field program has been progressing normally with field data notebooks coming in, but the biggest hurdles are with the financial system, the sponsored programs office processing subawards, and IDC issues; new FRD in New Mexico; QA is continuing to operate well as a team; 13 ASRs were completed by the lab; the lab hosted Borlaug Fellows, FAS visitors, HQ visitors; the lab move for seismic retrofit has been delayed; hosted the 50th Anniversary of ACS Agro-division; and last week there was an EPA inspection in the field and lab with no findings.
- ARS: A. Simmons reported: that the overall status for research is good; two locations are delayed on their 2023 field data books; all field sites have or will participate in eFDB training; and Wapato laboratory updated their SOPs to mirror the UC Davis SOPs and will be visiting the UC Davis lab to exchange knowledge.
    - A discussion was held regarding funding for the ARS labs.

- HQ Report
    - J. Baron reported: that Jimmy Byrtus will be promoted to Study Director; the biology team is working to standardize processes; David Schnatter has transitioned to the regulatory team; HQ QA has taken on auditing 4 new sites from the SOR and Jane Forder continues to QA for the NER and NCR; operations team is continuing to refine their work; archives have mostly been transferred to a new storage site in NC but 3.1% are still missing from former site; increasing problems with requests for test and reference substances from registrants as they want the orders in earlier; contentious meeting with RFCs about eFDB and new training to help reduce concerns about using the eFDB; and HQ is looking into using artificial intelligence to develop predictive models for field trails.
        - A discussion was held regarding digitizing data and the need to keep the files for the life of the registration.

13. Program Reports – Part 1
    - Environmental Horticulture (Handout + Presentation)
        - C. Palmer reported: that there were 22 data summaries for 2023; there was one registration last year but delays due to registrants, ESA, etc.; EHC has produced 64,063 crop uses as of February 2024; on outstanding data reports; on funding rate issues for field trials; on the regional funding distribution for EHC trials and average funding per trial; that there is a joint pilot project going on with Canada; and a forthcoming publication.

14. Last minute plans for Congressional Lunch and Learn
    - D. Beaudreau briefed the group on the plans for the Lunch and Learn.

The meeting recessed for the Lunch and Learn at 10:32 am. --

11:15 am to 2:00 pm ET

Congressional Lunch and Learn (noon-1:30 PM) – Capitol Building

- Welcome and Introduction of IR-4
    - Mike Aerts, FFVA to MC
    - Jerry Baron, Overview of IR-4
- Speakers representing specialty crops
    - Rachel Roberts, American Mushroom Institute
    - Johnathan Sarager, Western Growers
    - John Walt Boatright, AFBF
    - Amy Upton, MNLA
    - Maggie Elliott, Hops
- IR-4 Current and Future Issues
- Questions and Closing

The meeting reconvened from the Lunch and Learn at 2:15 pm. --

A brief update was provided regarding the success of the Lunch and Learn; the presentation panel was effective and there were approximately 15 staffers in attendance.

15. Program Reports – Part 2
    - Biopesticide Regulatory Support/ International Capacity Building (Handout)
        - M. Braverman reported on: opportunities and challenges of altering the current Biopesticide program; EPA submissions made recently on Lepidext/InsterusHz Moths, Citrus Greening, greenhouse cucumber; several projects that are currently under development by the biopesticide team and future projects; and an upcoming meeting with the Biopesticide division of the EPA.
        - M. Braverman provided a report on International Capacity Building including: and STDF projects in Thailand regarding spinetoram on mango, and Kenya regarding Sulfoxaflor on mango; and about the Global Minor Use Summit.
        - A discussion was held regarding sharing incoming project details and the new MUF center in Latin America.
    - Communications (Handout)
        - H. Ross reported on: the refreshed logo; updated brand color pallet for an enhanced look and for accessibility for the visually impaired; new team resources developed; new printed materials available; digital updates in social media, newsletter and website; the status of the intranet project; videos planned for 2024; and a publication on the history of IR-4 created by Meister Media.
    - Grant Processing (Handout)
        - K. Chojnacki reported on the current status of the NIFA grants, continued issues with the RED system, and that amendments to finally clean up the NIFA grant numbers will be coming out soon from NC State.
        - A discussion was held regarding the changes software systems and grant end dates.
    - Technology Team and eFDB (Handout)

        - J. Byrtus reported on the status of the technology team, membership, and the potential for using AI.
        - J. Byrtus provided an update on the eFDB reporting: there are over 50 eFDB in use; trainings that have taken place and are planned; and that the first notebooks from the pilot are now being reviewed by QC and QA.
        - A discussion was held regarding if an electronic signature is available.
- Food Program (Handout)
    - Residue Research – Field Program/Capacity & Submissions: D. Carpenter reported: this has been a successful year with 18 actions resulting in 1,613 new uses and 213 tolerances; there were 12 new submissions in 2023; the crop grouping initiative updates; a comparison of the field research program in 2023 and 2024 and over the past 10 years; the status of the Field Data Notebooks received at HQ and outstanding 2024 notebooks; and reviewed regulatory challenges.
        - A discussion was held regarding the cause of delays for submissions and if EPA is still allowing super crop groups.
    - Residue Research – Laboratory: D. Carpenter reported on: the current status of the backlog and plans for addressing it at Tifton, Wapato, WR Lab and SOR Lab; and the status of the studies at contract labs.

Break at 3:45 pm. The meeting reconvened at 3:59 pm. –

- Quality Assurance (Handout)
    - J. Mazlo reported on: EPA compliance monitoring; QA preparation activities for the eFDB; additional areas that QA HQ has picked up or assisting with; the implementation of a shared drive; the national QA group is meeting regularly; reviewed 2023 audit inspection data and a comparison from 2021-2023; and provided an update on eQA and eDoc.
- Education & Training Committee (Handout)
    - C. Dineen reported on: the status of selecting the location for the next NEC; planning underway for content of the training; the national SOPs committee and work underway thus far including working toward incorporating them into eQA; update on revising the magnitude of residue protocol template; quarterly virtual trainings; and IR-4 Advisory updates.

16. Food Program Capacity
    - J. Baron reported: on an idea to coordinate hiring among the national program and discuss capacity issues such as if FRDs have vacated their role.

17. Other topics/Adjourn
    - J. Baron reported that the house approved the budget.

A motion to adjourn the regular session at 4:44 pm and to move to Executive Session was made by Alvin Simmons; seconded by Todd Scholz; unanimously approved.

The meeting recessed for the evening at 4:44 pm.--

Thursday March 9, 2023 - 8:30 am to 11:30 am ET
Matt Hengel convened the Executive Session at 8:30 am. --

18. Executive Session

Break at 10:10 am. The meeting reconvened at 10:30 am. –

The members reconvened from Executive Session at 11:22 am with the following motions or actions out of Executive Session:

- **Action Item (Baron/Braverman): The Biopesticide Regulatory Support Program will establish an enhanced vetting process for projects and an enhanced database tracking system to present and demonstrate both to the PMC at the Summer Meeting.**

19. Adjourn

A motion was made to adjourn the meeting at 11:22 am by Alvin Simons seconded by Jerry Baron; unanimously approved.

NRSP Renewal

Presenter: Dr. Jerry Baron

IR-4 Project

NRSP-4 Renewal

Process/Deadlines

- July 31, 2024-Lead AA notify NRSP RC Chair of intent to renew as a Capacity NRSP.
- August 30, 2024-Draft renewal and accomplishment documents finalized
- November 30, 2024-External peer review panel completes assessment of renewal proposal. Peer review panel transmit comments and recommendations to Lead AA
- December 31, 2024-Baron revises the renewal proposal based on peer review comments
- January 15 2025- Updated renewal proposal, projected budget and external peer response sent to NSRP RC Chair. Materials forwarded to Executive Directors for distribution to appropriate multistate research committee
- April 30, 2025 – Appropriate Regional Committees review renewal proposal
- May 31, 2025- NRSP RC collates comments/concerns identified through renewal reviews
- July 30, 2025 - NSRP RC prepares recommendations on project proposed renewal → shares recommendation with Executive Directors who distribute it to regional associations.
- September 30, 2025 – SAES Directors vote on approval of project and five-year budget.
- October 1, 2025 – New Project starts with 5 year funding

Northeast Region Report

Presenters: Dr. Simon Zebelo

Northeast Region PMC Report

January 1 – June 30, 2024

M. Ross, M. J. Hickman, S. Zebelo and J. Forder

Program Summary

Trials At-A-Glance

Food Use MOR Trials - Summary	2022	2023	2024
Trials Placed	29	30	26
Canceled Trials	6	2	0
Completed Trials	23	28	2
FDBs/eFDBs Completed	23	28	0
Completed QC Reviews	23	28	0

Food Use Performance Trials - Summary	2022	2023	2024
# of Trials	10	20	17
Completed Trials	10	18	0
Reports Submitted	10	10	0

Env. Hort Efficacy - Summary	2022	2023	2024
# of Protocols	6	4	5
Projects Placed	6	4	5
Canceled Projects	0	0	0
Reports Submitted	5	2	0

Env. Hort Crop Safety - Summary	2022	2023	2024
# of Protocols	1	1	3
Trials Placed	21	21	19
Canceled Trials	0	0	0
Reports Submitted	21	12	0

Integrated Solutions- Summary	2022	2023	2024
# of Trials	10	8	7
Completed Trials	10	7	0
Reports Submitted	10	5	0

Update from the Director's Office

UMES started processing a no-cost extension (NCE) for the 2023-2024 FY budget. The 2023-2024 FY (Year 3) sub-sub awards release is progressing well, and for those serving as FRDs and SLRs, we are processing the subaward and SLR travel budget together.

The NER team worked together to prepare the continuation proposal for the 2024-2025 FY (aka, Year 4) and submitted it to NC State.

UMES- School of Agricultural and Natural Sciences (SANS) is renovating a hoop house with a cooling and heating system dedicated to IR-4 crop safety and efficacy trials. The renovation is almost done, and we are expected to run a few EHC trials this summer.

UMES purchased and distributed residue bags and boxes to all regional offices, USDA-ARS, and Canada. Moreover, we have stocked our residue bags inventory at UMES in case any region needs urgent sample bags.

I attended the EPA-USDA specialty crop tour on June 26, 2024, and it was great visiting some of the farmers and researchers in the NER. I have learned a lot about the services that the IR-4 project provides to our clientele and met EPA and USDA personnel. I have also been attending some of the monthly IR-4 National Expanding Taskforce (NET) meetings.

Moreover, I have attended several local, national, and international meetings and trainings. Just to mention a few, I traveled to the Democratic Republic of Congo and Kenya in January and May 2024 and conducted training in molecular insect identification and integrated pest management of mango fruit flies, respectively. These are part of projects funded by USDA and USAID.

The IR-4 NER team had several regular virtual meetings. Thanks to the hard-working colleagues Marylee, Megan, Jane, John, Josh (UMES research office), SLRs, and the researchers, things are progressing well in the NER.

Regards,

Simon Zebelo

Update from the Regional Coordinator's Office

2024 has presented us with some unique challenges. We launched into the transition from paper Field Data Books to electronic FDBs. Headquarters has been working with iAdvantage to understand and tailor the eFDB to the needs of IR-4. Now it was time for the training. There were countless meetings offering training to Field Research Directors, Quality Control and Quality Assurance officers, Regional Field Coordinators and Study Directors. It was exhausting and confusing at times, but it seems to have worked. There are still kinks to work out, but the FRDs are using the eFDB. I am very proud of our FRDs having taken this on and to do so without compromising the quality of work we always expect.

In March Phillip Moore traveled to Salisbury, MD where we hosted GLP training with the eFDB. All of our Northeast FRDs attended. It was and is a learning curve for everyone. Mistakes were made and mistakes were discovered as we conducted a mock trial at the Lower Eastern Shore Research and Education Center. That's growth. We also enjoyed some down time at a local restaurant. I'll say it again; I am very proud of our FRDs. They are an amazing group of wonderful people that are dedicated to the IR-4 mission and the demands of GLP.

We participated in the Western Region GLP Training Webinar in February. Nicole Soldan, North Central RFC and I worked together to organize the May Webinar with help from Christina Dineen and others at Headquarters. We will do the same for a Webinar in August, then the regions will take turns organizing these quarterly Webinars.

I was also very active in the planning for this year's IR-4/EPA/USDA Educational Tour. June 26 was a day planned to enlighten the group on the challenges faced by growers of industrial hemp, tree fruits, small fruits and vegetables. The tour was absolutely educational and thoroughly enjoyable.

That's all for now,

marylee

Program Report

Food Use Program

Magnitude of Residue

In 2024, twenty-six magnitude of residue (MOR) trials are being conducted in the Northeast Region. MOR field trials were conducted in four locations, including:

- Lange Research, Inc., North Rose, NY (Contract Research Facility)
- Lower Eastern Shore Research and Education Center, Salisbury, MD (University of MD)
-Rutgers Snyder Research and Extension Farm, Pittstown, NJ (Rutgers University)
-Rutgers Marucci Center for Cranberry and Blueberry Research, Chatsworth, NJ (Rutgers University)

Two samples have been shipped and no electronic Field Data Books (eFDBs) have been completed yet. All Quality Control (QC) reviews have been completed for 2023.

Performance

In 2024, seventeen performance trials are being conducted in the Northeast Region. The Efficacy and Crop Safety trials are being conducted at eight locations.

Efficacy and Crop Safety trials are being conducted at:

- Rutgers Center for Blueberry and Cranberry Research and Extension, Chatsworth, NJ (Rutgers University)
- Agricultural Experiment Station, Geneva, NY (Cornell University)
- Long Island Horticultural Research Lab, Riverhead, NY (Cornell University)
- University of Maryland Main Campus, College Park, MD (University of Maryland)
- University of Connecticut Main Campus, Storrs, CT (University of Connecticut)
- Carvel Center for Agricultural Research, Georgetown, DE (University of Delaware)
- Wye Research and Education Center, Wye Mills, MD (University of Maryland)
- WVU Plant Diagnostic Clinic, Morgantown, WV (West Virginia University)

No trials have been completed and no reports have been submitted yet.

Environmental Horticulture Program

In 2024, there are five efficacy protocols and three crop safety protocols. Under these protocols, we placed five efficacy projects and nineteen crop safety trials.

The five efficacy projects are being conducted at:

-Long Island Horticultural Research Lab, Riverhead, NY (Cornell University)
- WVU Plant Diagnostic Clinic, Morgantown, WV (West Virginia University)

The nineteen crop safety trials are being conducted at:

-Long Island Horticultural Research Lab, Riverhead, NY (Cornell University
-University of Maryland College Park, College Park, MD (University of Maryland)

To date, no reports have been submitted.

Integrated Solutions

In 2024, seven Integrated Solutions trials are being conducted.

The trials are being conducted at:

-Agricultural Experiment Station, Geneva, NY (Cornell University)
-Long Island Horticultural Research Lab, Riverhead, NY (Cornell University)
-University of Delaware Carvel Research & Education Center, Georgetown, DE (University of Delaware)
-Massachusetts Agricultural Experiment Station, Amherst, MA (University of Massachusetts)
-Rutgers Marucci Blueberry and Cranberry Experiment Station, Chatsworth, NJ (Rutgers University)
- University of Maryland College Park, College Park, MD (University of Maryland)

To date, no trials have been completed or reports submitted.

Quality Assurance

During the period of this report, I [Jane Forder] conducted 21 audits of field data books, 2 audits of electronic field data books, 5 final report audits. I performed a second review on 3 final reports, performed 5 closing report checks and typed up 1 QA statement. I conducted 16 field in-life inspections, 5 in the northeast region and 11 in the northcentral region. I provided extensive training to Juliet Thompson on auditing field data books, closing checks and field data summaries. I also attended many electronic field data book training sessions.

Southern Region Report

Presenter: Dr. Liwei Gu

IR-4 Project

UF UNIVERSITY of FLORIDA

Institute of Food and Agricultural Sciences
Food Science and Human Nutrition Department
Food and Environmental Toxicology Lab
IR-4 Southern Region

The IR-4 Project

1642 SW 23rd Drive
PO Box 110270
Gainesville, FL 32611-0270
352-294-3983
352-392-9467 Fax

Southern Region Report for CLC and PMC

Liwei Gu, Gail Mahnken, Kristen Searer-Jones, and Kathleen Knight

July 1st, 2024

1. Field programs and QC

Kristen Searer-Jones has been doing an excellent job as interim Research Field Coordinator since March 1st, 2024. We will be doing Zoom and onsite interviews for a new RFC.

QC of FDBs:

2022 trials – 87 of the 90 2022 FDBs have been received as of mid-June. Outstanding FDBs are from trials conducted in 2023, including 2 ethaboxam/citrus trials in Florida with a CRO and 1 ethaboxam/grapefruit trial in TX.

2023 trials – As of mid-June, 64 of the 72 FDBs have been received, including three tomato and cucumber trials canceled by the manufacturer (BCS-CW64991). Two of these outstanding 2023 trials were conducted using electronic notebooks.

2024 trials - Four paper FDBs have been received as of mid-June. FRDs are working with Philip Moore to ensure trial information is correctly entered into the electronic notebooks. At this time, Philip will QC early 2024 books as they are completed.

SOP review: SOP revisions have been completed for the IR-4 facilities at North Carolina State University and the Agricultural Experiment Station in Corozal, PR. SOPs were also reviewed and discussed during a site visit to Uvalde, TX in May. Between the 2024 and 2025 seasons, field sites will be working to update SOPs to reflect the new use of the electronic field data books. National SOPs are also forthcoming, and training has been requested regarding how to balance national and site SOPs.

2024 GLP assignments:

Seventy-three GLP trials were assigned to SOR for 2024. Three mesotrione/sesame trials have been canceled due to phytotoxicity. Four linuron/stevia trials (1 FL, 3 NC) have been terminated due to weather-related issues. As of mid-June, samples have shipped for six 2024 trials. Fourteen trials have been removed from TREC at Homestead, FL for the 2024 season (5 miracle fruit, 3 avocado, 2 lychee, 2 dragon fruit, 2 guava). Vladimir Seregin is no longer with IR-4 and a search is being

conducted for a replacement FRD at this site. 4 miracle fruit trials will likely be converted to dill trials and placed accordingly. The tropical trials will be placed at sites with capacity in 2024 and 2025.

Food Crop Product Performance Trials: As of mid-June, 19 of 47 Food Crop Performance trials assigned to the Southern Region in 2023 have been received. Many trials are ongoing or completed with reports expected in 2024. Forty-eight Food Crop Performance trials have been assigned to SOR researchers in 2024, and two reports have been received.

Integrated Solutions (IS) trials: Reports have been received from fourteen of the twenty-one 2023 Integrated Solutions trials. Two projects were delayed: the root aphid rearing protocol for the IS hemp project took additional time to develop, and the timing for dormancy in FL for the weed control/stevia was not known and plants did not reach marketable height. These trials will be conducted in 2024. Twenty-two IS trials were assigned to SOR researchers in 2024, and one report has been received.

Environmental Horticulture Trials: Twenty-one reports out of the twenty-seven projects assigned in 2023 have been received. Several projects are ongoing and will be completed in early 2024. One pythium efficacy trial is being repeated this year. In 2024, thirty-seven projects were assigned across the region: seventeen weed science, nine plant pathology, and ten entomology projects.

2024 SOR Priority Setting: The priority meetings for the SOR Food Use Program were conducted virtually June 11-13 *via* a series of discipline-specific webinars to identify the region's priority needs for 2024. The meetings were well attended by state liaisons, research faculty, extension specialists, and the IR-4 lead biology team. A final priority-setting call will be held in mid-August before the nomination period opens.

Training: All SOR field research directors (FRDs) and technicians are being continuously trained in using the iAdvantage electronic field data book (eFDB). The southern region will be hosting the fall quarterly GLP training webinar, with topics to be determined.

Extension activities:

- Hosted UF IFAS + IR-4 Special Seminar with Southern Region team & Alice Axtell from HQ to educate UF researchers on IR-4 collaboration opportunities.
- Attended a Field Critical Point Inspection in Uvalde, TX for the harvest of trial bifenthrin/onion with Headquarters QA, May 16, 2024.
- Attended Hops Field Day at UF Gulf Coast Research & Education Center in Wimauma, FL, June 5, 2024.
- Virtually attending Southeast Vegetable Extension Workshop July 16-17, 2024.

2. Analytical Lab

Personnel: A search to fill a vacant chemist position is underway.

Projects and reports finished: The lab has targeted 17 projects for completion in 2024. To date, 7 analytical summary reports (ASR) have been submitted with projects 4, 6, and 7 listed as backlogged.

#	Submission Date	PR No	Pesticide	Commodity	Trial	
					Year	Number
1	01/16/24	12673	Pydiflumetofen	Cucumber	2022	4
2	01/30/24	11881	Pydiflumetofen	Strawberry	2022	5
3	03/04/24	12975	Pyraziflumid	Lettuce	2022	5
4	03/20/24	13333	Pydiflumetofen	Cranberry	2022	5
5	03/20/24	Zeta-cypermethrin	Lychee	08560	2022	4
6	05/28/24	Dimethomorph	Basil	13242	2022	5
7	05/28/24	Ametoctradin	Basil	13242	2022	5

Ongoing Projects: The following projects are currently in progress in the laboratory.

#	Project Number	Chemical	Crop	Last Sample Receipt Date	Status	Anticipated Date ASR to HQ
1	13259	Picoxystrobin	Coffee	03/08/23	ASR in QA review	07/2024
2	13407	Isocycloseram	Strawberry (GH)	03/19/24	Method Development	12/2024
3	13405	Isocycloseram	Pepper (GH)	pending	Method Development	12/2024
4	13540	Fluazifop-P-butyl	Squash (summer)	12/07/23	Pending SS analysis	11/2024
5	13511	Inpyrfluxam	Tomato	11/04/23	Pending SS	02/2025
6	13498	Tiafenacil	Cucumber	09/13/23	Pending SS analysis	05/2025
7	13500	Tiafenacil	Tomato	pending	Pending Field Trial and SS analysis	05/2025
8	13501	Tiafenacil	Pepper	pending	Pending Field Trial and SS analysis	06/2025
9	13541	Fluazifop-p-butyl	Pea	pending	Pending Field Trial and SS analysis	02/2025
10	07883	Pyridate	Sweet Corn	11/14/23	Method Validation	10/2025
11	12752	Fluazaindolazine	Mint	10/07/22	Method reevaluation	08/2025
12	13169	Fluazaindolazine	Radish	02/20/23	Method development	06/2026
13	13304	2,4-D choline	Strawberry	01/09/24	Method reevaluation	06/2026
14	11568	Thiophanate-methyl	Radish	02/20/23	Pending SS (04/25)	06/2025
15	13360	Thiophanate-methyl	Carrot	03/22/23	Pending SS (04/25)	06/2025
16	13449	Inpyrfluxam	Coffee	01/17/24	Method development	11/2025

Pending Projects: Trials from the following projects have been received but work on the projects has not started.

#	Project Number	Chemical	Crop	Last Sample Receipt Date	Trial	
					Year	Number
1	13078	Fludioxonil + Pydiflumetofen	Basil	01/11/24	2023	5
2	13293	Fludioxonil + Pydiflumetofen	Mint	pending	2023	6
3	13489	Fludioxonil + Pydiflumetofen	Asparagus (fern)	06/24/24	2023	6
4	13496	Isocycloseram	Sunflower	12/07/23	2023	9
5	13504	Isocycloseram	Pomegranate	12/13/23	2023	4
6	13798	Fluazifop-P-butyl	Pepper (Bell & Nonbell)	pending	2024	13
9	13289	GF-4031	Tomato (GH)	pending	2024	5
10	13545	GF-4031	Pepper (GH)	pending	2024	5
11	08037	Pyridaben	Pepper (Bell & Nonbell) (GH)	pending	2024	5
12	08266	Pyridaben	Lychee	pending	2024	4

Projects with late ASR or backlogged:

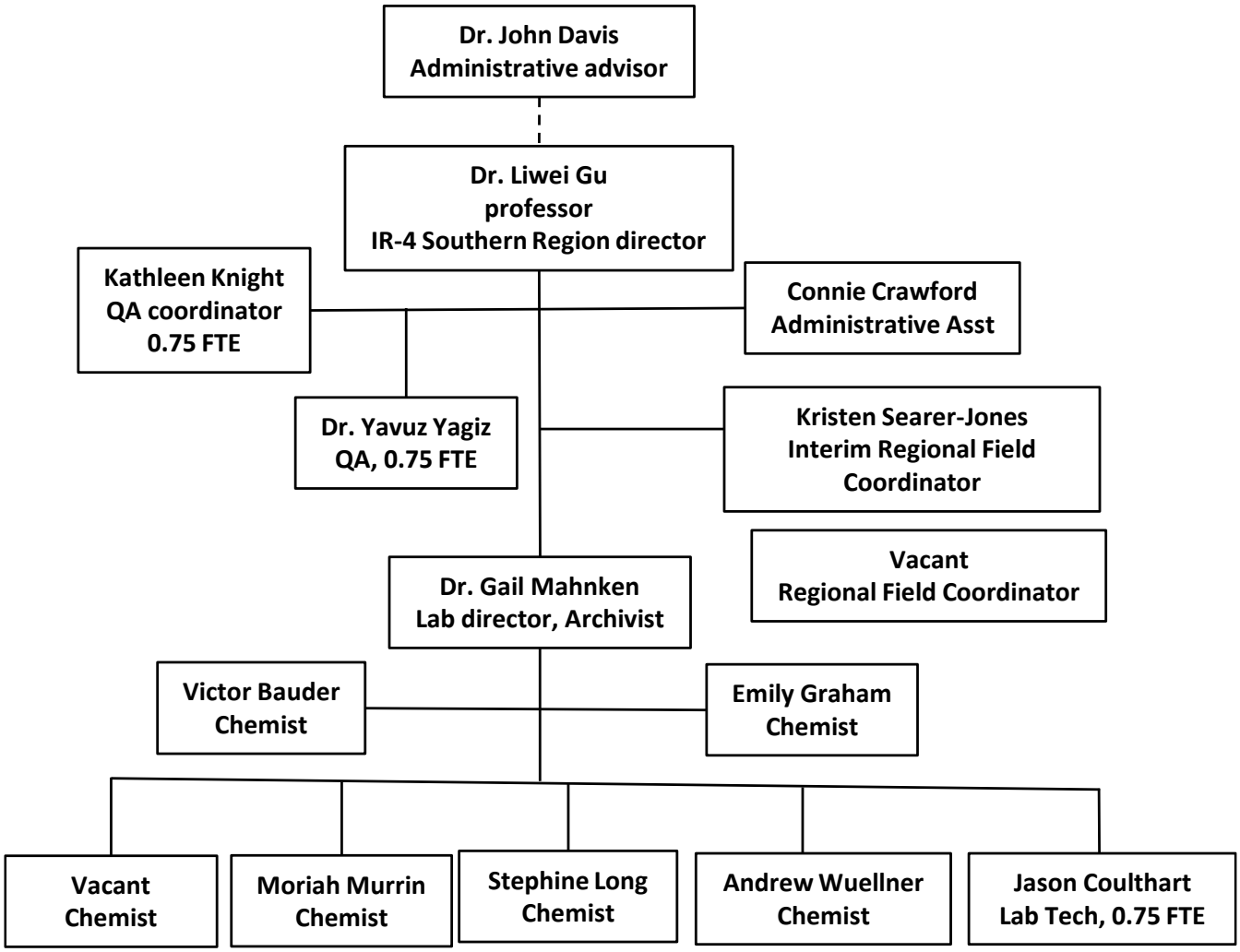
#	Project Number	Chemical	Crop	Last Sample Receipt Date	Status	Anticipated Date ASR to HQ
1	12752	Fluazaindolazine	Mint	10/07/22	Method reevaluation	03/2025
2	13169	Fluazaindolazine	Radish	02/20/23	Method development	06/2026
3	11568	Thiophanate-methyl	Radish	02/20/23	Pending SS interval in 04/2025	06/2025
4	13360	Thiophanate-methyl	Carrot	02/20/23	Pending SS interval in 04/2025	06/2025
5	13259	Picoxystrobin	Coffee	03/08/23	ASR in QA review	07/2024

3. Quality Assurance Unit

Function (man/days)	2024 completed	2024 Assigned	% Completion	man/days
Draft Final 5	1	11	9%	5
Field Data Books 1.0	95	100	95%	95
Field Critical Point Insp 2.5	8	19	50%	20
Lab Facility Inspection 3	0	0	0	0
Lab Critical Point Insp 1.5	10	30	33%	15
Field Facility Inspection 2.5	1	2	50%	2.5

Contributing Scientist's Report Audit 3	0	0	0%	0
Analytical Sum Report 6	9	17	53%	54
Review Calculations 0.1	13			1.3
Training 1	5.2			5.2

Southern region organizational chart (effective March 1, 2024)



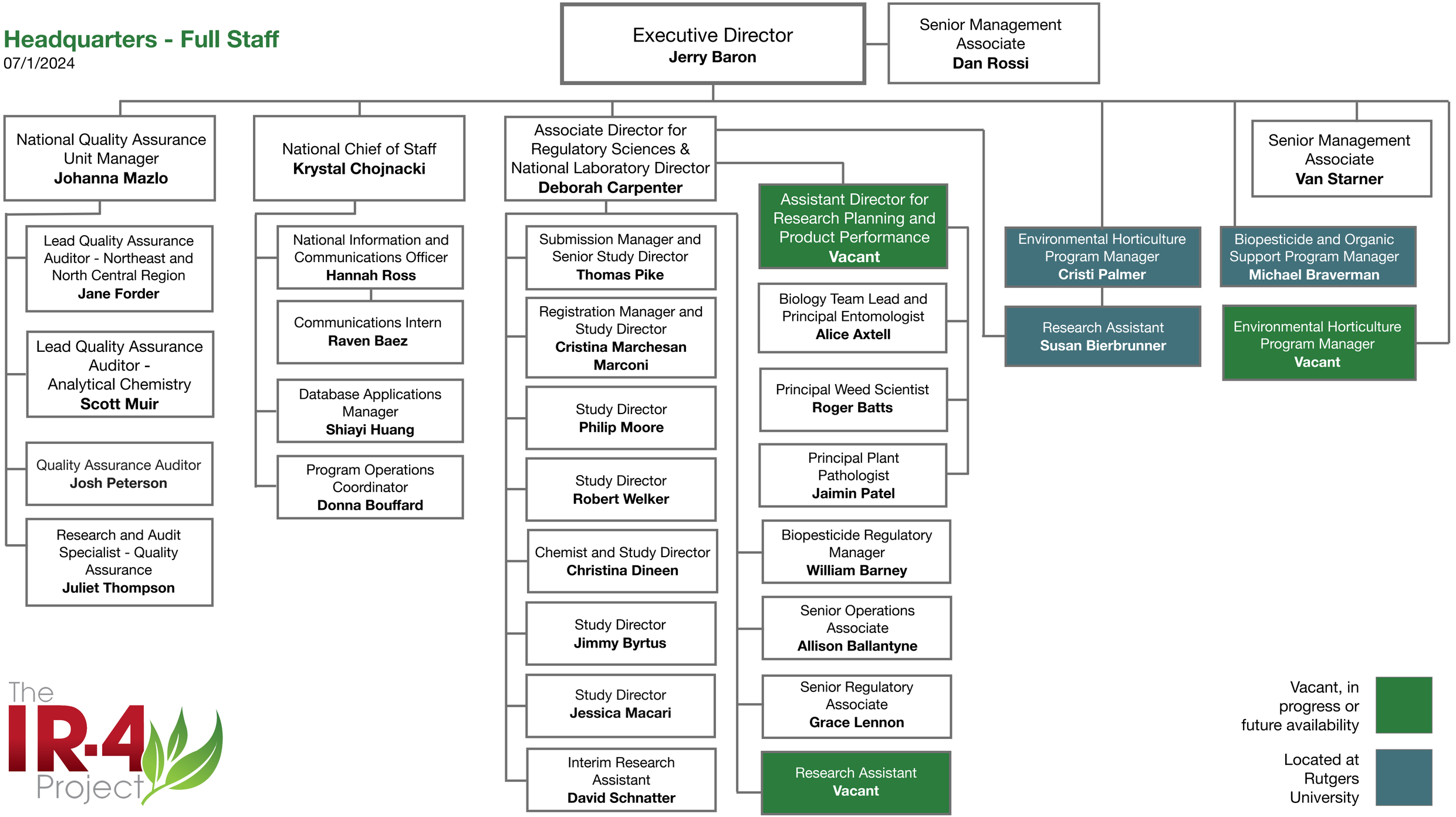
Headquarters Report

Presenter: Dr. Jerry Baron

IR-4 Project

Headquarters - Full Staff

07/1/2024



The IR-4 Project

Program Update: Food Program Field Residue Studies & Submissions

Presenters: Dr. Debbie Carpenter, Thomas Pike and Cristina Marconi

IR-4 Project

Food Program
July, 2024

Debbie Carpenter, Thomas Pike, Cristina Marconi

Outline

New Uses - 2024
Submissions – 2024
Crop Group update
Residue Research Program (10-year history)
Outstanding Field Notebooks
Timeline Summary
Regulatory Challenges

IR-4 Project

2024 New Uses

4 Actions (new uses through May 2024)

- Triclopyr (1)
- Cyclaniliprole (2)
- Cyflumetofen (28)
- Cyantraniliprole (696)

Total = 727 new uses,
18 tolerances

IR-4 Project

2024 Submissions - 3 (through May)

- **Fenhexamid**
- **Tolfenpyrad**
- **Saflufenacil**

- **Provided to registrant**
  - Potassium Phosphite/Peanut

Crop Group Update

- **Crop Grouping Initiative**
- **All Commodity Classes have been approved by the Codex Alimentarus Commission.**
- **US EPA - Final Rule Published Sept 21, 2022**
  - **Phase VI: CG 15, Cereal Grains; CG 16, Forage, Fodder and Straw of Cereal Grains; CG 6, Legume Vegetables and CG 7, Foliage of Legume Vegetables**
- **Remain to be published (IR-4 work is complete, but we have been requested to provide assistance for EPA review.)**
  - **Phase VII: CG 17, Grass Forage, Fodder, and Hay Group; CG18, Nongrass Animal Feeds; CG1, Root and Tuber Vegetables; CG2, Leaves of Root and Tuber Vegetablesand CG9, Cucurbit Vegetables. Timing target Jan, 2025.**

IR-4 Project

Field Research

2023 Residue Program

- 52 New Studies
- 354 New Field trials
- 30 Carryover trials

2024 Residue Program

- 54 New Studies
- 365 Residue Field trials
- 38 Carryover trials

Field Research Program

Region	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
NER	49	39	27/11*	34	39	36	33	26	28	34	26
NCR	68	59	67/4	66	61	39	50	51	49	81	63
SOR	76	92	78/19	85	78	90	100	95	90	73	74
WSR	171	185	162/16	167	149	164	140	151	128	129	138
ARS	54	62	52/15	67	55	49	62	49	46	56	52
Canada	41	36	32/3	31	19	29	31	10	6	11	12
TOTAL	451	472	418	450	401	407	416	382	347	384	365

***indicates 2016 dropped trials, mostly due to study changes.**
Other dropped trials not included in numbers reported

IR-4 Project

Field Data Notebooks, 6/24

Year	Total	FRD	RFC	QA	HQ
2021	382	0	0	0	382
2022	347	4	1	4	338
2023	384	76*	12	40	256

*Did not count: 2 trials for a study being cancelled; 2 trials without completion dates; 4 trials to be harvested after June 2024.

IR-4 Project

Outstanding FDB, 6/24

Notebooks with FRD						
Year	ARS	WSR	NER	SOR	NCR	CAN
2022	0	0	0	4	0	0
2023	10	52*	0	9	7	0

*Included 2 trials without completion date.

Notebooks with RFC						
Year	ARS	WSR	NER	SOR	NCR	CAN
2022	0	0	0	1	0	0
2023	2	3	3	1	1	2

Timeline Summary

- *As of 6/17/24 there are 9 outstanding 2022 Field Data Books. Approx. 64% of completed 2023 books have arrived at HQ. Completion of FDB is critical to meeting timelines.*
- *About sixty studies in final report processing (Writing/QA etc)*
- *More than 100 studies are TBD for submission. Most are signed and ready to submit.*
- *Many cannot be submitted as a safety finding cannot be made.*
- *1 of the 2 registrants are now allowing us to move forward with some IR-4 submissions and have shared submission plans for the next 2 years (2024 and 2025).*

IR-4 Project

Regulatory Challenges

Internal challenges

- ***Analytical backlog and quality***
  - ***Delays submissions***
  - ***Costs lab, study directors and QA resources to address***

- ***Delayed field databooks –***
  - ***More critical as analytical backlog is addressed.***
  - ***One outstanding book holds up the whole study.***
  - ***Concern that if we miss a submission, it could be years before it can go in.***
  - ***eFDB may greatly help ease delayed field databooks.***

IR-4 Project

Regulatory Challenges

External issues

- *Impacts from Endangered species act still a concern*
  - *Concern about mitigation proposals and impact on stakeholders*
  - *Once in compliance, will not want to be out of compliance*
  - *Working with EPA to address ESA for new uses*

- *Registration status in Europe and impact on support from companies for stakeholder requests.*

- *Slow down or hold on submissions by two companies*
  - *Path forward is not clear due to ESA – resulting in some reluctance for submissions*
  - *Lack of submission documents until previous labels have issued from EPA*

IR-4 Project

Thank You!

IR-4 Project

Program Reports:
Laboratory Activites & Backlog

Presenter: Dr. Debbie Carpenter

Laboratory Update/Backlog
July, 2024

Debbie Carpenter

Outline

Backlog (Data from mid-June, 2024)

Current status at each lab

Plans to address backlog

Use of contract labs

Summary

Other

IR-4 Project

Backlog Details - TIR

TIR											
PR	Chemical	Matrix	Trials	ASR Due Date	ASR Est.	Initial EPA Target Sub.	Revised EPA Target Sub.	Note	Late ASRs	Backlogged	
13218	Ethaboxam	Almond	5	11/23	2/25			Field Trials complete. Storage study remains - complete 12/24			
13353	Difenoconazole and azoxystrobin	Mint	6	10/23	5/25			Parent DFZ complete except for oil fraction. No work done on triazoles.			
11331	Difenoconazole and azoxystrobin	Tomato (GH)	5	3/24	5/25			Parent DFZ complete, Azoxy complete, no work started on triazoles			
13094	Difenoconazole and azoxystrobin	Spinach	9	2/23	2/27			Field Trials complete. Storage study remains - complete 01/27			
13219	Ethaboxam	Avocado	6	3/24	2/25			Field Trials complete. Storage study remains - complete 12/24			
									Backlog	5	studies

IR-4 Project

Plans for Moving Forward

Backlog – Tifton

Five studies are backlogged.

Concern about viability of samples which were delayed due to work on propiconazole method. Analyses in progress on these older studies but will remain in backlog until the time period elapses for determining stability in freezer storage.

Lack of personnel – position posted

Backlog Details - YAR

YAR											
PR	Chemical	Matrix	Trials	ASR Due Date	ASR Est.	Initial EPA Target Sub.	Revised EPA Target Sub.	Note	Late ASRs	Backlogged	
13111	azoxystrobin	Broccoli		02/23				Submitted to QA			
11997	Bicyclopyrone	Pineapple		04/23				Storage stability status?			
11691	Dimethomorph + Ametoctradin	Tomato (GH)		1/21				Submitted to QA. Responded to hopefully last question.			(ametoctradin ASR has arrived.)
12972	Fludioxonil +Pydiflumetofen	Peach	12	10/22				Pydiflumetofen ASR nearing submission to QA. Fludioxonil in a rougher draft.		2	
12817	s-metolachlor	Greens (Mustard)	10	12/22				ASR in draft. Will be submitted following peach ASRs			
12818	s-metolachlor	Turnip Greens	6	12/22				ASR in draft. Will be submitted following peach ASRs			
13284	Ethaboxam	Lemon		3/24				Field trial analysis done. Full storage stability study for orange to establish complete coverage. Lemon SR points in progress.			
									Total backlogged	8	ASRs

Plans for Moving Forward

Backlog – YAR

Some progress during the past year although slower than anticipated.

Still eight ASRs that need to be completed (Analyses complete). Two are in QA.

Data quality issues being addressed. On-going work with HQ staff and Davis QA to assist.

No 2024 studies were assigned to YAR until backlog is addressed. Will impact rest of program

IR-4 Project

Backlog Details - CAR

CAR

PR	Chemical	Matrix	ASR Due Date	ASR Est.	Initial EPA Target Sub.	Revised EPA Target Sub.	Note	Late ASRs	Backlogged
12634	sulfosulfuron	tomato	9/23	12/2025			Awaiting long-term SS		*
12834	flutianil	hemp	10/23	7/2024			Addressing findings		
13007	isofetamid	hemp	4/24	8/2024			ASR Prep		
13217	fluopicolide	almond	10/23	5/2025			Awaiting long-term SS		
13241	fluopicolide	avocado	5/24	9/2024			ASR Prep		
13311	flupyradifurone + spidoxamat	hops	10/23	8/2024			ASR Prep		

5 studies

* = study is backlogged but transferred from another lab

IR-4 Project

Plans for Moving Forward

Backlog – CAR

Five backlogged studies, but one due to outside issues.

All analytical work has been completed or is in progress.

CAR has analyzed many of the studies from Michigan.

Storage stability delays-samples not spiked when received.

Hemp studies take much time, many crop fractions.

No action needed to reduce backlog, but cannot help other labs by taking additional studies.

IR-4 Project

Backlog Details - FLR

FLR										
PR	Chemical	Matrix	Trials	ASR Due Date	ASR Est.	Initial EPA Target Sub.	Revised EPA Target Sub.	Note	Late ASRs	Backlogged
12752	FLUAZAINDOLIZINE	MINT		11/23	05/28			Worst case SS		
13169	FLUAZAINDOLIZINE	RADISH		02/24	11/26			Worst case SS		
11568	THIOPHANATE METHYL	RADISH		02/24	06/25					
13259	PICOXYSTROBIN + CYPROCONAZOLE	COFFEE		03/24	07/24					
13360	THIOPHANATE METHYL	CARROT		03/24	06/25					5

IR-4 Project

Plans for Moving Forward

Backlog – FLR

Five studies are backlogged.

Data quality was a concern. Addressing issues has taken much time and resources. Issues largely addressed.

Will not make submission timeline with Corteva newer chemistry

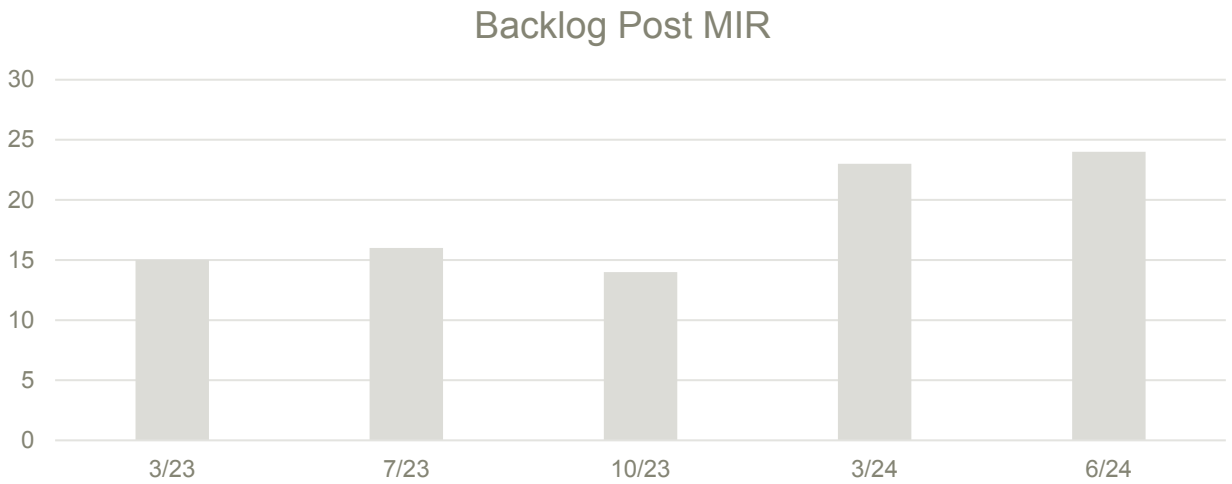
Difficulty in maintaining experienced analysts.

IR-4 Project

Studies at Contract Labs

CRO PR	Chemical	Matrix	Original Lab	ASR Due Date	ASR Est.	Initial EPA Target Sub.	Revised EPA Target Sub.	Note	
12564	abamectin	Miracle Fruit	MIR(GPR)	9/22		10/22	4/26		Waiting on SS
12757	abamectin	sugar beet	MIR(GPR)	6/22		10/22	4/26		Waiting on SS; get bid for new SS study
11824	Asulam	Clover	Symbiotic (GPR)	6/21		10/21	6/23	To be cancelled	Raw data to be sent into HQ
10827	azosystrobin	pomegranate	MIR(GPR)	12/22		4/22	4/26		
12538	benzovindiflupyr and difenoconazole	stevia	MIR(Adpen)	02/21		10/21	4/26		
13179	benzovindiflupyr and difenoconazole	coffee	Adpen			10/25	4/26		
12220	diquat	grape	MIR(GPR)	10/20		10/21	4/26		Ready to be written
12675	emamectin	limabean	MIR(GPR)	11/21		10/22	4/26		
12714	ethofumesate	swiss chard	GPR			10/26			Field samples just coming in
12903	Flutolanil	Radish	YAR(GPR)	02/22		10/22	TBD		Ready to be written
12904	Flutolanil	Tomato	YAR(GPR)	10/21		10/21	TBD		Ready to be written
11195	Flutolanil	Pepper, Bell and Nonbell	FLR(GPR)	12/21		10/22	TBD		Ready to be written
9520	Flutolanil	Garden Beet	MIR(GPR)	5/22		10/22	TBD		Ready to be written
12902	Flutolanil	Carrot	MIR(GPR)	6/22		10/22	TBD		Ready to be written
9102	Flutolanil	Strawberry	GPR			10/25	10/25		Method validation complete, field analysis ongoing
13295	GF-4031	Cherry	EUR			10/25	TBD		Waiting on registrant for method confirmation
13355	GF-4031	Strawberry	EUR			10/24	TBD		Waiting on registrant for method confirmation
9493	Glufosinate	Coffee	MIR(Adpen)	10/22		10/21	8/23		In method development phase, needs new method validation
11148	Glufosinate	Sesame	Adpen			10/24	4/25		
13178	Glufosinate	Sunflower	FLR(Adpen)	(02/23)		10/23	8/23		Was waiting on reference standards, just received last week so should complete field analysis and then need to run SS
13330	Glufosinate	Dragon Fruit	Adpen			10/24	4/25		ASR to be signed soon
13455	Glufosinate	Strawberry	Adpen			4/25	4/25		
13463	Glufosinate	Peanut	Adpen			4/25	4/25		
13408	halosulfuron	stevia	Adpen			10/24	10/24		Waiting on SS
11772	Linuron	Bean (Edible podded and succulent shelled)	FLR(GPR)	9/22		10/22	12/23		Ready to be written
12816	Linuron	Dry bulb	Adpen			10/25	10/25		Started method development
13732	Linuron	Mint	Adpen			10/26			
13733	Linuron	Stevia	Adpen			10/26			Most field trials will need to be redone in 2025
13734	Linuron	Green Onion	Adpen			10/26			
13092	Norflurazon	Clover	GPR			10/27			Field samples just coming in; will have 2025 field trials
12810	Paraquat	Stevia	MIR(GPR)	6/22		10/23	10/23	To be cancelled	Raw data to be sent into HQ
12544	Ziram	Olive	Symbiotic (GPR)	02/21		10/21	TBD	Registration may be cancelled	ASR to be signed soon

Backlog Graph Post MIR



Summary

Backlog

- Very little change since March in overall numbers. Improvement in that many ASRs are in QA or awaiting storage stability

Plans for lab focused training for all analysts. All agree this is needed to bring analysts to a baseline level and help with method development skills.

Other

- **MIR data**
  - Storage stability samples not spiked in some cases – delays
  - QA audits not addressed completely – time and resources as study directors, QA must identify and address as final report is written. This is still a huge item taking resources.
- **Data quality at two labs**
  - Many resources required to address
    - Includes not only Lab, but also Study Director, QA
    - Potential Impacts on IR-4 Reputation
    - Good news is that FLR has addressed.

IR-4 Project

Thank You!

IR-4 Project

Program Update:
Quality Assurance

Presenter: Dr. Johanna Mazlo

IR-4 Project

QA Update

July 2024 PMC Meeting

Overview

- EPA Compliance Monitoring Update
- Electronic Field Notebook Update
- QA Update
- 2020-2024 QA Audit\Inspection Data
- eQA and eDocs Update

IR-4 Project

EPA Compliance Monitoring

- EPA has a new inspector
  - Christine Phebus
- EPA Inspection
  - Turner Ag – June 2024
- Decommissioning
  - Del monte – in progress
  - South Dakota State University – in progress

Electronic Field Notebook Update

- QA has been:
  - Auditing eFDBs
  - Working on assisting FRDs during in-life inspections
  - Working proactively to anticipate GLP issues
    - computer maintenance logbooks
    - verifications of eFDBs
  - Regular meetings with QC and P. Moore\J. Byrtus

IR-4 Project

QA Update

- Laurel Hsieh – new WSR auditor
  - Training both regionally and nationally
- Worked to adjust targeted in-life inspections after Homestead
- Working more closing with LRDs/FRDs on SOPs
  - Tifton lab, Uvalde Field, assist with specific SOPs, etc.
- Picking up Wapato Lab audits
  - In-life inspections, analytical data audits, ASRs

IR-4 Project

QA Update

- Meeting on a regular intervals
  - Discuss eFDB findings, how to do things more efficiently, etc.

- HQ and SOR QA/RFC interacting on a regular basis
  examples: - Homestead issues
  - Joint visit to Uvalde

- QA is active with National SOPs and the draft Protocol

- Scoping eQA alternative software packages

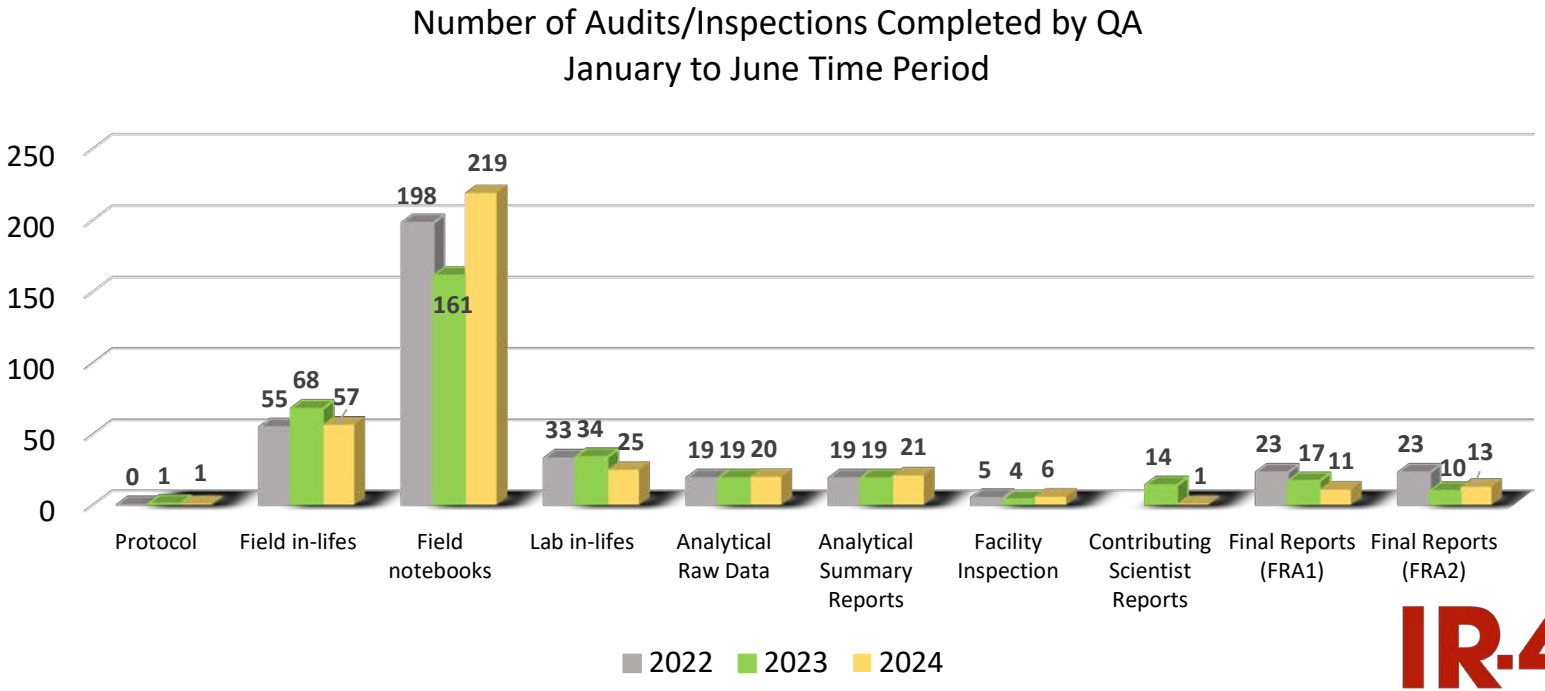
IR-4 Project

QA Update

- QA Shared Drive
  - Allows QA to increase efficiencies
  - Allows QA to connect in real time
  - Positive results from QAU team
  - Decreases time for QA to receive documents and eliminates the need to utilize IR-4 website for large document transfers
  - Continue to add new items to the drive
    example: Tracking eFDBs ready for audit for all regions

IR-4 Project

2022, 2023, and 2024 Audit/Inspection Data



eQA and eDoc Update

- eQA
  - Trained 4 people
  - 420 audits added in 2024
- eDocs
  - Added 2 National SOPs
  - 6340 total documents
  - Analytical methods 372
  - Working methods 58
  - All RFCs, QC, and FRDs have access to HQ SOPs

Program Reports:
Product Performance & IS Update

Presenter: Dr. Alice Axtell

IR-4 Project

2024 Performance & IS Update

Alice Axtell, PhD

Product Performance

No. of Active Priorities by Discipline

DISCIPLINE	'A' PRIORITIES		H+ PRIORITIES		TOT
ENTOMOLOGY	NEW	OLD	NEW	OLD	
	8	6	3	1	18
PLANT PATHOLOGY	NEW	OLD	NEW	OLD	
	18	16	2	2	38
WEED SCIENCE	NEW	OLD	NEW	OLD	
	6	7	8	7	28
TOTAL	32	29	13	10	84

- **79%** of the 2023 Priorities have a performance component
- The 2024 Research Plan includes **84** active projects that have a performance component: **45** PCRs are NEW and **39** PCRs are OLD, as they were prioritized before the 2023 FUW and had to be placed on hold due to lack of funding.

IR-4 Project

No. of Active Trials by Discipline

DISCIPLINE	TOT. No. of Active Projects in 2024	TOT. No. of Trials in 2024	NO. of Trials Needed to Complete '23/'24 Research Plan[1]
ENTOMOLOGY	18	27	13
PLANT PATHOLOGY	38	54	26
WEED SCIENCE	28	71	28
TOTAL	**84**	**152**	**67**

- The TOT NIFA cost to complete these projects is = **$420,556** (Includes IDC 11.11%).
- The TOT Third Party Cost to complete these projects is = **$25,000** (Includes IDC 11.11%).

[1] This is an estimate that does **NOT** include failed 2024 trials that will become a carryover in 2025.

IR-4 Project

No. of Previous Priorities That Were Placed on HOLD in 2024 AND Must Be Resumed in 2025

DISCIPLINE	PRIORITIES PLACED ON HOLD	NO. OF TRIALS TO COMPLETE PROJECTs
ENTOMOLOGY	2	4
PLANT PATHOLOGY	5	5
WEED SCIENCE	1	2
TOTAL	**8**	**11**

- The TOT NIFA cost to complete these projects is = **$ 106,111** (Includes IDC 11.11%)

IR-4 Project

Total Estimated Cost To Complete 2023/2024 PRs (*Does NOT Include Failed Trials*)

- The TOT NIFA cost to complete active 2024 projects is = **$420,556** (Includes IDC 11.11%).
- The TOT NIFA cost to complete priorities that were kept on "hold" due to lack of funding is = **$ 106,111** (Includes IDC 11.11%)

TOTAL = $526,667

IR-4 Project

Integrated Solutions

No. of Priorities by Discipline

DISCIPLINE	PRIORITIES		TOT
ENTOMOLOGY	NEW	OLD	
	7	7	14
PLANT PATHOLOGY	NEW	OLD	
	8	4	12
WEED SCIENCE	NEW	OLD	
	4	3	7
TOTAL	19	14	33

- The TOT No. of 2023 priorities is **19**
- **5** projects are funded by CDFA
- The 2024 Research Plan includes **33** active projects: **19** PCRs are NEW; **14** are PCRs that were prioritized prior to 2023 that need to be completed.

IR-4 Project

No. of Trials by Discipline

DISCIPLINE	TOT. No. of Active Projects in 2024	TOT. No. of Trials in 2024	NO. of Trials Needed to Complete '23/'24 Research Plan[1]
ENTOMOLOGY	14	22	7
PLANT PATHOLOGY	12	18	9
WEED SCIENCE	7	22	3
TOTAL	**33**	**62**	**19**

- The TOT NIFA cost to complete these projects is = **$255,000** (Includes IDC 11.11%).

[1] This is an estimate that does NOT include failed 2024 trials that will become a carryover in 2025.

IR-4 Project

Industry Technology Session
-Update (As of 6/13)-

July 18, 2024 - 11:30 am to TBD

- Approx. **100** attendees
  (vs. ~120 in 2023)
- **7** Presenters
  (vs ~ 22 in 2023)
- **7** Sponsors
- Registration closes on 6/28

IR-4 Project

Food Use Workshop
-Update (As of 6/13)-

Sept. 10-12, Milwaukee - WI

AGENDA – *Coming Soon*

Day 1
- Introductions & Welcome
- Guest Speaker Presentations
- EPA Updates
- Priority Setting: Weed Science
- Reception

Day 2
- Priority Settings: Plant Pathology
- Priority Setting: Entomology

Day 3
- Finalize Priorities: All Disciplines

Renaissance Milwaukee West Hotel

IR-4 Project

Thank you!

IR-4 Project

Program Update: Biopesticide Regulatory Support

Presenter: Dr. Michael Braverman

IR-4 Project

The IR-4 Biopesticide and Organic Support Program Update.

PMC Meeting July 2024

Michael Braverman Bill Barney

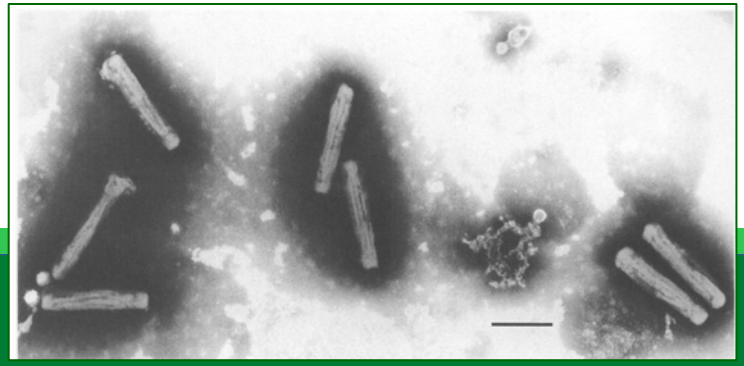
Philip Moore

EPA Submissions

Lepidext/ InsterusHz Moths

- *Helicoverpa zea* nudivirus-2 strain 901R71

Update- Provided EPA with responses to questions concerning registration in conjunction with University of Kentucky.

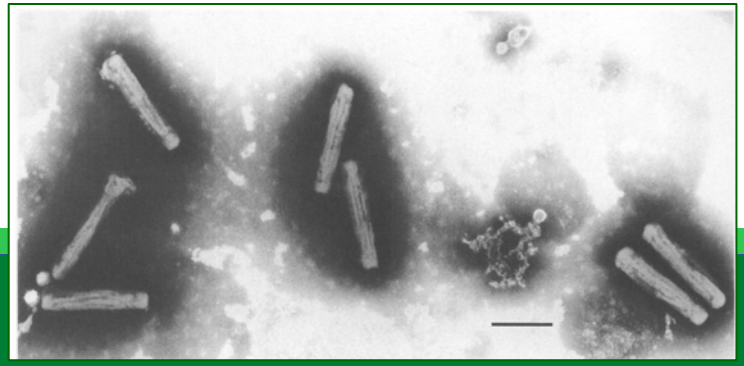


EPA Submissions

Lepidext/ InsterusHz Moths

- *Helicoverpa zea* nudivirus-2 strain 901R71

Receipt of Petition Published in the Federal Register
alfalfa; amaranth; beans; black medic; cabbage; cauliflower; chickpea; citrus; clover; cotton; cucumber; eggplant; groundnut; hemp; henbit deadnettle; lettuce; maize; millet; okra; pea; peppers; quinoa; sorghum; soybean; spinach; strawberry; sunflower; sweet corn; tobacco; tomato.

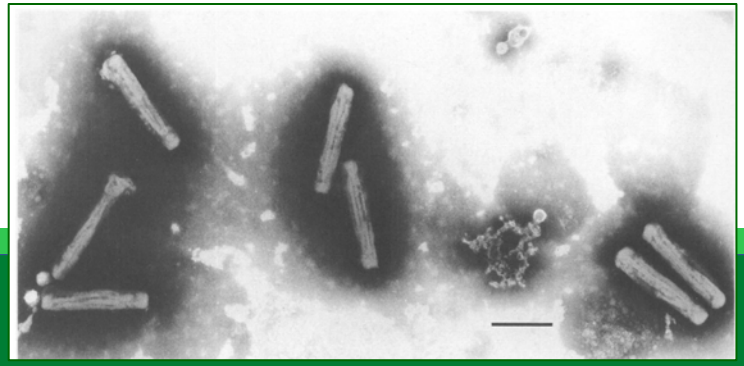


EPA Submissions

Lepidext/ InsterusHz Moths

- *Helicoverpa zea* nudivirus-2 strain 901R71

State of Colorado has submitted a Section 18 request.



EPA Submissions – GH Cucumber

Attenuated Cucumber Green Mottle Mosaic Virus Strain ON-BM3

Passed Milestone 1 No issues at 21 day screen

EPA Submissions – Citrus Greening

CTV-Spinach defensin proteins- Silvec/Southern Gardens.

Replied to EPA for additional information related to product chemistry. EPA requested that CTV-SoD2 be subdivided into 3 different active ingredients SoD2, SoD2-1 and SoD2* in the registration and tolerance exemption request.

EPA Meeting – Citrus Greening

Meeting with Soilcea and EPA to discuss potential Section 18 for CRISPR edited citrus. Knockout of genes influencing Liberibacter reduction of citrus immune system.

Cas9 edited rootstock does not pass the graft union.

Biopesticide Regulatory Projects Under Development

Crown Gall Resistant Walnut Rootstock

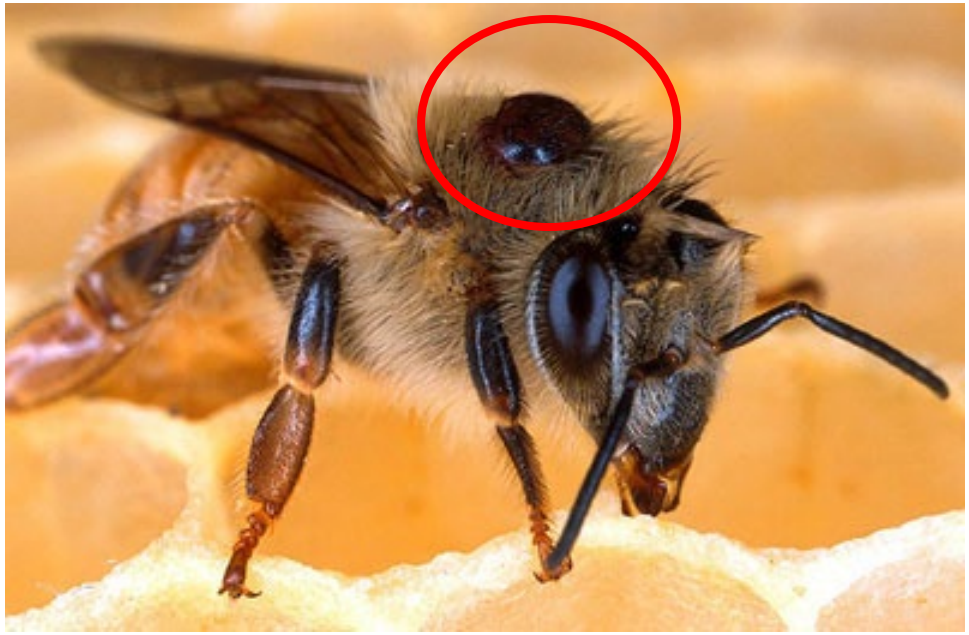
Pseudomonas soli -fire blight and greening

Alum for fireblight on apples- Resubmitted Biochemical Classification.

HopGuard

Registered by IR-4 for BetaTec
Registration sold to Mann Lake

BetaTec- *With since thanks to Bill and Michael over the years.*

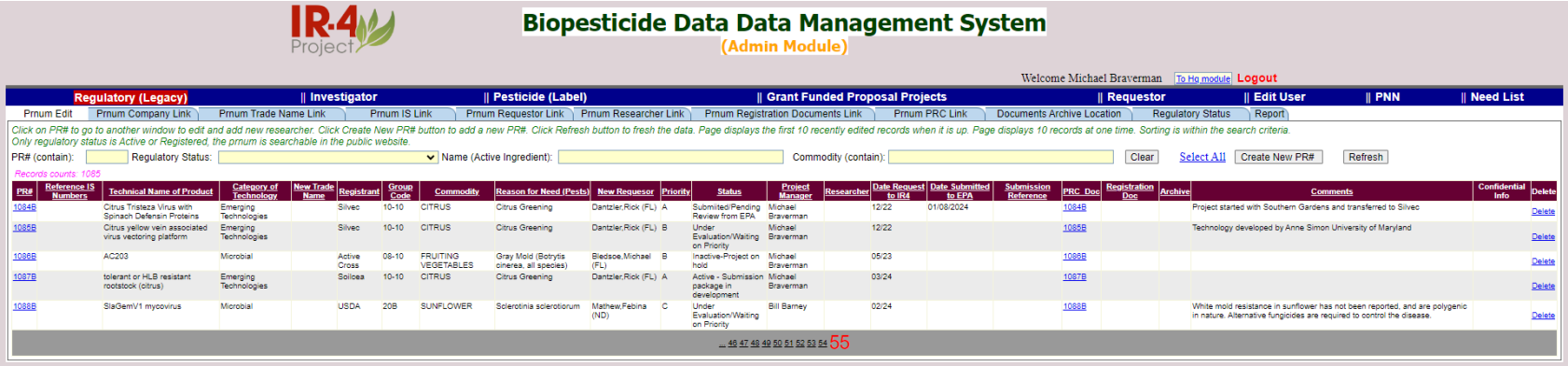


Future Projects

Timothy Mcnellis- Penn State developing an attenuated strain of fireblight.

Trying to revive project on hypovirulence of chestnut blight. Fallen silent……

Biopesticide database



Biopesticide Data Data Management System
(Admin Module)

Welcome Michael Braverman To Hg module Logout

Regulatory (Legacy) || Investigator || Pesticide (Label) || Grant Funded Proposal Projects || Requestor || Edit User || PNN || Need List

Prnum Edit | Prnum Company Link | Prnum Trade Name Link | Prnum IS Link | Prnum Requestor Link | Prnum Researcher Link | Prnum Registration Documents Link | Prnum PRC Link | Documents Archive Location | Regulatory Status | Report

Click on PR# to go to another window to edit and add new researcher. Click Create New PR# button to add a new PR#. Click Refresh button to fresh the data. Page displays the first 10 recently edited records when it is up. Page displays 10 records at one time. Sorting is within the search criteria. Only regulatory status is Active or Registered, the prnum is searchable in the public website.

PR# (contain): Regulatory Status: Name (Active Ingredient): Commodity (contain): Clear Select All Create New PR# Refresh

Records counts: 1085

PR#	Reference IS Numbers	Technical Name of Product	Category of Technology	New Trade Name	Registrant	Group Code	Commodity	Reason for Need (Pests)	New Requesor	Priority	Status	Project Manager	Researcher	Date Request to IR4	Date Submitted to EPA	Submission Reference	PRC_Doc	Registration Doc	Archive	Comments	Confidential Info	Delete
1084B		Citrus Tristeza Virus with Spinach Defensin Proteins	Emerging Technologies		Silvec	10-10	CITRUS	Citrus Greening	Dantzler,Rick (FL)	A	Submited/Pending Review from EPA	Michael Braverman		12/22	01/08/2024		1084B			Project started with Southern Gardens and transferred to Silvec		Delete
1085B		Citrus yellow vein associated virus vectoring platform	Emerging Technologies		Silvec	10-10	CITRUS	Citrus Greening	Dantzler,Rick (FL)	B	Under Evaluation/Waiting on Priority	Michael Braverman		12/22			1085B			Technology developed by Anne Simon University of Maryland		Delete
1086B		AC203	Microbial		Active Cross	09-10	FRUITING VEGETABLES	Gray Mold (Botrytis cinerea, all species)	Bledsoe,Michael (FL)	B	Inactive-Project on hold	Michael Braverman		05/23			1086B					Delete
1087B		tolerant or HLB resistant rootstock (citrus)	Emerging Technologies		Soilcea	10-10	CITRUS	Citrus Greening	Dantzler,Rick (FL)	A	Active - Submission package in development	Michael Braverman		03/24			1087B					Delete
1088B		SlaGemV1 mycovirus	Microbial		USDA	20B	SUNFLOWER	Sclerotinia sclerotiorum	Mathew,Febina (ND)	C	Under Evaluation/Waiting on Priority	Bill Barney		02/24			1088B			White mold resistance in sunflower has not been reported, and are polygenic in nature. Alternative fungicides are required to control the disease.		Delete

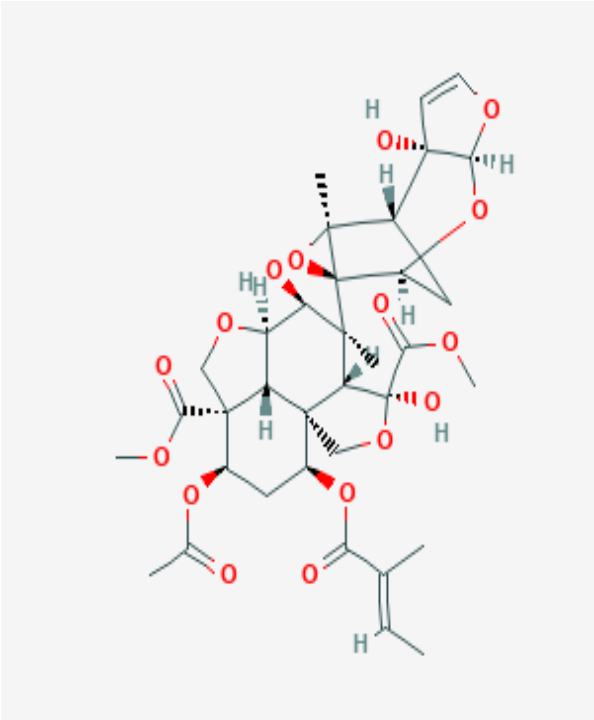
... 46 47 48 49 50 51 52 53 54 55

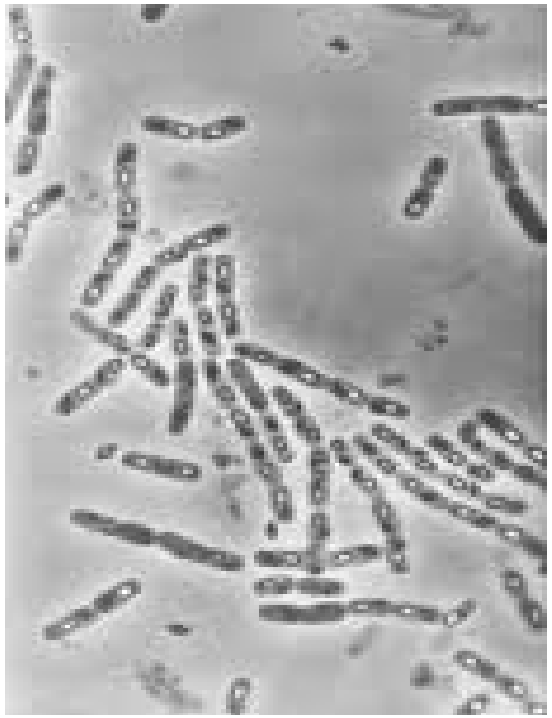
Jerry Baron to discuss as part of the Biopesticide Platform.

Thank You

Michael Braverman **Bill Barney** **Philip Moore**

BIOCHEMICALS MICROBIALS BIOTECHNOLOGY





Program Updates: Environmental Horticulture

Presenter: Dr. Cristi Palmer

IR-4 Project

IR-4 Environmental Horticulture Update

So far during 2024, the Environmental Horticulture Program compiled and posted 11 summary reports based on the high priority projects conducted through 2023 (Figure 1): The summary reports include: Afidopyropen Crop Safety Summary - 2024, Bacterial Disease Efficacy Summary - 2024, Fatty Acid Herbicide Efficacy - 2024, Flumioxazin Crop Safety - 2024, Fluopicolide Crop Safety - 2024, Mefentrifluconazole Crop Safety - 2024, Mollusc Efficacy Summary - 2024, Nematode Efficacy & Literature Review - 2024, Pendimethalin Crop Safety - 2024, Phytophthora Efficacy - 2024, and S-Metolachlor Crop Safety – 2024.

No new registrations have been documented to date. However, SePro elected to discontinue development on SP2700 and ProFarm Group discontinued MBI-181. Historical archive data were incorporated into the Pendimethalin Crop Safety report, and efficacy data not previously summarized from the archives were included and registration impact calculated. The total historical impact of the program stands currently at 65,090 crop uses.

Outstanding Data

For 2023, we have received 54% of the planned research with 33% outstanding. For 2022, we have received 76% of the planned research with 15% outstanding. For 2021, we have received 78% of the planned research with 13% outstanding. For 2020, we have received 79% of the planned research with 6% outstanding (Table 1).

Figure 1. EHC Program Data Summaries – 2024 - YTD

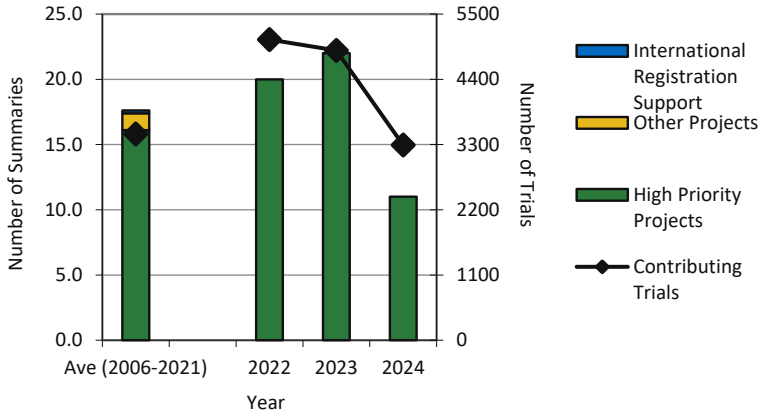


Figure 2. EHC Program Registrations - 2024 - YTD

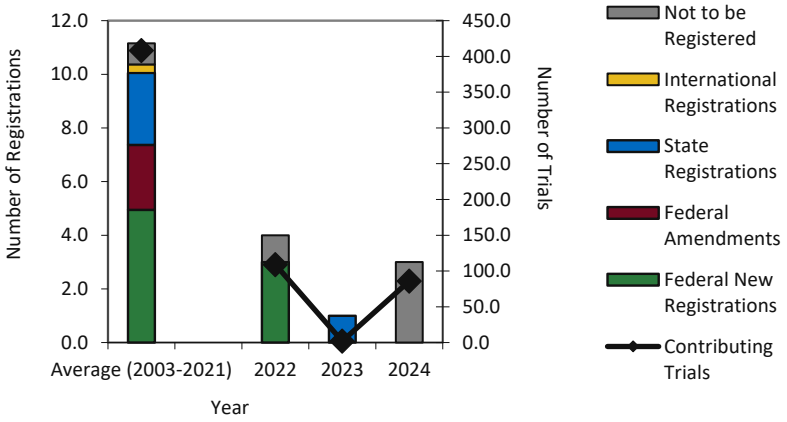


Figure 3. EnvironHort Program - Crop Impact - 2024

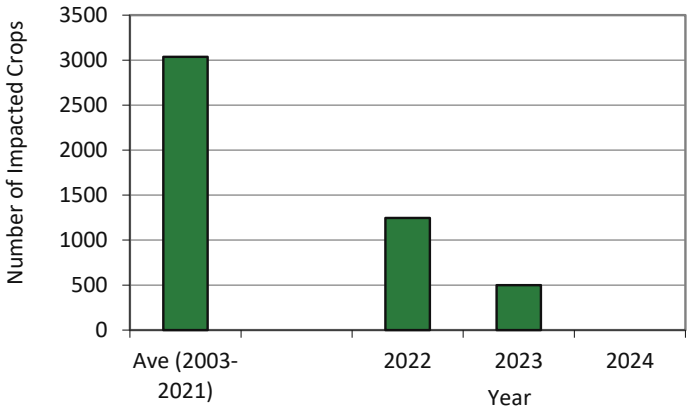


Table 1. Number of Planned Trials and Percent Completed by Region, June 27, 2024

Year	NCR					NER					SOR					WSR					USDA ARS				
	# Trials Planned	Complete	Ongoing	Delayed	Cancelled	# Trials Planned	Complete	Ongoing	Delayed	Cancelled	# Trials Planned	Complete	Ongoing	Delayed	Cancelled	# Trials Planned	Complete	Ongoing	Delayed	Cancelled	# Trials Planned	Complete	Ongoing	Delayed	Cancelled
2023	76	59%	36%	0%	5%	69	38%	45%	1%	16%	269	83%	12%	0%	6%	173	8%	72%	0%	20%	138	66%	22%	0%	12%
2022	70	94%	0%	0%	6%	74	66%	20%	0%	14%	258	88%	2%	0%	9%	142	42%	51%	0%	6%	110	73%	5%	0%	22%
2021	82	95%	1%	0%	4%	86	80%	17%	0%	2%	184	79%	1%	0%	21%	160	55%	41%	0%	4%	221	82%	0%	0%	17%
2020	82	89%	0%	1%	10%	102	78%	11%	0%	11%	207	78%	0%	0%	22%	190	69%	16%	0%	15%	165	72%	0%	0%	28%
2019	79	86%	0%	0%	14%	113	99%	0%	0%	1%	235	93%	0%	0%	6%	195	75%	13%	5%	7%	153	90%	1%	0%	10%
2018	114	73%	1%	0%	26%	136	90%	0%	0%	10%	205	82%	0%	0%	18%	156	74%	4%	0%	21%	132	73%	0%	0%	27%
2017	107	86%	1%	0%	13%	110	98%	0%	0%	2%	232	86%	0%	0%	14%	200	88%	0%	0%	13%	148	78%	0%	0%	22%

2024 Research Program

During October 10-12, the EHC Workshop was held following the 2.5 day agenda with a pre-workshop tour, discussions of projects on day one with voting in the evening, followed by national priority refinements as needed and discussion of regional priorities. We also had brief trainings on the research selection portal and how best to write and submit research reports.

National Priority Projects for 2024 - 2025:

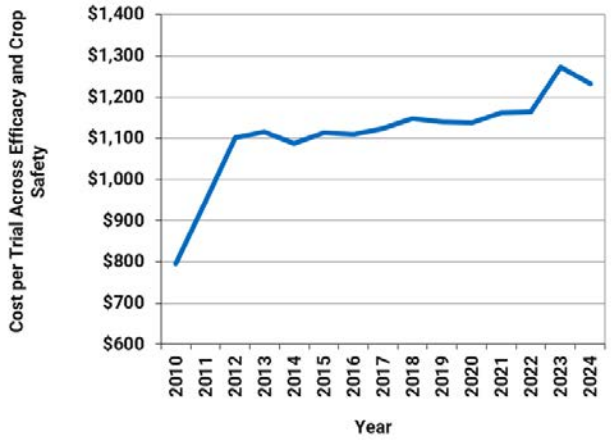
Pathology - Phytophthora & Pythium Efficacy
Pathology - Boxwood Foliar Disease (Blight, Decline, Volutella) Efficacy
Pathology - New Disease Management Tool Crop Safety
Entomology - Thrips Efficacy
Entomology - Scale Efficacy
Entomology - New Pest Management Tool Crop Safety
Weed Science - Preemergent Herbicide Crop Safety (Select Herbaceous Perennials, Cut Flower, In-Ground Production)
Weed Science - Postemergent Herbicide Crop Safety

Regional Priority Projects for 2024 - 2025:

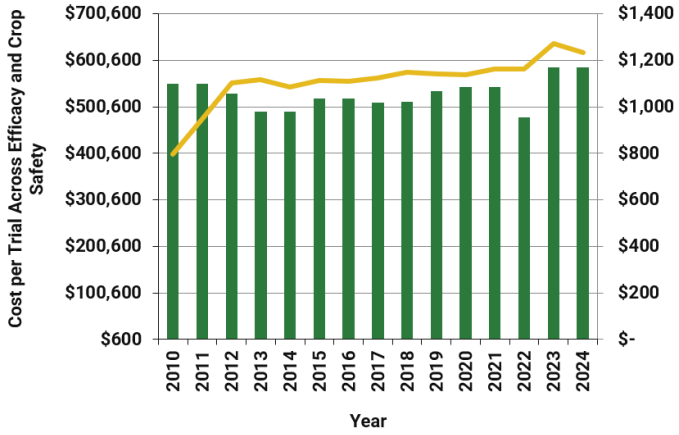
Botrytis Efficacy (NCR, WSR)
Equisetum Efficacy in Christmas Trees (NCR)
Lygus Efficacy (WSR)
Nematode Efficacy (NER)
Pollinator Plant Herbicide Crop Safety (SOR)
Root Aphid/Aphid Efficacy (NER)
Vascular Streak Dieback Efficacy (SOR)

For 2024, the EHC program had a research funding target of $650,000. Despite inflationary pressures impacting research costs, the RFCs and the program manager elected to utilize the same compensation amount as 2023: $1,222 per crop safety trial and $1,556 per efficacy treatment. Once the initial research proposal was developed balancing research among available regional resources and across disciplines, the final total became $650,800.

While a significant increase in funds was allocated to EHC in 2023, with both IDC and increased trial/treatment rates, this resulted in just a slight increase in the amount of research activities for 2023 versus 2022; however, it represents a similar level to the generally flat number of experiments from 2013 through 2021 and we were not able to fund each researcher that requested to be part of the program in 2023 and was only able to in 2024 due to retirements and researchers ‘catching up’ on research activities without being allocated new funds. An increase of $150K is requested to better fund the research network who act as an additional set of people promoting IR-4 as well as improve the registration successes.



* 2023/2024 excludes IDC for comparison purposes; per trial amounts increased in 2010, 2011, 2012, and 2023



* 2023/2024 excludes IDC for comparison purposes; per trial amounts increased in 2010, 2011, 2012, and 2023

Nineteen protocols were developed for the national and regional priorities, and the Thrips protocol was modified to include the treatments for the joint project with Canada studying *Thrips parvispinus*, a newly invasive species impacting growers of both countries.

Invasive Species

Box Tree Moth. The team successfully developed efficacy data to support a compliance agreement for applications by nurseries to ship boxwoods out of the quarantine zones. Research is continuing for length of residual control after applications to refine recommendations.

Environmental Horticulture Program

IR-4 Environmental Horticulture Program
2023 Overview

Author: Cristi L. Palmer
Date: March 22, 2023

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Introduction

The Environmental Horticulture Program (EHC) supports an industry valued at nearly $19.2 billion in annual sales (Horticulture Census, 2019, NASS), which is approximately one third of the specialty crop market value. This industry is quite complex because growers cover many diverse markets including flowers, bulbs, houseplants, perennials, trees, shrubs and more. These plants are grown and maintained in greenhouses, nurseries, commercial/residential landscapes, interiorscapes, Christmas tree farms and sod farms. Multiple operations are involved for seed development and production, plug production, plant production, finished crop production, and wholesale and retail sale. In addition, EHC research also supports plant maintenance in commercial and retail landscapes, and in urban forests.

Program activities can be described under three areas: Registration Support, Invasive Species, and Special Projects. Registration Support is the original and core focus for EHC. Invasive Species comprise many of the targeted issues arising within Registration Support; thus, collaborating with researchers to determine optimal options for localized eradication or delaying spread of new introductions is key to protecting the US environmental horticulture industry. As the green industry faces new and different challenges for crop production, Special Projects positions IR-4 collaborate with trade representatives, researchers, regulators, and crop protection personnel for the benefit of the growers. One such project is Pollinator Protection.

Registration Support

Registration Support is the primary component to address registration of crop protection tools for the environmental horticulture industry where options are limited. This area is focused on developing efficacy and crop safety data to support product first registrations with EPA and subsequent amendments for environmental horticulture. Potential research avenues are solicited through a 1) grower & extension survey of disease, pests and weeds impacting plant production, 2) a project request form and 3) through word of mouth via the Regional Field Coordinators (RFCs) and the research and extension community. National priorities are established at the biennial workshop for a two-year research cycle. Regional priorities are established at this workshop and, in the interim years, through discussions with RFCs, researchers and extension personnel.

Processes and Workflow

Grower Needs. Potential research priorities are gathered through multiple avenues. The largest, and most utilized source is an annual survey for growers, extension personnel, researchers and members of the allied industry. The survey captures generally the pathogens, pests and weeds growers have too few tools currently to manage well. If a grower, researcher or extension personnel know specific solutions for an issue, then the Project Request Form can relay a more detailed research priority. Word-of-mouth through conversations at trade show, conferences or other conversations is another avenue where research priorities are brought to the attention of IR-4 personnel.

Project Prioritization. Potential research priorities are collated, and project descriptions prepared in advance of the biennial workshop held in years ending in odd numbers. Project descriptions (otherwise known as Project Information Sheets) cover both previous projects and new research topics and contain lists of products currently in the market and active ingredients being studied for the research target. At the biennial workshop, registrants present new active ingredients and options for additional label development for existing products. This information is used to determine whether potential research projects have sufficient active ingredients available for screening. Usually, two high priority efficacy projects are established for both entomology and pathology with a standing new product crop safety project in both disciplines where compounds are included as registrants are interested in crop safety trials

number until approximately two years after registration with EPA. Project characteristics are discussed with emphasis on resistance management, environmental impact, and number of options available. For weed science, crop safety data has been more necessary, but efficacy projects for nostoc, liverwort, and expansion of used of pre-emergent herbicides into early post-emergent weed stages has occurred along with exploring better use of fatty acid-based herbicides.

Protocol Development. After biennial priorities are established, protocols are written each year for national and regional research priorities, collaborating with researchers and crop protection personnel. Emphasis is placed on nonregistered materials with reduced environmental footprints. For efficacy protocols, A level treatments are those active ingredients not yet registered for the target pathogen, pest or weed; B level treatments are those where the registrant needs additional information on use pattern such as altering the rate range or application intervals; C level treatments are those products that don't fall within A or B but are not yet considered Standards. For crop safety protocols, priority level is less well defined and tends to be the first set of crops for new active ingredients targeting pathogens or pests. These initial lists are developed in conjunction with registrants and include potentially sensitive plant species and those infected or infested by target pathogen or pest. For herbicides, the list includes those crops not on the label and often a crop type is chosen such as field grown cut flowers or conifers.

Annual Research Program Planning and Implementation. In order for the annual research program to be established, new efficacy and crop safety projects are entered into the EHC database. New crop-product combinations are added as researchable studies for crop safety projects. These then become available for researchers to select potential research activities through the Research Selection portal which is available throughout November each year. In early December, the RFCs and the EHC Program Manager (PM) work collaboratively to assign research activities balancing assignments across discipline and regions with the goal of funding each researcher, if possible. In January, the RFC or PM contact researchers about their assignments and provides a researcher acceptance letter, and the PM contacts registrants with the information specific to their products. After researchers sign and submit their research acceptance letters, the Research Coordinator (RC) enters estimated start dates. As researchers determine their preferred crop systems for efficacy experiments, they contact the RFCs and PM so final study numbers (PR#) can be assigned. If researchers are unable to locate plant materials planned for crop safety experiments, they contact the RFCs and PM, and the PM provides a list of alternative options. The RFCs prepare and establish the contracts associated with research activities and approve payment of invoices according to their respective institutions policies and procedures. Please see Table 1 for individual responsibilities.

Report Review and Data Dissemination. Once researchers complete experiments, they write and submit reports to the RFCs and PM. The RC and the PM review reports for completeness and quality. At times the RC or PM updates the report as needed for missing or changed PR# in addition to updating the database. If other adjustments are needed, the PM or RFC contacts the researcher. The RC records receipt of reports, converts files to pdf, and posts them to the website. The PM or Food Use Biologist of the relevant discipline, previously handled by the now retired Program Assistant Manager (PAM), reviews the reports for technical results and prepares oneliners, which are brief one or two sentence summaries of the outcome for each product, target, and crop combination. When a preponderance of data has been received for a project, a new Research Summary is prepared or a previously prepared Research Summary is updated for the newly received data. The PM and Food Use Biologist, previously the PAM, collaborate in the preparation of the Research Summaries. The PM finalizes Research Summaries, posts them to the website and sends them to the registrants. Registrants contact the PM when summary information results in Federal or State registrations, and the PM validates registration action annually by checking EPA activity for each active ingredient or product screened in the previous 5 years that had not yet been catalogued as registered.

Historical Priorities

Projects within the EHC program are defined differently depending on whether they are targeting efficacy or crop safety. For efficacy projects, they are named by the target pathogen, pest or weed. For crop safety projects, they are named by the active ingredient(s) or by the code number if the active ingredient is early in development. Efficacy projects encompass numerous targets in order to address specific target pathogens, pests or weeds that can impact multiple regions.

In entomology, these pest types have recurred from 2006 through the workshop in 2022: thrips, coleopterans, scale and mealybugs. In pathology, root pathogens (oomycete and non-oomycete), downy mildew, bacteria, leaf spots, and botrytis have been prevalent. In weed science, the focus has been primarily crop safety, but liverwort, nostoc, specific broad leaf weed efficacy projects have occurred. (Table 2)

For pathology and entomology, crop safety are standing projects. Products or numbered compounds are included when the registrants first would like to include them until up to 2 years after first EPA registration for environmental horticulture uses.

Plant growth regulators are under-represented as projects, due to budget constraints, and only were assigned national projects from 2006 through 2009.

Table 1. 2023 Matrix of Interactions with Research Community

Task	NCR	NER	SOR	WSR	ARS
Initial Contact about Research	PM & RFC (understudy)	RFC	RFC	RFC	PM
Contractual Agreements	RFC	RFC	RFC	RFC	na
Shifts in Crop/Target/ Active	PM/RC	PM/RC	PM/RC	PM/RC	PM/RC
Technical Questionss	PM	PM	PM	PM	PM
In-Season Follow-ups	PM	RFC	RFC	PM	PM
Post-Season Follow-ups	PM	RFC	RFC	PM	PM
Receipt of Technical Reports	PM/RC & RFC	PM/RC & RFC	PM/RC & RFC	PM/RC & RFC	PM, RFC, RC
Report QC	PM/RC & RFC (understudy)	PM/RC & RFC	PM/RC & RFC	PM/RC & RFC	PM/RC
Feedback to Researchers	PM&RFC	PM&RFC	PM&RFC	PM&RFC	PM
Receipt of Invoices	RFC	RFC	RFC	RFC	na

Table 2. Historical High Priority Projects 2006 through 2023

Year	Entomology	Pathology	Weed Science	PGR
2006	Thrips Efficacy Coleopteran Efficacy	Phytophthora Efficacy Pythium Efficacy	Broadleaf Weed and Sedge Management Tools Crop Safety	Woody perennial Branching Herbaceous Crop Shelf Life
2007	Thrips Efficacy Coleopteran Efficacy	Phytophthora Efficacy Pythium Efficacy	2007 Sedge Materials Crop Safety	Woody perennial Branching Herbaceous Crop Shelf Life
2008/2009	Thrips Efficacy Coleopteran Efficacy Armored Scale Efficacy	Phytophthora Efficacy Downy Mildew Efficacy Bacteria Efficacy	2008/2009 Herbicide Crop Safety Early Post-Emergent Efficacy for Oxalis Bittercress and Spurge	Woody perennial Branching Herbaceous Crop Shelf Life
2010/2011	Scale Efficacy Thrips Efficacy and IPM strategies Insecticide Crop Safety	Bacterial Efficacy Pythium Efficacy Fungicide Crop Safety	Herbicide Crop Safety Early Post Emergence Efficacy Liverwort Efficacy.	
2012/2013	Thrips Efficacy Armored Scale Efficacy Insecticide Crop Safety	Bacterial Efficacy Pythium Efficacy Fungicide Crop Safety	Herbicide Crop Safety Liverwort Efficacy.	

Year	Entomology	Pathology	Weed Science	PGR
2014/2015	Thrips Efficacy Armored Scale Efficacy New Product Crop Safety	Botrytis Efficacy Leaf Spot & Anthracnose Efficacy New Product Crop Safety	Pre-Emergent Liquid Herbicide Crop Safety Ornamental Grass Herbicide Crop Safety	
2016/2017	Thrips Efficacy Foliar Feeding Beetle Efficacy New Product Crop Safety	Botrytis Efficacy Bacterial Disease Efficacy New Product Crop Safety	Pre-Emergent Herbicide Crop Safety Ornamental Grass Herbicide Crop Safety	
2018/2019	Foliar Feeding Beetle Efficacy Coleopteran Borers New Product Crop Safety	Botrytis Efficacy Non-Oomycete Root Disease Efficacy New Product Crop Safety	Pre-Emergent Herbicide Crop Safety Post-Emergent Herbicide Crop Safety Post-Emergent Herbicide Efficacy	
2020/2021	Foliar Feeding Beetle Efficacy Scale & Mealybug Efficacy New Product Crop Safety	Pythium Efficacy Non-Oomycete Root Disease Efficacy New Product Crop Safety	Pre-Emergent Herbicide Crop Safety Nostoc Efficacy	
2022/2023	Borer & Beetle Efficacy Mealybug & Scale Efficacy New Pest Management Tool Crop Safety	Pythium & Phytophthora Efficacy Non-Oomycete Root & Crown Rot Efficacy New Disease Management Tool Crop Safety	Preemergent Herbicide Crop Safety Postemergent Herbicide Efficacy Nostoc Efficacy on Hard Surfaces	

Funding

Like other programs in the IR-4 Project, the NIFA IR-4 grant and ARS monies fund the EHC program for registration support activities. These funds are supplemented with donations from crop protection product registrants. Funding between 2010 and 2023 varied considerably from $550,000 in 2010 down to $478,250 in 2022, then up to $585,600 for 2023, excluding IDC, which began in FY2023 (Figure 3). Factors that contributed to variable budgets include flat funds, anticipation of IDC implementation (2022), reduction to supplement the Food Use Program Laboratories to address their large backlog (2017) and then subsequent return (2020), additional funds transferred from the Biopesticide & Organic Support Program's former research activities (2019), and an infusion with the recent legislative increase for the IR-4 Project (2023). The recent increase to IR-4 includes funds to offset the newly introduced 10% indirect costs charged on total funds awarded (11.11% on direct costs).

Between 2010 and 2023, compensation amounts have increased for the research network (Figure 4). In 2010, crop safety trials were valued at $500 per study, which included nontreated control plus three rates usually 1X, 2X, and 4X; efficacy was compensated at $1,000 per treatment. In 2011, crop safety was increased to $750 per study. In 2012, crop safety was increased to $1,000 per study, and efficacy was increased to $1,250 per treatment. After more than a decade of flat compensation with some supplements for research in locations that required more to cover expenses, rates were increased again in 2023 to $1,100 per crop safety study and $1,400 per efficacy treatment, for net compensation; indirect costs for host institutions raised these to $1,222 and $1,555, respectively.

Figure 3. NIFA Funding for EHC Program registration support, 2010 – 2023

* 2023 excludes IDC for comparison purposes; per trial amounts increased in 2010, 2011, 2012, and 2023

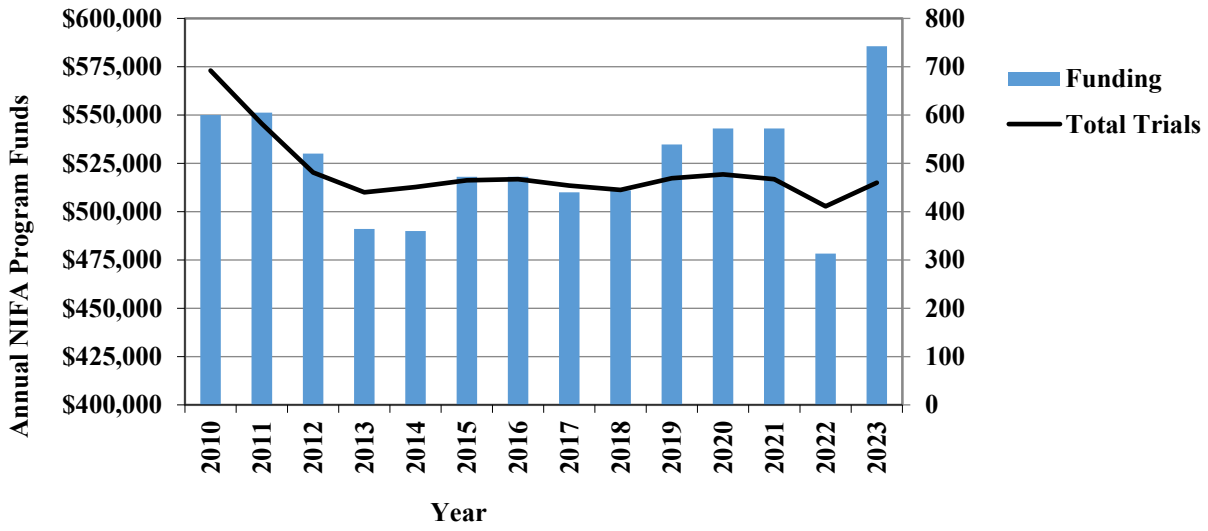
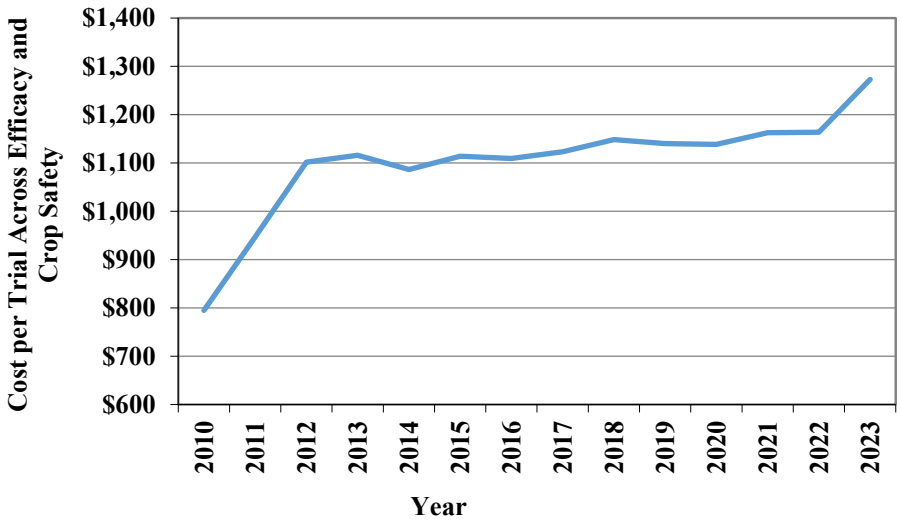


Figure 4. Average per trial NIFA Funding across efficacy and crop safety, 2010 - 2023

* 2023 excludes IDC for comparison purposes; per trial amounts increased in 2010, 2011, 2012, and 2023



Productivity

The EHC program tracks productivity in several ways: number of trials (Figure 3, Figure 5), number of research summaries completed annually (Figure 7).

The amount of research the EHC Program is able to sponsor is a direct correlation with the funding available and the increasing costs of research. As compensation per trial has increased due to inflationary pressure and funds for the program have fluctuated, the number of trials has generally declined. In 2010, EHC sponsored more than 1,700 trials across efficacy and crop safety projects, while in 2022 the number has declined to a little more than 600 trials. While crop safety research trials are less expensive that efficacy research, the balance between crop safety and efficacy has generally favored crop safety due to weed science projects tending to focus on screening for injury (Figure 6).

Starting in 2006, the EHC Program began to prepare Research Summaries for each project, post them to the website and send them to the relevant registrants. Research Summaries are mostly compiled for high priority projects, but some have been written as requested for international registration support or by registrants for historical data housed in paper archives. Since 2010, 20 Research Summaries, on average, have been prepared.

Figure 5. Current status for all trials across EHC program, 2010 - 2022

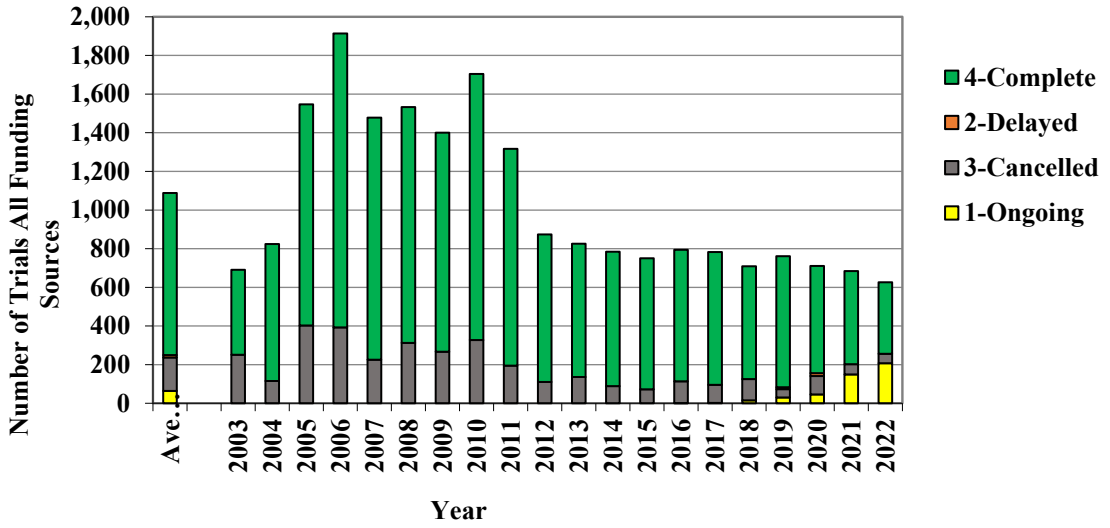


Figure 6. Balance of trials between efficacy and crop safety, 2010 - 2022

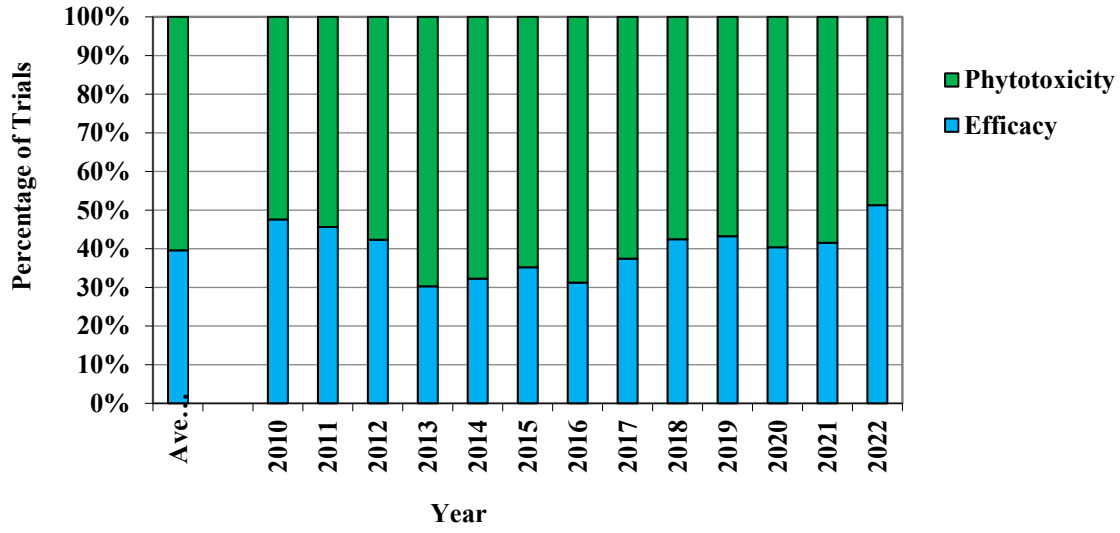
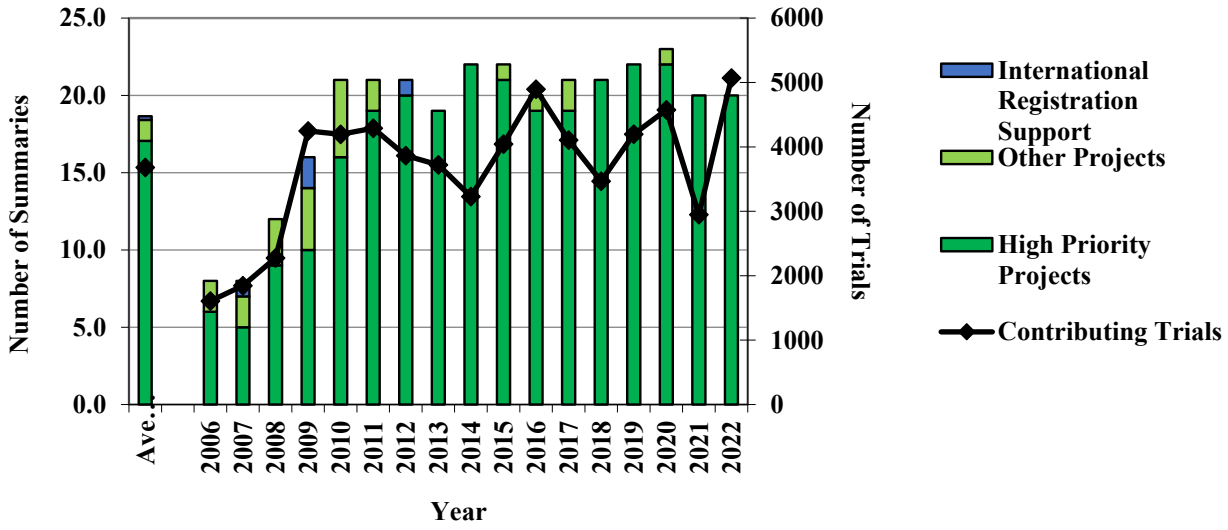


Figure 7. Research Summaries Prepared and Posted, 2006 - 2022



Outcomes & Benefits

The mission of IR-4 is to facilitate the registration of crop protection tools. For EHC, registrations are tracked by federal EPA new registrations for environmental horticulture production, subsequent amendments with EPA, state registrations (primarily CA, but also special local need labels), and international registrations. If a product is not initially commercialized after registration, crop uses are included as impacts when the crop protection company commercially launches the product. Between 2003 and 2022, registration outcomes include 209 number of actions for 125 products. Prior to 2003, 349 products or active ingredients were studied; however, archived data have not been validated fully. Thus, registration actions prior to 2003 are not able to be estimated accurately. As archives are validated for research activities, new and amended registrations with EPA are assessed and catalogued in the database. To date, there are 49 validated registration actions before 2003.

Registrations supported by IR-4 data fluctuate annually based on multiple factors including registrant timelines, impact of new regulatory metrics (such as new studies needed for pollinator protection or review of uses for the Endangered Species Act), and how well EHC grower priorities align with development pipelines, which are often based on commodity agriculture.

Crop impact is calculated by estimating the number of EHCs impacted by the initial registration or amendment based on the type of data gathered by IR-4 and provided to crop protection companies. With crop safety screening of products to manage diseases or pests, crops that have demonstrated little or no adverse effect after application are counted with the initial registration as a one-to-one crop use. Additional crop impacts are only included if crop is subsequently listed on a do not use list. For crop safety screening of herbicides, crop impact is also a one-to-one ratio: one crop studied equals one crop use added, but, since crops are typically listed on herbicide labels, crop uses are calculated with the initial registration and for each amendment. With efficacy data, diseases and pests may impact one crop or many crops. The number of crops are estimated for each disease and pest by surveying literature for the lists of known infected or infested crops within environmental horticulture. Whether they are included in the initial registration or added later, most diseases and pests represent a one-to-many relationship with one disease or pest impacting many crops. Examples include *Phytophthora cinnamomi* and western flower

thrips (*Frankliniella occidentalis*), both impacting more than 200 crops each. Between 2003 and 2022, aggregate crop impact is 53,976 crop uses. The validated registration impacts prior to 2003 provide 1,048 crop impact. However, prior to 2003, most data collected were crop safety so non-validated completed studies marked as registered comprise 2,991 crop uses for a running total of 55,024 through 2022.

Figure 8. Registrations from IR-4 Data, 2003 - 2022

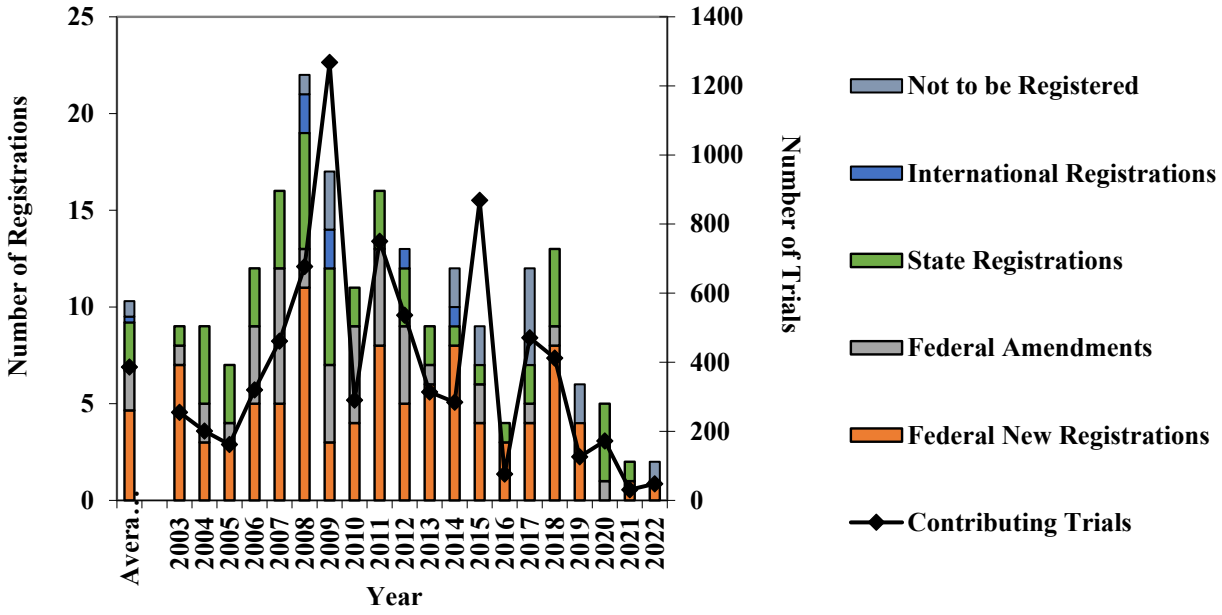
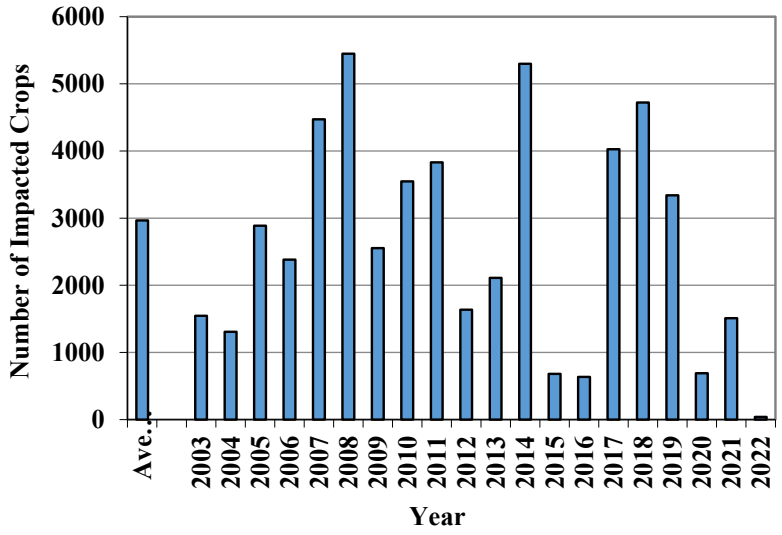


Figure 9. Crop Impact from Registrations, 2003 - 2022



Invasive Species

Introduction

IR-4 began activities to support mitigation of invasive species when we were invited to participate in the USDA-APHIS ad hoc task force on Bemisia Q biotype whitefly. At the time, we also devoted a small part of our NIFA budget to screen actives as well as received a small grant from the Insecticide Resistance Action Committee to determine whether the Q biotype whitefly in the US had the level of resistance observed internationally. The Program Manager (PM) facilitated the development of a whitefly management plan that then became the model for an element of the Project Information Sheets utilized as part of the biennial workshop discussions. This was followed shortly after with participation in a similarly focused Chili Thrips ad hoc task force. IR-4 was then requested by Society of American Florists (SAF) to build research collaborations (a core competency of the program) to address gladiolus rust which was then followed by similar requests by SAF, American Nursery & Landscape Association (ANLA), and later AmericanHort to build and manage research teams for Chrysanthemum White Rust, Shipping of Invasive Arthropods including European Pepper Moth, Boxwood Blight, Impatiens Downy Mildew, and Box Tree Moth.

Processes

As part of routine conversations with trade association representatives, researchers, and RFCs and participation in trade and scientific meetings, the PM learns about new pathogen and pest introductions impacting EHC growers. Depending on the situation, new and emerging invasive species may fit under Registration Support Research. In most cases, however, the PM is invited to organize multi-institutional teams to quickly develop efficacy data to support mitigation efforts either for local eradication or for transition into routine management programs.

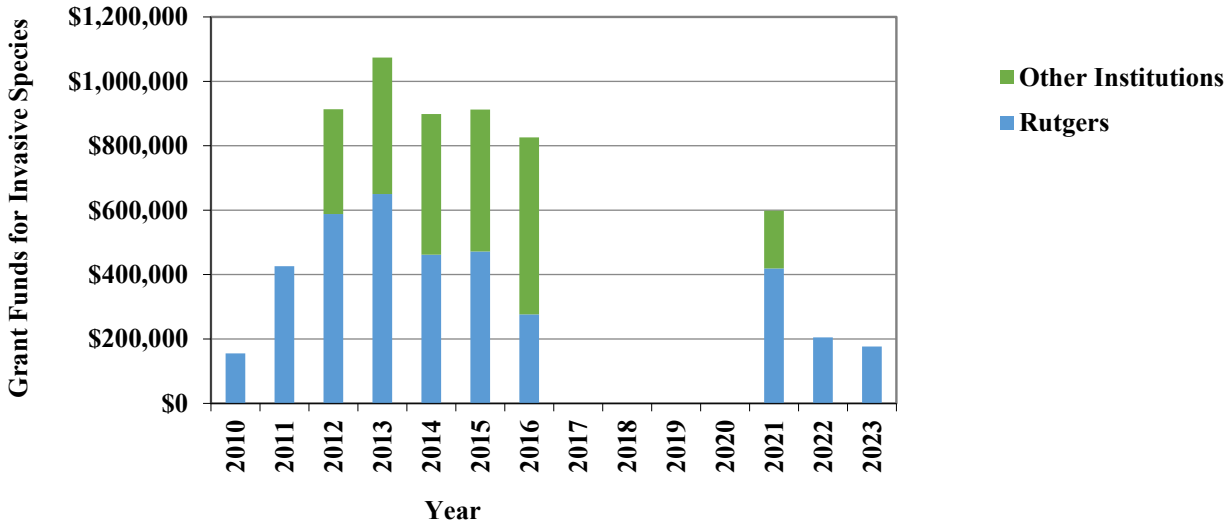
Once a team is assembled, the team collaborates to write grant proposals or APHIS research suggestions and submits them. The scope of the project is primarily mitigation towards determining what tools will be most effective with the plan to amend current registrations for the new pathogen or pest, but biology, epidemiology, and genomics have often been included because this information is often critical to pinpoint optimal life stages for treatment or to better encompass integrated solutions for growers.

The role of the EHC PM is to develop the team, create the framework to write and edit the proposals, solicit budgets and collate them collaborating with financial professionals within Rutgers University for a final budget, facilitate communication and collaboration among research team members and with stakeholders and representatives of the funding agencies, oversee progress, review and approve invoices, represent team findings to stakeholders, and receive, collate, and write annual and final reports.

Funding

Invasive species projects are primarily funded through APHIS cooperative agreements (Figure 10). Projects are typically multi-institutional and have included scientists located at quarantine facilities with BSL 3 or greater designation to prevent accidental introduction of invasive species outside quarantine zones. Researchers located at universities typically are funded via subaward agreement with Rutgers University managing prime agreement. Funding for researchers in ARS is handled through interagency agreements but are included as part of the total funding (Figure 10).

Figure 10. APHIS funding for EHC invasive species, 2010 – 2023



Project Activities

Q Biotype Whitefly

The introduction and detection of Q biotype whitefly on poinsettias in Arizona during late 2004 was a highly charged situation, pitting EHC growers and growers of fruit, vegetables, and cotton against each other because of concerns about how this invasive species would alter the economics for growers across all the crops, food and non-food. These concerns arose from the previous displacement of B tabaci A biotype and the images of B biotype migrating from cotton fields to nearby specialty crops. In addition to participating in conference calls and coordinating activities similar to those within the Registration Support Research, the EHC PM coordinated the initial development of a whitefly management plan and revisions to it for growers who export plant materials and when new information is available on management tools. This management plan has been updated multiple times and was eventually published through the University of Florida's Extension Publications.

Chilli Thrips

It is unknown exactly when Chilli thrips was introduced into Florida. However, it was discovered during 2006 in multiple states after shipments of EHCs to retail locations and was subsequently traced back to the Florida grower location. Although a new invasive pest well known to cause significant damage to crops worldwide, chilli thrips was not designated as a quarantinable pest by APHIS because of discovering it after it was spread to multiple states. Similar to the Q-biotype whitefly task force, the EHC PM participated in technical calls and coordinated research experiments through the Registration Support Research, plus a thrips management plan was developed encompassing western flower thrips and chilli thrips. This management plan has been updated multiple times and was eventually published through the University of Florida's Extension Publications.

Gladiolus Rust

Gladiolus rust is a disease of gladiolus and a few related plants like *Tritomia*. At the time this project started, this disease was considered a quarantine pathogen by USDA-APHIS, but it was subsequently determined to be endemic and limited to small geographical area based on spore survival. The pathogen that causes this disease is *Uromyces transversalis*. From 2010 through 2014, the EHC PM facilitated APHIS sponsored research through the Farm Bill to investigate mitigation (management) options, basic biology, cultivar resistance, and diagnostics. Fungicides, individually and in programs, were evaluated,

and recommendations were developed for Mexican growers and two growers in California, who had been under quarantine conditions for shipping cut flowers. Multiple experiments screen various gladiolus cultivars for tolerance to this disease. In addition to examining survivability of urediniospores in the field, survival of spores under controlled environmental conditions was determined. Polyclonal antibodies were developed from germinating urediniospores and based on antigens identified through development of cDNA libraries as a first step to improve diagnostics for low infection levels.

Table 11. Example mitigation data for the Gladiolus Rust Project: Gladiolus rust disease severity after fall fungicide applications in commercial fields in Santa Isabel Cholulu, Puebla, Mexico, Fall 2011

Active Ingredients	Trade Name	Rate per Liter (Rate per 100 gal)	Disease Severity			AUDPC
			10/8	10/22	11/5	
Acibenzolar-s-Methyl	Actigard 5O GS	60 mg (0.8 oz)		21.0 d	32.0 b	26.5 c
Azoxystrobin + Difenoconazole	Amistar + Score	600 mg + 1,000 uL (8.0 oz + 12.8 floz)	3.8 a	2.0 ab	0.0 a	11.8 ab
Azoxystrobin + Epoxiconazole	Amistar + Opus 125	600 mg + 1,500 uL (8.0 oz + 19.2 floz)	0.0 a	0.0 a	0.0 a	7.8 a
Azoxystrobin + Propiconazole	Amistar+Tilt	600 mg + 2,000 uL (8.0 oz + 25.6 floz)	0.0 a	0.0 a	0.5 a	7.8 a
Chlorothalonil	Daconil 2787	3,000 mg (2.5 lb)	7.3 a	15.8 cd	36.3 b	26.3 c
Chlorothalonil + Epoxiconazole	Daconil 2787 + Opus 125	3,000 mg + 1,500 uL (2.5 lb + 19.2 floz)	0.5 a	0.5 a	0.3 a	9.5 ab
Chlorothalonil + Propiconazole	Daconil 2787 + Tilt	3,000 mg + 2,000 uL (2.5 lb + 25.6 floz)	0.8 a	0.3 a	2.5 a	10.3 ab
Cyproconazole	Alto 100 SL	800 uL (10.2 floz)	6.5 a	14.0 bcd	0.0 a	18.8 b
Difenoconazole	Score	1,000 uL (12.8 floz)	0.5 a	0.0 a	0.0 a	9.0 a
Epoxiconazole	Opus 125	1,500 uL (19.2 floz)	0.8 a	5.0 abc	0.0 a	13.5 ab
Fluoxastrobin + Myclobutanil	Disarm	1.928 g (26.4 oz)	0.0 a	3.8 abc	1.0 a	13.8 ab
Flutolanil	Moncut 50 WP	4,000 mg (25.6 floz)	0.8 a	3.8 abc	1.0 a	13 ab
Oxycarboxin + Tebuconazole	Plantvax + Folicur	3,000 mg + 1,200 uL (2.5 lb + 15.4 floz)	0.8 a	0.0 a	0.0 a	8.0 a
Oxycarboxin + Trifloxystrobin	Plantvax + Flint	3,000 mg + 500 mg (2.5 lb + 6.7 oz)	0.0 a	0.8 a	1.8 a	10.0 ab
Non-treated, non-inoculated			7.0 a	35.8 e	58.8 c	30.8 c
Non-treated, inoculated			6.5 a	38.0 e	60.0 c	31.5 c

[z]Means followed by same letter do not differ significantly based on Fisher's LSD (p=0.05); shaded averages are significantly different from the untreated inoculated treatments.

[y] Area under the Disease Progress Curve was calculated on ratings from the Horsfall-Barrett scale.

Chrysanthemum White Rust

Chrysanthemum white rust is a disease of chrysanthemums considered a quarantine pest by USDA-APHIS. The pathogen that causes this disease is *Puccinia horiana*. From 2011 through 2016, the EHC PM facilitated APHIS sponsored research through the Farm Bill to investigate mitigation (management) options, basic biology, epidemiology, host range, genetic variability (the similarity of US and European strains), and diagnostics. Fungicides were screened for *in planta* reduction of disease and for baseline sensitivity through reduction of *in vitro* basidiospore germination. It was confirmed that Montauk daisy (*Nipponanthemum nipponicum*) was a host for *P. horiana*, and it was determined the US isolates clustered into two genetic groups. Experiments were conducted to assess the risk that asymptomatic infected plants could result in the generation of asymptomatic infected cuttings, which could be unknowingly moved into

production and sold. While some background ambient inoculation occurred in one of the three repetitions of this experiment, clear movement of *P. horiana* did occur into axial shoots arising from inoculated leaves. In addition, we also examined whether being in a vegetative state or flowering state had an impact on infections, and infection rates were consistent between flowering and vegetative plants. These experiments result in the following conclusions: 1) highly sensitive PCR and *in situ* hybridization diagnostic tools can be developed for rust pathogens; 2) downward movement of *P. horiana* in chrysanthemums is unlikely to be triggered by simulated overwintering temperatures and day/night length; and 3) upward movement of *P. horiana* can occur from infected leaves into axial shoots.

Table 12. Example mitigation data for the Chrysanthemum White Rust Project: Effective fungicide concentrations required to inhibit *P. horiana* basidiospore germination.

FRAC MOA	Active Ingredient	Basidiospore Germination (ppb)	
		EC_{50} (95% CI)	EC_{85} (95% CI)
M	chlorothalonil	205.2 (157.9 - 264.1)	394.1 (328.2 - 476.1)
M	mancozeb	6,576.7 (5,602.0 - 7,697.5)	11,353.3 (10,067.4 - 12,831.9)
3	metconazole	28,276.0 (23,799.0 - 33,499.9)	53,535.3 (47,202.5 - 60,807.4)
3	myclobutanil	9,487.5 (7,144.8 - 12,627.2)	14,928.9 (11,895.7 - 18,994.1)
3	propiconazole	36,551.5 (31,703.9 - 42,083.4)	65,980.6 (59,321.7 - 73,580.9)
3	tebuconazole	26,150.7 (21,119.7 - 32,324.3)	39,054.4 (32,829.3 - 45,693.3)
3	triadimefon	43,549.8 (37,375.0 - 50,669.5)	59,526.5 (52,291.5 - 67,868.6)
3	triticonazole	244,190.1 (203,284.7 - 292,633.6)	461,311.7 (403,513.5 - 529,761.0)
11	azoxystrobin	2.4 (2.0 - 2.8)	3.8 (3.3 - 4.3)
11	fluoxastrobin	10.2 (8.4 - 12.4)	15.8 (13.5 - 18.6)
11	mandestrobin	27.1 (70.4 - 93.8)	44.6 (119.2 - 151.1)
11	trifloxystrobin	2.5 (2.2 - 3.0)	4.2 (3.7 - 4.8)
11+3	trifloxystrobin + triadimefon	1.0 + 5.2 (0.9 + 4.7 - 1.2 + 5.8)	1.6 + 8.3 (1.5 + 7.6 - 1.8 + 9.1)
11+7	pyraclostrobin + boscalid	1.6 + 3.2 (1.4 + 2.8 - 1.8 + 3.6)	2.6+ 5.1 (2.3 + 4.6 - 2.9 + 5.8)

Arthropod Shipping

Inadvertant movement of insect and mite pests (arthropods) domestically and internationally via shipping of cuttings occurs. While plants are inspected and possibly sequestered for a period of time, it is possible to miss seeing small exotic arthropods or their eggs. From 2011 through 2014, the EHC PM facilitated APHIS sponsored research through the Farm Bill to investigate mitigation (management) options using biopesticides and softer products applied prior to shipping of cuttings of several model crops. Also examined was the use of hot water baths to kill multiple insect and mite stages. Part of this project was developing mitigation options and life cycle information for the newly arrived pest European Pepper Moth (*Duponchelia fovealis*). For pre-shipment efficacy on cuttings, aphid, mite and thrips populations were reduced by dips into natural products but not consistently to the level required to eliminate interstate or international shipping of these pests. For actual shipping, citrus mealybug populations were also reduced with dip treatments generally providing better control than spray treatments. BotaniGard and Safari reduced mealybug populations to virtually zero by approximately 2 weeks after application. With silverleaf whitefly, none of the natural products sufficiently reduced populations after shipping to warrant their use as regulatory pre-shipment treatments. Our research team determined the minimal and maximum temperature thresholds for *D. fovealis* development with the optimal temperature being 32.2ºC. The current *D. fovealis* population within San Diego county was surveyed over time demonstrating multiple generations per year. In examining hot water immersion treatments as a potential means of disinfestation, rooted chrysanthemum cuttings exhibited higher heat tolerance than unrooted cuttings and subsequent growing conditions can impact growth and market readiness. Poinsettia cuttings were not able to tolerate the same temperatures as chrysanthemums.

Table 13. Example mitigation data for the Arthropod Shipping Project: Efficacy of selected insecticides against early instar larvae of the European pepper moth infesting potted *Vinca minor*.

Treatment	Rate/100 gal	Surfactant v/v%	Avg. # adults per pot emerged
Check	---	---	1.34 a
Proclaim 5 SG +Dyne-amic	2.4 oz	0.5	0.12 b
Proclaim 5 SG +Dyne-amic	4.8 oz	0.5	0.00 b
Proclaim 5 SG +Dyne-amic	9.6 oz	0.5	0.00 b
Proclaim 5 SG +Ultra Pure Oil	4.8 oz	1.0	0.00 b
Proclaim 5 SG	4.8 oz	---	0.00 b
A16901B WG +Dyne-amic	1.78 oz	0.5	0.00 b
Scimitar GC	4.8 oz	---	1.01 a
Coragen	5.0 oz	---	0.00 b
Belt SC	3.0 oz	---	0.12 b

DF=10, F value= 14.24, Pr>F=<.0001

Table 14. Example mitigation data for the Arthropod Shipping Project: Percent survivability of European Pepper Moth larvae

Chemical	Cage Position	1 DAA	5 DAA	7 DAA	14 DAA	21 DAA	Mean
Enfold (emamectin benzoate) @ 2.4 oz per 100 gal	top	60	50	0	0	25	27
	bottom	100	50	0	33	100	56.6
Enfold @ 4.8 oz per 100 gal	top	50	50	0	100	60	52
	bottom	100	100	0	50	100	70
Scimitar @ 5 oz per 100 gal	top	100	33	0	50	60	48.6
	bottom	100	100	100	50	100	90
Conserve @ 22 oz per 100 gal	top	0	0	100	50	100	50
	bottom	100	50	100	75	83	81.6
UTC	top	100	100	100	50	100	90
	bottom	100	100	100	0	100	80

Table 15. Example mitigation data for the Arthropod Shipping Project: Mean number of mites per spearmint leaf after dipping with natural products

Treatment/formulation	Rate	DAT 0 (Pre-spray)	DAT 2
Stoller Natur'l Oil	1%	11.2a	0.0b (100)
Mpede	1%	10.8a	4.3b (62)
Untreated check	-	10.7a	11.3a
F value		0.47	17.64
Pr > F		0.6292	<.0001

Means in a column followed by the same letter are not significantly different ($P > 0.05$, Tukey test)
Henderson-Tilton's corrected percent mortality is presented in parentheses after each mean

Boxwood Blight

Boxwood blight was first discovered in the US during 2011. Worldwide, this disease is caused by two different closely related fungi: *Calonectria pseudonaviculata* and *Calonectria henricotiae*. Currently, only the *C. pseudonaviculata* is found in the US. From 2012 through 2018, APHIS sponsored research through the Farm Bill to investigate mitigation options, basic biology, epidemiology, genomics, and diagnostics.

Fungicide program recommendations for boxwood and pachysandra growers were developed along with guidance for sterilizing tools and hard surfaces in nurseries. In addition, two aminoimidazole compounds can inhibit or stimulate microsclerotia formation depending on *Cps* isolate. Use of hot water dip treatments was explored for disease management on cuttings of both species and specific Cps isolates, and heat tolerance of certain boxwood cultivars was determined. In addition, a study of steam sterilization of soil demonstrated both *Cps* and *Ch* were killed whether present in leaves, twigs, or as discrete microsclerotia. Host range (boxwood, pachysandra, and sarcococca) and differential tolerance of boxwood species and cultivars was studied along with whether partially resistance cultivars can serve as reservoirs with the result that ratings of boxwood blight severity and incidence on 25 cultivars planted in the field and inoculated yielded a range of susceptibilities from highly susceptible to highly tolerant. Furthermore, bioassays of 24 isolates of *Cps* and *Ch* on cuttings from eight different *Buxus* cultivars demonstrated cultivar isolate specificity. Similar studies were conducted on whole plants. Cutting dip assays demonstrated varying susceptibility, similar to field assays, and may become a tool to screen new cultivars prior to introduction to the trade. *Trichoderma* species were isolated from soil around boxwood accessions at the National Arboretum and were screened for antagonism against *Cps*.

Outreach efforts have included updates to BMPs and other technical literature, articles in trade journals, interviews for the popular press, more than 57 presentations to grower and landscape audiences, 45 publications, the 2014 Boxwood Summit, and a 2014 APS Symposium focused on Boxwood Blight. Plus, this team hosted a final summary to APHIS personnel to present outcomes and future research pathways.

Downy Mildew (Impatiens and others)
Impatiens downy mildew (IDM) was first discovered in the US during 2004. During 2015 through 2007, only sporadic cases occurred. However, during 2009 and 2010, there were major declines in impatiens planting in Saratoga Springs, NY. Then in 2011 and 2012, IDM was reported throughout the US. This disease is caused by an oomycete or water mold called *Plasmopara obducesns*. From 2013 through 2017, the PM facilitated APHIS sponsored research through the Farm Bill to investigate mitigation options, basic biology, epidemiology, genomics, and diagnostics. Throughout this project, this team made several key discoveries. First, IDM overwinters as oospores – thick walled resting spores - in stems of common garden impatiens (*I. walleriana*) and in seeds of balsam impatiens (*I. balsamina*). Second, alternative hosts are available and can potentially serve as reservoirs for inoculum for both IDM and cucurbit downy mildew (CDM). Third, collecting diverse populations of downy mildews (IDM, CDM and downy mildews of hops, basil) have yielded richer genomic resources that in turn has fostered improved understanding of population dynamics and has provided the basis for new genomic-based diagnostic tools (spore trapping + PCR for CDM, and FISH assay for IDM). Genomics has also identified several new downy mildew species affecting cucurbit hosts. Fourth, screening for mitigation options highlighted the critical need to develop and maintain robust rotational programs to minimize resistance development and spread. Pockets of transient resistance were noted for mefenoxam and fluopicolide in *Plasmopara obuscens*, the IDM pathogen.

In addition to being highly prolific researchers, this team has been highly prolific in outreach. This group has prepared and published or presented 25 scientific abstracts/posters, 51 oral scientific presentations, 27 scientific manuscripts, 24 Plant Disease management Reports, 163 oral extension presentations, 14 trade journal articles, 26 online & print extensions bulletins, plus field days, news releases, and popular press interviews. Plus, this team hosted a final summary to APHIS personnel to present outcomes and future research pathways.

Table 16. Example mitigation data for the Boxwood Blight Project: Evaluation of fungicides for the preventive and curative activity for boxwood blight, Ivors, 2013

Treatment and rate /100 gal		FRAC code*	Percent leaf area diseased: 19 Aug geometric midpoint	AUDPC percent leaf area diseased	Combined analysis**
Non-treated, non-inoculated negative control		NA	3.602 d **	21.61 d**	f
Curative	Concert II 35.0 fl oz	M5 + 3	36.484 c	1196.28 c	c
	Daconil WeatherStik 1.375 pt	M5	40.237 c	1197.99 c	c
	Disarm C 11.0 fl oz	M5 + 11	67.398 ab	1526.02 b	b
	Medallion WDG 4.0 oz	12	62.481 b	1459.01 b	bc
	Spectro 90WDG 1.5 lb	M5 + 1	40.237 c	1197.99 c	c
	Strike Plus 50WDG 9.0 oz	3 + 11	36.484 c	1175.47 c	c
	Torque 10.0 fl oz	3	43.362 c	1216.74 c	c
	Tourney 50WDG 4.0 oz	3	47.114 c	1239.25 c	c
Preventative	Concert II 35.0 fl oz	M5 + 3	2.141 e	12.84 d	f
	Daconil WeatherStik 1.375 pt	M5	0.906 e	5.44 d	f
	Disarm C 11.0 fl oz	M5 + 11	3.602 de	26.48 d	f
	Medallion WDG 4.0 oz	12	8.035 cd	230.39 c	e
	Spectro 90WDG 1.5 lb	M5 + 1	2.141 e	18.28 d	f
	Strike Plus 50WDG 9.0 oz	3 + 11	0.453 e	5.44 d	f
	Torque 10.0 fl oz	3	10.603 bc	341.79 c	e
	Tourney 50WDG 4.0 oz	3	14.411 b	502.82 b	d
Non-treated inoculated positive control		NA	78.612 a	1916.79 a	a

* Fungicide Resistance Action Committee (FRAC) code indicates fungicide mode of action.

**Means within a column followed by the same letter are not significantly different ($P = 0.05$) based on the Waller-Duncan k-ratio ($k = 100$) t test. Statistical tests were conducted separately for both the curative and preventive applications, although a combined analysis of AUDPC percent leaf area diseased was also conducted for all treatments and reported in the last column.

Table 17. Example mitigation data for the Downy Mildew Project: Disease severity of treatments to control downy mildew of impatiens, Palmateer, 2016

Treatment	Rate/100 gal	Residual [z]	Disease Severity [y]
Untreated control	---	---	98.9 a [x]
Adorn	4 fl oz	5	96.8 a
Subdue Maxx	1 fl oz	5	75.6 b
Adorn + Subdue Maxx	4 fl oz + 1 fl oz	5	72.8 bc
Segway O	3.5 fl oz	6	48.9 cd
Stature SC	12.25 fl oz	10	42.4 d
Segovis	2.4 fl oz	---	0 g
Pageant Intrinsic	18 oz	7	26 e
Orkestra	10 fl oz	7	16.9 e
Orvego	14 fl oz	7	55 cd
Micora	8 fl oz	16	1.9 fg
Inosco	64 fl oz	21	1.3 g
Alude	64 fl oz	21	1.6 fg
Protect	2 lbs	7	24.1 e
Protect + Capsil	2 lbs + 6 fl oz	12	7.3 f

[z] Days after last application (29 Nov) until pathogen sporulation was evident on treated plants.

[y] Average weekly disease severity expressed as percent leaf canopy affected.

[x] Column means indicated with the same letters are not significantly different ($P \leq 0.05$) based on Student Newman Keuls test.

Boxtree Moth

Box tree moth (BTM) was first discovered in the US during 2021 during a trace forward event after a nursery in Canada inadvertently shipped infested boxwoods to 6 states. Starting in 2021, the PM facilitated APHIS sponsored activities to compile information on the biology and management of BTM from European and Canadian sources for preliminary guidance on mitigation options as well as develop a visual guide for commonly found lepidopterans caught in traps deployed to lure BTM adults in surveys to determine spread within the United States. Collaborative research activities were initiated between Rutgers University and the APHIS Forest Methods Research Laboratory in Massachusetts, where the sole BTM colony in the US resides. Media utilized to rear BTM larvae were amended with insecticides representing 6 mode of action groups, and percent mortality and or morbidity were assessed for eggs and early instars. Method development for assessing insecticide impact for larvae feeding on cuttings is being developed.

Table 18. Example mitigation data for the Box Tree Moth Project: Percent mortality at high rate of each active ingredient.

Active	IRAC Mode of Action Class	Percent Egg Mortality	Percent 1st/2nd Instar Mortality
Carbaryl	1A	85.0%	84.8%
Cyantraniliprole	28	11.1%	91.4%
Dinotefuran	4A	22.0%	45.8%
Fenpropathrin	3A	13.0%	99.5%
Pyrethrin	3A	10.8%	100.0%
Spinosad	5	12.5%	100.0%
Tolfenpyrad	21A	28.4%	98.9%
SP3014	--	25.0%	5.0%
Nontreated (across actives)	--	13.9%	24.6%

Outcomes & Benefits

The mission of IR-4 is to facilitate the registration of crop protection tools. In each of the projects described above, a key element was screening current products or active ingredients, which at the time were not registered, to determine their utility initially for local eradication and restriction of spread and then their ability to be incorporated into a routine management program. These research teams have been prolific covering not just mitigation, but also underlying needs related to biology, epidemiology, genomics, and diagnostics which enable improved utilization of fungicides or pesticides due to better understanding of sensitive life stages and infection/infestation pathways.

Special Projects: Pollinator Protection

Introduction

Protecting pollinators rose to national attention after a misapplication by an Oregon landscaper of a systemic insecticide to flowering linden trees caused mortality to thousands of bees in 2013. AmericanHort and SAF along with representatives of the crop protection industry recommended IR-4 become involved in developing data to support EPA regulatory decisions regarding the use of neonicotinoid and other systemic insecticides within environmental horticulture. Protecting pollinators is a unique challenge for the green industry. While the green industry is poised to provide plants to aid in

habitat restoration, production systems must incorporate practices to manage pests without harming pollinators. IR-4's EHC PM hosted a workshop to refine the scientific questions and outline needed research: 1) determine residue dynamics within model EHCs, 2) assess pollinator visitation to EHCs, 3) compare alternatives to systemic insecticides for efficacy, economics and toxicology, 4) survey growers and consumers for preferred marketing terminology for EHCs with little risk to pollinators, and 5) develop and communicate best management plans for growers. Throughout its duration, this project remained of public interest, and its results continue to impact decision making at many levels from individual consumer to the federal government.

Processes

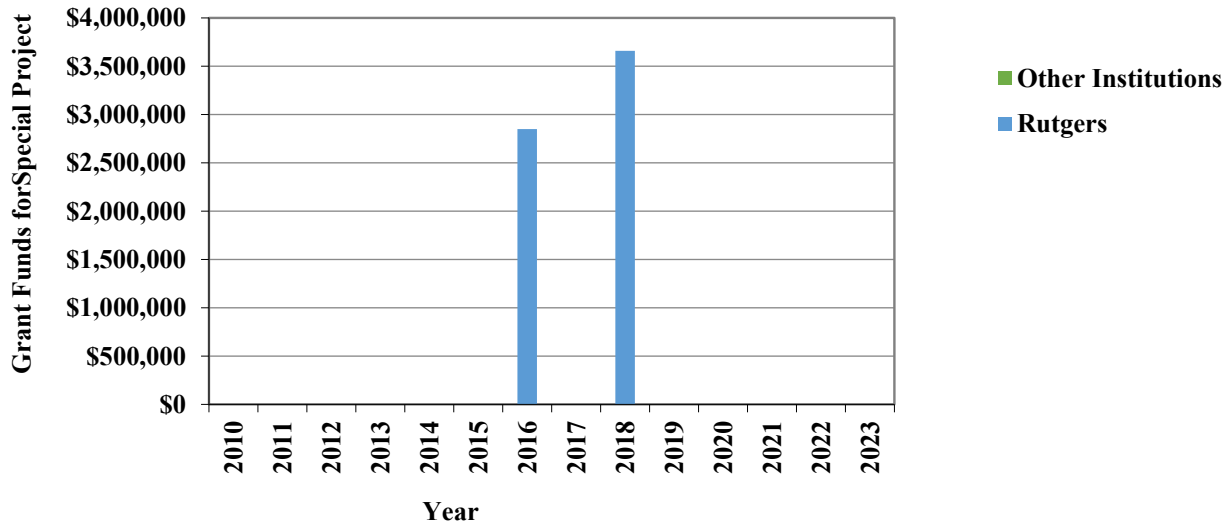
As mentioned above, IR-4 was requested to be involved in pollinator protection due to concerns about how EPA would regulate the use of systemic insecticides for the production of EHCs and for landscape maintenance particularly where invasive pest species are capable of killing large trees, and systemic insecticide treatments are the optimal mitigation option.

The role of the EHC PM was to bring together diverse researchers and stakeholders into a cohesive team to outline EHC needs and the vision for the project, and then create the framework to write and edit the proposals, solicit budgets and collate them collaborating with financial professionals within Rutgers University for a final budget, facilitate communication and collaboration among research team members and with stakeholders and representatives of the funding agencies, oversee progress, review and approve invoices, represent team findings to stakeholders, and receive, collate, and write annual and final reports.

Funding

Special projects are funded through relevant funding opportunities and sources. The pollinator protection project was allocated two funding installments arising from a single approved proposal through the NIFA Specialty Crop Research Initiative (Figure 10). This project encompassed 16 researchers at 10 institutions throughout the US. Rutgers University oversaw the prime agreement and 15 subawards and contracts to private entities.

Figure 19. NIFA-SCRI funding for EHC pollinator protection, 2010 – 2023



Activities

Pollinator Visitation. During this project, the research team established test garden plots of common annuals and perennials at six locations in five states (CA, CT, MI, PA, SC) and counted the visiting pollinators along with collecting samples to identify which pollinators were present. In addition, a study on woody perennials (trees and shrubs) was conducted in KY.

Systemic Insecticide Residue Dynamics: The research team conducted studies to determine the level of systemic insecticides found in nectar and/or pollen of rhododendron, sunflower, annual and perennial salvia, knipofia, dahlia and snapdragon.

Alternatives Comparisons. We compiled the available efficacy and toxicology information for alternative treatment options and developed an online resource for growers to compare options and select the most appropriate tools based on their plant materials and situation. We analyzed data from a grower survey to understand the economic and social impacts related to neonicotinoid use or lack thereof. We analyzed enterprise analysis budgeting provided by growers for costs with alternative tools.

Consumers & Plants for Pollinators. We also developed the consumer online and eye tracking survey tools to assess consumer willingness to pay and preferences related to grower production practices. We developed and implemented the consumer online and eye tracking survey tools to assess consumer willingness to pay and preferences related to grower production practices. and consumer online and eye tracking survey tools to assess consumer willingness to pay and preferences related to grower production practices.

Best Management Practices. We contributed to the Horticultural Research Institute's Best Management Practices document and

Outreach. Over the course of this project, our team wrote more than 106 scientific trade articles and gave more than 300 presentations to multiple audiences from K-12 students to scientific peers. We created, maintained, and updated a website to provide information about pollinators and developed a searchable website for consumers to select plant materials for their gardens based on sound scientific data on pollinator visitation to flowers and pollen collection.

This research project is providing crucial, science-based information for this decision making and provide opportunities for the environmental horticulture industry to contribute to improved pollinator health by growing plants using the best production practices, thereby increasing pollinator forage quality and quantity in rural and urban landscapes. Ultimately, these activities will improve pollinator health and conservation in urban and suburban areas and improve the sustainability and profitability of the ornamental horticulture and beekeeping industries.

Outcomes & Benefits

The mission of IR-4 is to facilitate the registration of crop protection tools. In this case, IR-4 became the nexus to develop registration support dat for maintaining existing registrations of neonicotinoid insecticides. The PM met with EPA to present preliminary findings of pollinator visitation which influenced EPA's risk assessment for pollinators and PID. In addition, this project developed the framework for future similar studies with residue dynamics of systemic insecticides within environmental horticulture crops.

Special Projects: Flat-Headed Borers – Supplement to IR-4 Database

Introduction

Flat headed borer impact many perennial food and non-food specialty crops posing challenges for growers of established food crops such as apples and walnuts as well as for growers producing non-food nursery stock. IR-4's public database cataloguing efficacy and crop safety data for environmental horticulture crops presents a unique opportunity as both an outreach tool and a data repository for research projects.

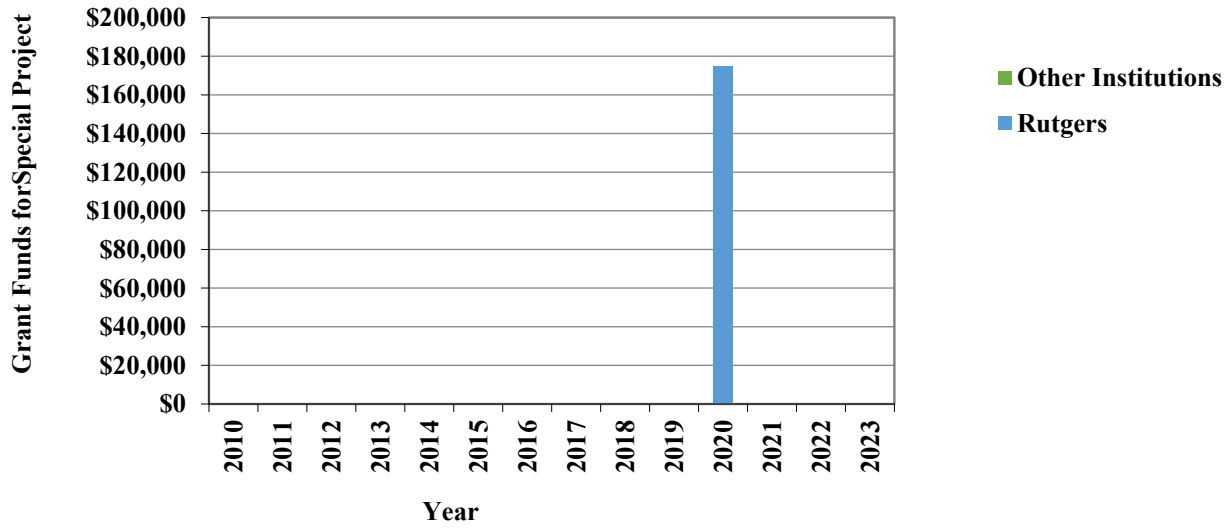
Processes

As mentioned above, IR-4 was included in this research project hosted by Tennessee State University to facilitate research outreach as well as be a data repository for efficacy experiment outcomes. The role of the EHC PM is to receive research reports, add new crops, borer pests, and products to the database as needed, create oneliners, and write annual and final reports for this subaward.

Funding

Special projects are funded through relevant funding opportunities and sources. This flatheaded borer project arose from a single approved proposal through the NIFA Specialty Crop Research Initiative submitted by Tennessee State University. The Rutgers component is funded via a subaward agreement (Figure 20).

Figure 20. NIFA-SCRI funding for IR-4 EHC supplements to registration data, 2010 – 2023



Activities

The planned activities are to participate in team meetings and to include results from efficacy experiments in the environmental horticulture database for augmented outreach about options from managing flat headed borers.

Outcomes & Benefits

The mission of IR-4 is to facilitate the registration of crop protection tools. In this case, IR-4 collaborating with research teams to collate additional efficacy data for environmental horticulture crops improves the body of data available to registrants for developing appropriate and targeted label use directions and increases the depth of information available to growers and extension personnel, enabling growers an improved resource for selecting optimal pest management tools.

IR-4 Communications Update

Presenter: Hannah Ross

Communications Update

Hannah Ross | Summer 2024

2024 Visual Strategy Update

Following logo & color palette refresh,

updated resources continually available for the team

BRAND REFRESH SNAPSHOTS

IR-4 Project

News and Updates

NORTHEAST REGION | IR-4 Project

SOUTHERN REGION | IR-4 Project

WESTERN REGION | IR-4 Project

NORTH CENTRAL REGION | IR-4 Project

Latest Print Materials

All four regional one-pagers complete!

NORTH CENTRAL REGION | IR-4 Project

Image Credit: Michigan State University

Image Credit: Michigan State University

The IR-4 Project has a 60-year track record of impact facilitating pest management solutions for specialty crops and specialty uses. According to a 2022 economic analysis, IR-4 contributes an estimated **$8.97 billion** to the annual U.S. gross domestic product. **Seven jobs can be attributed to every $1000** of public investment in IR-4.

By facilitating EPA registration of safe, effective pest management products specialty crop growers produce healthy, abun vegetables, nuts, herb

IR-4's federally-funde management strategie products, bio-based p integrated solutions to production systems.

IR-4's North Central R State University, is on temperate climate, am processing facilities, a region excels in the di

The NCR team works identify and prioritize p midwestern agricultur

Have a pest problem (or solution) in mind? Anyone may submit a Pro prioritized by stakeholders through a participatory, national research NCR team can help you submit a Project Request (see reverse for cor

NORTHEAST REGION | IR-4 Project

The IR-4 Project has a 60-year track record of im facilitating pest management solutions for specia crops and specialty uses. According to a 2022 economic analysis, IR-4 contributes an estimated **$8.97 billion** to the annual U.S. gross domestic product. **Seven jobs can be attributed to every $1** of public investment in IR-4.*

By facilitating EPA registration of safe, effective p management products and technologies, IR-4 hel specialty crop growers access the tools they nee produce healthy, abundant harvests—including fru vegetables, nuts, herbs, and horticulture crops.

IR-4's federally-funded research evaluates variou pest management strategies—including reduced-r chemical products, bio-based pesticides, emergin technologies, and integrated solutions to serve bo conventional and organic production systems.

The IR-4 Project's Northeast Region (NER) team works collaboratively with stakeholders to identify and prioritize pest issues, and secure solutions to help growers thrive. Informed by the field, the NER team advocates for the needs of regional growers in IR-4's national research program.

Have a pest problem (or solution) in mind? Anyone may submit IR-4 Project Clearance Requests (PCRs) to evaluate pest management products and strategies. Projects are selected with stakeholder input through an annual priority setting process. The NER team can help you submit a PCR (see reverse for contact information).

**Read about Michigan State University's economic impact analysis here.*

SOUTHERN REGION | IR-4 Project

The IR-4 Project has a 60-year track record of impact in the specialty crop community, with a focus on increasing pest management options for specialty crop growers. According to a 2022 economic analysis by Michigan State University, IR-4 contributes an estimated **$8.97 billion** to the U.S. GDP.*

By facilitating EPA registration of safe, effective pest management products, IR-4 helps specialty crop growers access the tools they need to produce healthy, abundant harvests— including fruits, vegetables, nuts, herbs, and horticulture crops.

IR-4's Southern Region (SOR), based at the University of Florida, is one of four regional offices. The SOR works with growers, extension agents, industry stakeholders, and land grant university researchers in 14 states and territories. These partnerships help IR-4 understand regional pest management needs in the field, and advocate for safe, effective solutions.

IR-4's federally-funded research evaluates a range of pest management strategies— including reduced-risk chemical products, biopesticides, emerging technologies, and integrated solutions to serve both conventional and organic production systems.

Learn more or submit a project request at ir4project.org.

**Read about Michigan State University's 2022 economic analysis here.*

WESTERN REGION | IR-4 Project

Image: NC State University

The IR-4 Project has a 60-year track record of impact facilitating pest management solutions for specialty crops and specialty uses. According to a 2022 economic analysis, IR-4 contributes an estimated **$8.97 billion** to the annual U.S. gross domestic product. **Seven jobs can be attributed to every $1,000** of public investment in IR-4.*

By facilitating EPA registration of safe, effective pest management products, IR-4 helps specialty crop growers access the tools they need to produce healthy, abundant harvests— including fruits, vegetables, nuts, herbs, and horticulture crops.

IR-4's federally-funded research evaluates various pest management strategies— including reduced-risk chemical products, bio-based pesticides, emerging technologies, and integrated solutions to serve both conventional and organic production systems.

IR-4's Western Region (WR), based at the University of California, Davis, serves growers in a range of climates, topographies, growing zones and cropping systems. Working collaboratively with stakeholders, the WR team advocates for regional priorities in IR-4's national research process. From arugula to almonds and from peonies to persimmons, IR-4 helps ensure the vitality of this productive and complex agricultural region.

Have a pest problem (or solution) in mind? Anyone may submit IR-4 Project Requests to evaluate pest control products. Projects are selected with stakeholder input through an annual priority-setting process. The WR team can help you submit a Project Request (see reverse for contact information).

**Read about Michigan State University's economic impact analysis here.*

Find these linked on the Outreach Page and RFC Contact page

New Videos

Food Use Workshop tutorial; IR-4 60 Years and Beyond

NEW VIDEO

The IR-4 Project Food Use Workshop Process

IR-4

Scan to view

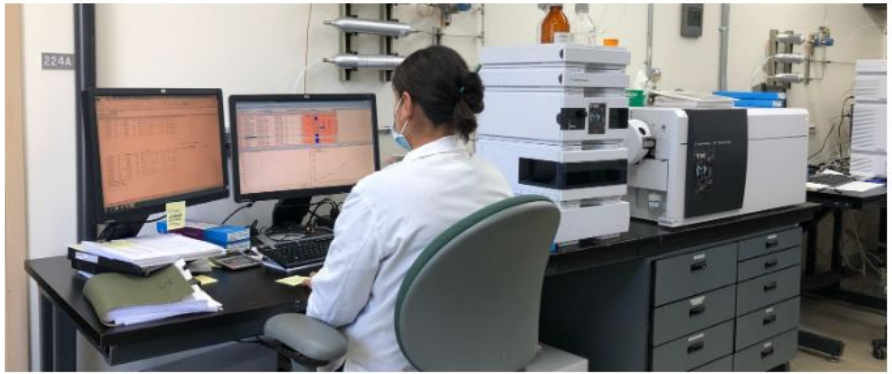

NEW VIDEO
The IR-4 Project:
60 Years + Beyond
1963-2023
60 YEARS
IR-4
Scan to view

VIDEO

Additional video content planned for 2024:

Video tutorial #4: Priority Upgrade Proposals

Stakeholder Resources



The IR-4 Project works with stakeholders from the specialty crop industry, land-grant universities, commodity groups, registrants and other partners to provide safe and effective pest management tools for specialty crop growers. The following resources are here to help stakeholders get involved in our research cycle.

Video Tutorials

Submitting a Project Clearance Request

Nominating Projects for the Food Use Workshop

The Food Use Workshop Process

Priority Upgrade Proposals (coming soon!)

Video links are now included on Stakeholder Resources Page

Digital Updates

Social Media, Newsletter, Website, Intranet

RECENT STORIES

Visit ir4project.org and scroll to Latest News to find these stories by Dave Kuack, Marylee Ross and Raven Baez.

SOCIAL MEDIA

SOCIAL MEDIA

Recent Highlights

LinkedIn (best traction seen here this year)

- **115 new followers** in the last 90 days
- Over **17,000 impressions** in the last 90 days

Facebook

- 14 new followers in the last 90 days
- Reach of over 2,000 in the last 90 days

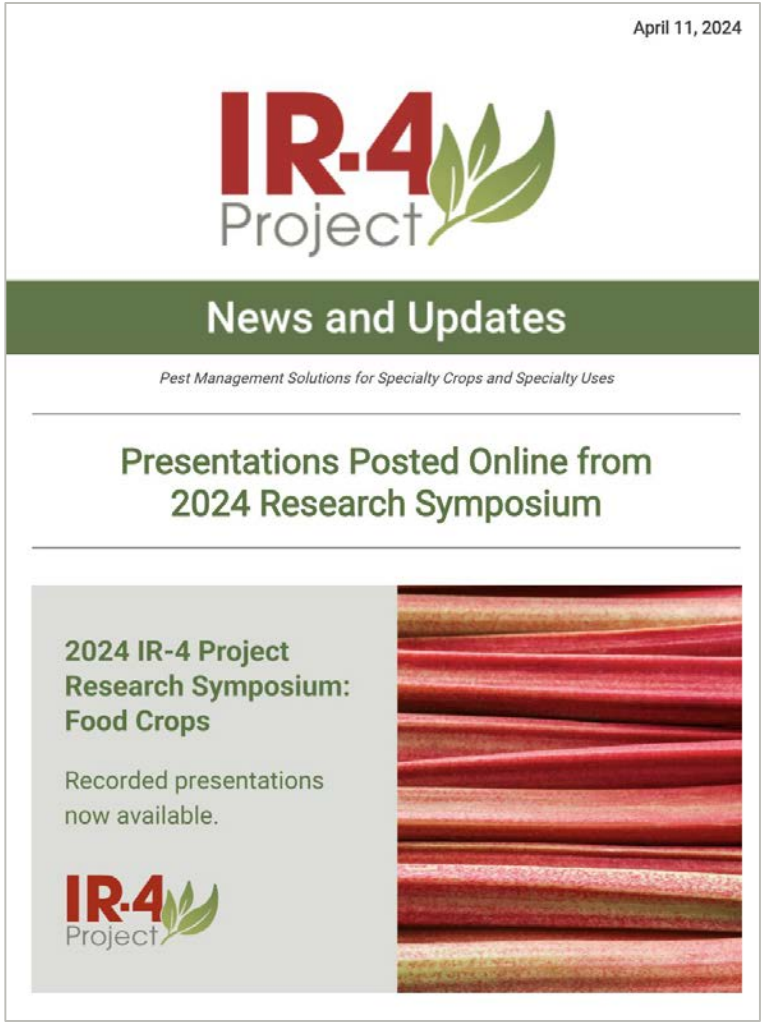
Instagram

- Now 118 total followers; growth is slow but the algorithm successfully attracts pest management **researchers** to our account

YouTube

- 310 total views of the “60 Years and Beyond” video
- 40 total views of the Food Use Workshop tutorial video
- 805 total views of the original “60 Years of IR-4” video

NEWSLETTER



April 11, 2024

IR-4 Project

News and Updates

Pest Management Solutions for Specialty Crops and Specialty Uses

Presentations Posted Online from 2024 Research Symposium

2024 IR-4 Project Research Symposium: Food Crops

Recorded presentations now available.

IR-4 Project

- Maintaining a 30% average open rate (healthy rate =20-40%)
- Over 2,000 total contacts
- Net gain of 30 subscribers in past 3 months
- Subscribe here

WEBSITE

Outreach

Accomplishments & Impact

Annual Reports and Year-End Summaries

2022 Annual Report
2022 Year-End Summary
Previous Annual Reports and Year-End Summaries

Path Forward 2.0 Documents

Path Forward Report 2.0
Path Forward 2.0 Implementation Plan

2022 Economic Impact Report

Executive Summary
Full Report
Economic Impact One Pager
Economic Impact Infographic

Vision 2020 Documents

Vision 2020 Summary
Full Report

IR-4 Awards Program

IR-4 Awards Page

Meeting Minutes

Outreach Materials

Informational One-Pagers

IR-4 Overview One-Pager (2024)
EHC Program One-Pager (2023)
North Central Region One-Pager (2024)
Northeast Region One-Pager (2024)
Southern Region One-Pager (2024)
Western Region One-Pager (2024)

one-pagers

Presentations

About IR-4 (2024)
About IR-4 (2022)
Environmental Horticulture Program (2019)

Promotional Videos

60 Years of IR-4 (2023)
IR-4: 60 Years and Beyond (2024)

We now have several video tutorials explaining parts of our research cycle; check them out on our Stakeholder Resources page.

IR-4 Project Logo

logo

Outreach Page updated (Find it on the homepage in the About IR-4 dropdown menu)

INTRANET

- A WordPress development site has been established through NC State Office of Information Technology
- Now working to set up the website's theme (the way it looks and the site architecture). NC State's web platform will allow us to use the IR-4 logo and color scheme; our updated color palette meets required visual accessibility standards.
- Have been working with HQ team members to brainstorm & hone the vision for how the intranet will be organized & what will be included (this is still a work in progress and will be iterative in nature as the site is built out)
- Our current freelance graphic designer is able to devote some hours to helping with the intranet build-out
- NC State marketing content team also available to provide strategic consultation
- Western Region's IR-4 Works being used as point of reference
- Project will be a focus for remainder of 2024
- Aim to have basic development site ready for testing by team members by the end of the year

AWARDS

IR-4 SOAR Award Nominations Now Open

- Nomination form can be found **here**
- All nomination forms and letters of support must be submitted by **11:59 pm PST on Wednesday, July 24**
- Recipients will be selected by HQ Management team and announced in the fall
    - Those present at the FUW will be presented with awards there

Training Committee and other training activities

Presenters: Christina Dineen & Rob Welker

IR-4 Project

Education & Training Committee Update

IR-4 PMC Meeting

July 2024

Christina Dineen

Planning for 2026 NEC

- **National Education Conference – 2026**
  - February 1-5, 2026
  - Working on securing venue contract
  - Leaning toward Charleston, SC

- **Committee Planning Activities**
  - Reaching out to potential outside speakers
  - Field Tour

IR-4 Project

National SOPs – Progress

- **Completed SOPs**
  - Guidelines for IR-4 National SOPs (N-01.1)
  - iAdvantage Electronic Field Data Book use (N-02.1)

  - Both in eQA and available for training
  - **We officially have IR-4 National SOPs!**

Document ID	Rev	Title	Effective Date	Location
SOP N-01.1	0	SOP N-01.1 Guidelines for IR-4 National Standard Operating Procedures	6/21/2024	IR-4 National SOPs
SOP N-02.1	0	SOP N-02.1 iAdvantage Electronic Field Data Book Use	7/2/2024	IR-4 National SOPs

IR-4 Project

National SOPs – What's Next?

- **SOPs in Progress**
  - EPA Inspection Procedures (N-01.2) – in review
  - QA Inspections (N-01.3) – writing phase
  - Training & Documentation (N-01.4) – to be written

- **Keeping IR-4 Employees Informed**
  - Informational webinar hosted on June 11
  - Plans for additional webinar(s)/support

IR-4 Project

MOR Protocol Template Revision

Background: Request from management to evaluate & revise residue protocol template to be used moving forward in 2025 studies.

- **Timeline/Where are we?**
  - Updated draft protocol has been through E&TC review
  - Working through comments before all IR-4 review
  - (Ambitious!) goal to complete before FUW in September

- **Highlights of Proposed Changes:**
  - Overall aiming for more clarity/ease of readability for researchers
  - Group background, field, & lab sections; restructure
  - Include more tables (instead of paragraphs)

IR-4 Project

IR-4 Advisory Updates

Background: As a result of protocol review/training discussions, some advisories were identified as needing updates.

- **Subgroup of Volunteers to Evaluate Advisories**
  - Plan to review & identify advisories to be updated
  - Work on revisions & get into review process

- ***Potential* Updates Previously Identified**

Update database screenshots & combine
- #2005-01 TS Container Disposal – Website Procedure
- #2003-02 TS Container Disposal

Consider eFDB
- #2003-01 Responding to FDB QA Findings

Add drip, drench, and other app. types
- #2004-02 IR-4 Application Type Definitions

IR-4 Project

Training/Resources

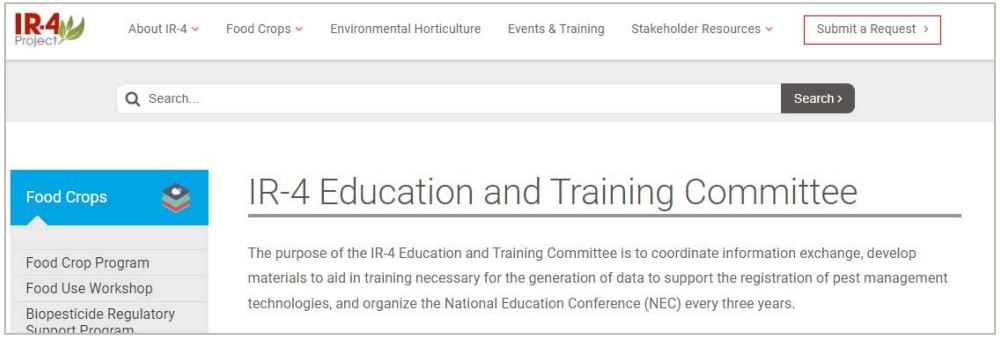
- **Virtual Training Opportunities**
  - RFC Quarterly Training Webinars
  - Future Laboratory Trainings (Hengel)
  - Future FRD Trainings (Welker)

Congrats to Nicole/Marylee on a successful Spring Webinar (May 21)!

Upcoming August 20th Topics: Harvest/sample modifications, completing the eFDB, and eFDB hardware differences

- **Future Website Updates for Training Resources**
  - Working with Hannah

Ideas:
- E&TC page revamp
- Add recorded trainings
- Forms for researcher input
- NEC page



FRD Training Update
Robert Welker

Some older training materials have been pulled together and the material is being updated as well as new material added. These materials will be broken down into modules that can be used for in-person training, online training and also put together as pre-recorded training videos that can be accessed online by any FRD as either an initial training or as a refresher on specific topics.

The following is a general outline of the materials that are being updated and developed currently (additional topics are being added as people review and comment, so this is not the complete/final list):

Field Research Director

- Definition
- Responsibilities
- Why? Critical work to complete residue research and support stakeholders.
- Relationships with SD, RFC, QA
- A position in a regulated environment
    - Reference materials available such as operational handbook, the eFDB guidance document, advisories and the GLP regulations
    - Skills that are important
        - Organization
        - Detail oriented
        - Communication
        - Urgency to complete

GLP

- Overview of why the GLPs exist and what is in 40 CFR Part 160
- Basic GLP with components that are pertinent to
    - Facilities
        - SOPs
            - What is required
            - Approval process
            - National SOPs – where they are, how to train on them and document that training
        - Master Schedule – availability, and providing dates in a timely manner
        - CVs and Training requirements/documentation
    - Equipment
        - Maintenance records
        - What equipment needs calibration and some guidelines on how to do it
        - Use of borrowed equipment

- Test substance
  - Receipt – including labeling and paperwork requirements
  - Storage (note on temperature requirements)
  - COA – confirmation that it is GLP and that it matches the protocol
- Adjuvants
  - Receipt
  - Storage

IR-4 Specifics

- IR-4 timeline
  - Priority setting
  - Trial assignments
  - Need for early protocols – Provide a realistic schedule.
  - Protocol review and providing comments prior to signature.
  - Immediate communication if trial will not be done in the assigned field season. Stress that there is a sense of urgency to complete trials as assigned to maintain submission schedules.
  - eFBD receipt
  - GLP Acceptance form and tentative schedule
  - Read and understand the protocol
  - Conduct the study – ship samples – complete notebook and send paper forms to HQ
- Protocol sections and requirements
- eFDB overview on use (facility SOPs, validation, data entry and use of paper – and what to do with the paper)
- Protocol amendments and deviations – procedures on reporting
  - SOP deviations – procedure for reporting
- Advisories
  - What and where they are
  - Procedure for establishing a new advisory
- Trial site
  - Simulating local commercial practice
  - Stacking trials
  - Thoughts on use of maintenance chemicals
  - Trial differentiation
    - Your trials
    - Another IR-4 location is within 20 miles
- Applications
  - Advisories again and close attention to application type
    - Overview of the different types of applications and how they are different
  - Application calculations prior to making the application
  - Speed calibration
  - Output calibration

    - Confirmation that application is acceptable
- Sample collection
    - Understanding protocol intent
    - Focus on contamination prevention
    - Cutting samples
        - Concern about enzyme degradation and documenting time to freezer
        - Request from lab
        - Duplicate samples for places that must ship via air transport (HI, PR)
    - Freezer alarms and shipping (truck and dry ice)
- Weather and irrigation
    - Expectations for data
    - Special attention to weather anomalies such as flooding, hurricanes
- QA Oversite
    - Cooperation for in-phase inspection scheduling
    - Overview of in-phase, facility and EPA inspections
- Completing the notebook and submitting raw data
    - Finish eFDB and submit
    - QC review
    - QA audit
    - Addressing QA audit findings in a timely manner
    - If one FDB is not completed the final report cannot be completed. Potentially delays registration for our stakeholders.

Technology Committee Update

Presenter: Josh Peterson

Technology Team Update

Technology Team

- **Assessed IR-4 needs via survey**
  - Priorities have shifted f rom e-signatures and eFDB centered topics to IR-4 database
- **Currently focusing on database needs and wants**
  - Brainstorming sessions underway
  - Prioritizing/organizing brainstorm ideas in progress
- **QA data management system**
  - Concerns/wants with current system
  - Preliminary look into alternative system options

IR-4 Project

Priorities Shifted

- **Many of the top priorities from t he survey were associated with eFDB usage**
  - This included e-signatures, handling of raw data, document uploads, ease of use with t he eFDB
    - These topics are being covered in eFDB update discussions and QA raw data handling procedures
    - This led to a shift in what t he technology team should focus on, potentially a new database system.

IR-4 Project

Database Needs and Wants

- **Brainstorming sessions underway**
  - Organizing thoughts and ideas currently ongoing

- **Sample of ideas coming out of brainstorming**
  - Visual/data consistency across platforms, Food Use, Biopesticide, Environmental Horticulture…
  - Researcher tools, such as budgeting, Lab ID's for sampling, scheduling tools
  - Role based data accessibility
  - Real time updates of data, pulling data from eFDB?

IR-4 Project

QA Data Management System

- **Concerns/wants of current system**
  - Discussions on what problems we have with our current system and if there are fixes or changes that can be made to address them.
  - Can additional features or uses of the system be implemented to improve our processes at IR-4

- **Preliminary look into alternative systems**
  - Orgainzing a list of alternative system options
  - Intial scope into different system options
    - How the systems work and how they would fit our needs
    - Cost effectiveness/efficiencies

IR-4 Project

Committee Update:
Network Expansion Project

Presenter: Dr. Jaimin Patel

IR-4 Project

NET (Network Expansion Taskforce) updates from Jaimin:

- Monthly meeting with NET taskforce members: Jerry Baron, Rich Bonnano, Michelle Samule-Foo, Michelle Infante-Casella, Gregory Goins, Moses Kairo, Simon Zobelo, Alice Axtell, Jaimin Patel
- An article on IR4 Project written by Jaimin Patel & Hannah Ross was published in Phytopathology News in Jan 2024 issue (https://www.apsnet.org/members/community/phytopathology-news/2024/january/Pages/IR-4-60-years.aspx) ; Shared the article on LinkedIn as well.
- Events attended by our biologists
  1. Presented a poster at Southeast Regional Fruit & Vegetable Conference, Jan 2024 (Roger)
  2. Set up a booth and poster at National Alliance of Independent Crop Consultant (NAICC) conference in Texas, Jan 2024 (Alice) – There was an efficacy workshop that Alice recommends to present in this session in future; About 60-70 attendees in the session
  3. Presented a poster at North American Raspberry and Blackberry Association annual meeting; Wilmington, NC. February 2024 (Roger)
  4. Delivered a talk and set up IR4 booth in 1890 Association of Research Directors (ARD) conference, Apr 2024 (Jaimin) – met with potential researchers, college deans, students and postdocs; Connected an urban entomologist to Cristi Palmer
  5. Delivered a talk in North Carolina Association of County Agricultural Agents in Wrightsville Beach, NC; June 2024 (Jaimin) – Almost all (except 1) agents did not know about IR4
- Simon Zobelo Attended regional Entomological Society of America meeting, March 2024
- Alice and Simon wrote an article on Ir4's work on entomology-related project and expect to submit to "Entomology for All'' before September 5 deadline.
- New video posted on IR4 website about "Food Use Workshop Process" to introduce newcomers to the Food Use Workshop
- Jaimin and Simon talked to Berran Rogers (Small Farm Coordinator at UMES) about how we can work together to help small growers on their pest management challenges
- Jaimin shared Industry Technology announcement with all 1890 HBCUs
- Jaimin connected potential 2 new researchers (a pathologist and an entomologist) with Southern and North-Central RFCs.
- IR4 has a new video featuring Researchers Perspectives on Looking beyond 60 years
- Krystal informed in RFC/HQ meeting on 6-20-24 that IR4 is preparing a PUP Instructional video
- Jaimin has been invited by Dr. Alton Thomson to present at the Annual 1890 ARD Business Meeting on September 23rd at the Sheraton in Raleigh. This opportunity aims to foster connections with stakeholders from Historically Black Colleges and Universities (HBCUs) and to enhance our network within this community.

Proposed parameters of 2025 field research program

Presenter: Dr. Alice Axtell

IR-4 Project

2025 Resource Allocations

Jerry Baron, PhD
Alice Axtell, PhD

The Big Picture

Proposed 2025 Allocation Versus Current Funding

	2024 Allocation $15 M BUDGET	2025 Allocation $15 M BUDGET	
		ARS Funds QA	ARS Does NOT Fund QA
Core	$8,475,287	$8,475,287	$8,475,287
Field Program Discretionary	$436,129	-68K ↓ $368,113	-68K ↓ $368,113
NIFA Residue Trials	$2,387,539	-138K ↓ $2,250,000	$2,400,000
NIFA Performance Trials	$1,123,990	+76K ↑ $1,200,000	$1,100,000
Integrated Solutions	$535,560	+64K ↑ $600,000	$550,000
Environmental Horticulture	$654,488	$650,000	$650,000
TOTAL	$13,874,400	$13,874,400	$13,874,400

↑↓ Arrows indicate major changes from 2024. A green arrow pointing up indicates an increase in the budget available compared to the prior year; a red arrow pointing down indicates a loss.

IR-4 Project

Resource Allocation for Residue Trials & Resulting NEW “A” Priorities

In 2025 IR4 Can Support Up To 43 NEW "A" Priorities (Pending ARS Funding)

Funding Source	No. of Residue Trials[1]	
	2025	
	ARS Funds QA	ARS Does NOT Fund QA
NIFA	290	309
ARS	+ 70	+ 0
Canada	+ 14	+ 14
California	+ 0.0	+ 0.0
Estimated No. of RED "A" trials	- 40	- 40
TOTAL No. of Trials	**= 334**	**= 283**
TOTAL No. of A Priorities[2]	**334 / 7.7[2] = 43**	**283 / 7.7[2] = 36**
No. of PUPs/Regional Upgrades	**6**	**6**
NEW FUW Priorities	**43-6 = 37**	**36-6 = 30**

[1]Cost of each residue field trial remains unchanged (including 11.11% IDC)= **$7,777**

[2]Average No. of residue studies per project was **7.5** in 2024 and it has increased to **7.7** in 2025.

Contrary to the previous years, the California contribution is NOT included at this time.

Resource Allocation for Product Performance Trials & Resulting “H+” Priorities

In 2025 IR-4 Can Support 8-9 “H+” Priorities (Pending ARS Funding)

	ARS Funds QA	ARS does NOT fund QA
2025 NIFA Funds available for Performance Trials	$1,200,000	$1,100,000
$$ Needed to complete 23/24 Research Plan	- $526,667	-$526,667
$$ Left for new performance trials	= $673,333	= $573,333
No. of 2025 trials that can be funded	$673,333 / $8,300[1] = 81	$573,333 / $8,300[1] = 69
TOTAL No. of new priorities that can be funded assuming 3 perf. trials per project[2]	**81 / 3 = 27**	**69 / 3 = 23**
TOTAL 2025 “H+” PRIORITIES (33%)	**27 × 0.33 = 9**	**23 × 0.33 = 8**
Approx. 70% of NEW “A” priorities has a performance component	**43* × 0.7 = 30**	**36* × 0.7 = 25**
Anticipated No. of residue studies with a performance component that will be started in 2025	**30-9 = 21**	**25-8 = 17**

[1]The average cost of a performance trial (including 11.11% IDC) was $7,777 in 2023 and $8,300 in 2024
[2]Average No. of performance trials per project is = 3
*No. of 2025 FUW “A” Priorities

Resource Allocation for IS

In 2025 IR-4 Can Support 9-10 NEW "A" Priorities (Pending ARS Funding)

	ARS Funds QA	ARS does NOT fund QA
2025 NIFA funds available for IS trials	$600,000	$550,000
$$ Needed to complete 23/24 Research Plan	-$255,000	-$255,000
$$ Left for new IS trials	= $345,000	= $295,000
No. of 2025 trials that can be funded	$345,000 / $11,000[1] = 31	$295,000K / $11,000[1] = 27
2025 No. of NEW IS Priorities[2]	31 / 3 = **10**	27 / 3 = **9**

[1]The average cost per IS trial including 11.11% IDC was $9,400 in 2023 and it was **$11,000** in 2024.
[2] The average number of trial per project is 3.

NEW Proposed Option for IS

Proposition:
Reduce New Priorities For 2024 By Half & Double the Funding Per Trial

Funding Source	ARS Funds QA	ARS does NOT fund QA
2025 No. of NEW IS Priorities	10	9
Average Cost Per Trial in 2024	$11,000[1]	
Proposition		
2025 No. of NEW IS Priorities	5	4
Increase Cost Per Trial Up To	$22,000	

IS projects are significantly **more complex** than product performance trials that support residue studies and, because of that, require **major efforts** necessary to find the so called "needle in the haystack".

[1]The average cost per IS trial including 11.11% IDC was $9,400 in 2023 and it was **$11,000** in 2024.

Summary

2024 FUW New Priorities

Type of Data	Priority Type	TOT NEW	
		ARS Funds QA	ARS Does NOT Fund QA
Residue +/- Product Performance	"A"	**37**	**30**
PUPs / RUs	"A" or "H+"	**6**	**6**
Product Performance ONLY	"H+"	**9**	**8**
Integrated Solutions (OPTION 1)	"A"	**10**	**9**
Integrated Solutions (OPTION 2)	"A"	**5**	**4**

IR-4 Project

Thank you!

IR-4 Project

iAdvantage electronic Field Data Notebook Update

Presenter: Philip Moore

IR-4 Project

eFDB Update

July 2024 PMC Meeting

Overview: eFDB Usage by the Numbers*

- **333** eFDB trial notebooks are in use
- **232** applications conducted / entered in eFDB
- **16** eFDB have reached the QC review phase
- **13** eFDB have reached the QA audit phase
- **62** Field personnel involved in eFDB trials
  - **>66%** are using the program offline

IR-4 Project

*Numbers as of 6/24/2024

Overview: Training and Support Activities

- **In-Person Regional Training events occurred in February - April 2024**
  - Gainesville FL: 17 attendees + virtual & recording available
  - Salisbury MD: 9 attendees
  - Prosser WA: 5 attendees
  - East Lansing MI: 9 attendees
  - Honolulu HI: 4 attendees
  - Canada (virtual): 16 attendees & recording available
- **20 weekly Q+A Zoom meetings December – April for all personnel**
- **7 QA/QC and RFC Zoom meetings conducted to share concerns and address issues**
- **Mid-May eFDB check-in for each FRD to review their eFDB usages/ uploaded documents and see if they had questions**
  - Reminder/ feedback on document upload rules
  - Request/ praise for providing GLP trial activity estimated dates to populate Master Schedule

New processes when using the eFDB

- **Estimated trial activity dates now provided via eFDB form instead of mailed card**
  - 86% of trials have provided estimated dates – a significant improvement
  - Excluding two “outlier” FRDs: 91% of trials have provided estimated dates
- **FRDs no longer ship paper notebooks to RFC for QC review, with reviewer asking permission to make changes to the notebook on behalf of FRD**
  - Instead, QC conducted virtually and FRD retains paper raw data and complete their own changes
- **QC/ RFC no longer ship paper notebooks to QA for audit, with auditor shipping notebook to HQ when audit is completed**
  - Instead, FRD ships paper raw data directly to HQ. QA (if outside HQ) is provided a scan of it.
- **Reduced Cost: instead of three shipments of each notebook, now only one!**
  - Paper usage per trial notebook reduced dramatically, also reducing shipping cost

Paper raw data of first eFDB received at HQ →

← A typical trial notebook

New and future processes when using the eFDB

- **FRDs are now following the IR-4 National SOPs for use of the eFDB**
  - Previously, this was a HQ SOP
- **QA is able to review study data prior to and after critical phase audits**
- **SDs and RFCs are able to review study data anytime**
- **eFDB Admin are able to generate status reports, run data queries, and review data across trials**

- **Discussions on-going with QA & RFCs to create “Facility Files” eFDB**
  - Used to compile equipment and personnel records traditionally added separately to each FDB
- **Final Reports: Field Data Summaries can now be generated using the eFDB!**
- **Planning eFDB training meetings for Fall, Winter, and Spring**

Challenges, changes, and improvements

- **Philip and Jimmy are quickly providing direct support to FRDs as needed**
- **Biggest struggle appears to be with document uploads:**
  - FRDs must provide the location of the original document, field ID no, and attribution info on file
  - Can be confusing when not done and/or if it requires corrections at QA/QC phase
- **iAdvantage recently updated the eFDB software and website for minor security issues:**
  - FRDs must maintain a maintenance log for their device(s).
- **Feedback for changes to the system for 2025 via a virtual “suggestion box”:**
  - 24 responses received suggesting improvements
  - These require coding changes and added cost for iAdvantage to implement
  - Budgeting $150k for this cost, based on cost estimate provided during pilot stage
- **28 errors or unusual circumstances have been logged, since 1st GLP trial in ‘23:**
  - Strange output from the system, “bugs” in the code, errors in notebook set up by the Admins
  - Most are resolved quickly by iAdvantage (<24 hours)
  - No negative impact on any trials

The eFDB system appears to be well accepted and easily used so far. Some have struggled with making the changes required at QC/QA review. After the 1st attempt, understanding and data quality improves.

Crop Protection Technology – trends/takeaways and cahllenges

Presenter: Dr. Jerry Baron & Dr. Debbie Carpenter

IR-4 Project

Crop Protection Technology Trends/Takeaways and Challenges

Year in Review

- Still time; however not many new requests submitted for consideration at upcoming priority setting cycle
- Stop light analysis for 2023 workshop
  - More Orange and Red ratings/Limited number of Green
    - Endangered Species concerns/mitigations
    - Fungi resistance concerns and impact on biological medicines
    - From recent EPA meeting – Watch out Pollinator Protection
- Company Meetings – Typically this is IR-4's first exposure to new technology
  - Not a whole lot of new options introduced
  - FMC messaging – Looking for products that make a difference
- Industry Technology Session
  - Only 12 companies signed out to share new information - Why?
    - Nothing to share…… maybe
    - Timing of ITS …… maybe
    - Companies no longer comfortable to share their new technology …… maybe

IR-4 research allocations observations

- Even with the reduction of new “A” priorities, competition at FUW is less intense
  - Not all projects are deemed important
  - In some cases, projects are established to get Centers adequate work
- PMC shifted some funds from residue study bucket to product performance bucket to clean-up backlog…..Thanks
  - Allowed IR-4 to reduce a sizable amount of product performance backlog
- Integrated Solutions
  - Protocols are limited in scope-Its not meeting original intent
    - Aggressive (short) time to get work planned and out
    - Not enough funds to do real complex projects

Biopesticides

Spent a sizeable amount of time over to last year to investigate the future of biopesticide & emerging technologies - Attended multiple workshop/meetings and spoke to many key members of the this segment of crop protection

Conclusions:

- Biopesticide/Emerging Technologies markets are growing a faster than chemical pesticides.
- Many companies (>1200) are looking to capitalize on regulatory, market and public perception challenges to take a larger share of crop protection
- Predicted that market share of competing technologies will cross over by 2045
- Brazil is leading the globe in biopesticide registrations, US is a distant second
- Venture Capitalists funds for biopesticide R & D has been significantly reduced over the past two years.

Biopesticides conclusions, continued

- Major companies (Bayer/BASF/Corteva/FMC/Syngenta/etc.) will continue to diversifying their product line and developing partnerships with small/start-up companies to partner with development costs and share in the registration success.
- While the audience may have been biased, there is significant feeling the 3rd-4th generation biopesticides will be a key component of future pest management systems. Precedent set on registration RNAi and peptides
- The major needs to sustain the growth of the segment is
  - Unbiased product performance data to answer "***DOES THE TECHNOLOGY WORK***"
  - Demonstration plots to show growers that products can work
  - Integration with existing technology
  - Cash for development

Biopesticide – Opportunities

- Western Grower's Platform 10
  - Funding Biopesticide efficacy data development on grower fields to test for efficacy and provide demonstration opportunities
  - Deep concern with California Sustainable Pest Management targets, chemical pesticide use will be limited in California
  - Help decelerate the loss of ag production to other growing areas
- Platform 10 is part of global grower network to cooperate in biopesticide efficacy data development
  - Australia / New Zealand / UK / EU
  - Limited knowledge of IR-4 and limited knowledge of Minor Use Foundation
- Danford Foundation-Assisting some biopesticide development by performing studies

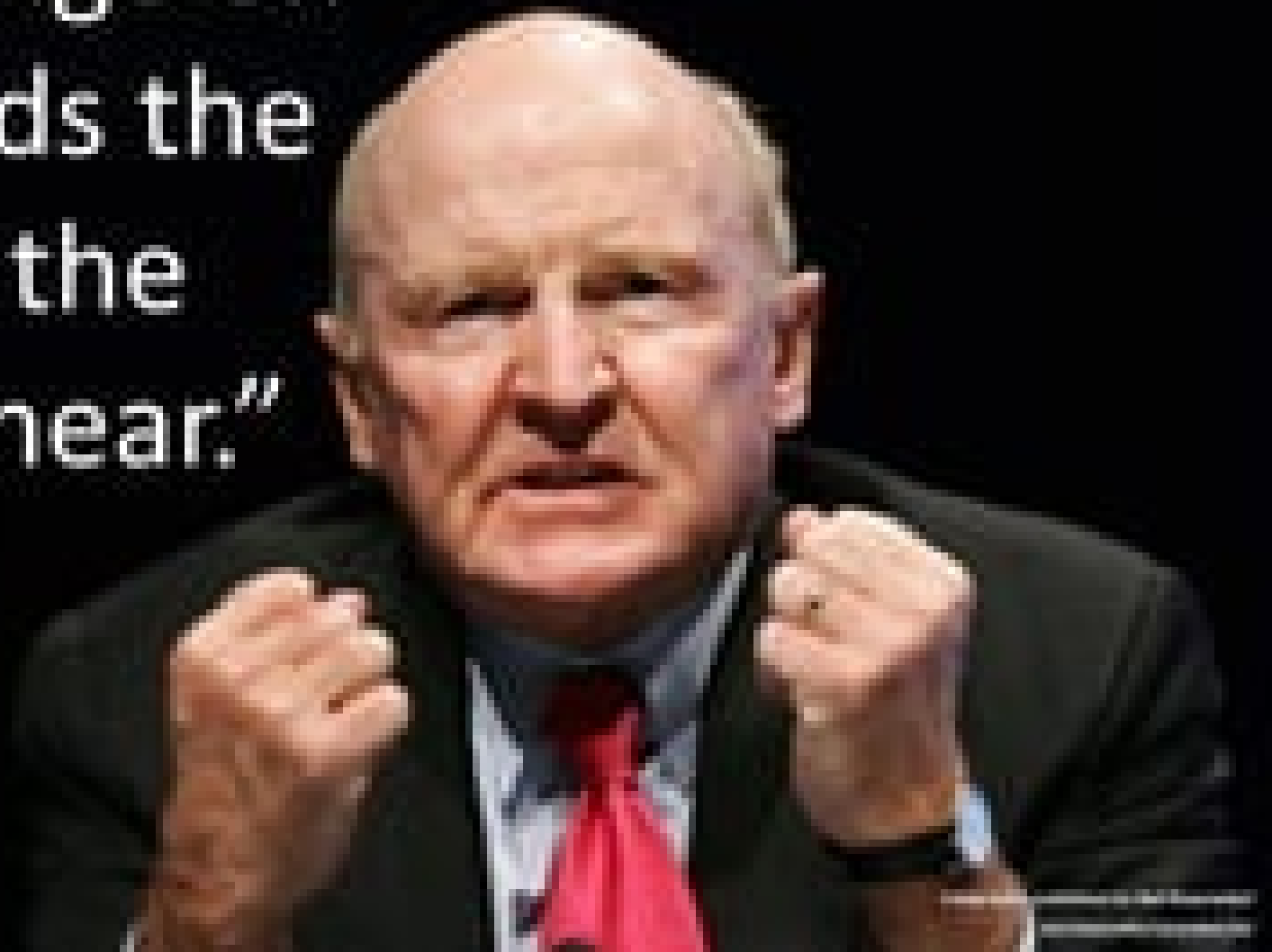
IR-4 Biopesticide Regulatory Support

Provide regulatory services to help technology developed by public sector scientists and small business get through EPA's regulatory process.

IR-4 also responds to situations when growers want harmonized registrations (US/Canada with greenhouse crops) or when EPA referrers someone to IR-4

- IR-4, working with EPA, helps determine what is necessary and develops a strategy to achieve registration.
  - Highly dependent of EPA acceptance on study waivers…..Good news waivers are still being accepted. A lot is based on their knowledge of the technology
  - **IR-4 does not have resources to perform required studies. In most cases, cooperating party does not have resources to fund studies. As VC money becomes increasingly difficult to find, the data gaps will grow larger.**
- IR-4 holds significant respect by many in the industry for what we have done to further biopesticide registrations

"If the rate of change on the outside exceeds the rate of change on the inside, the end is near."
- *Jack Welch*



Final questions/thoughts…

What is our end game?

Is it new **chemical pesticide registrations** for specialty crops or new **crop protection solutions** for specialty crops?

- Chemical pesticides, and the need for residue data will not go away. IR-4 will have a role to play in helping get these materials approved
- Companies, state, EPA are seeking more product performance data or prior to registration to prove that the chemical pesticides are safe and effective.
- Many new technologies are being viewed as the replacement products for elimination of currently registered products. They are different and will need different types of support

Ways of Working in the Food Program – Addressing partner issues

Presenters: Dr. Debbie Carpenter & Dr. Jerry Baron

IR-4 Project

Operational Challenges & Potential Solutions

Operational Challenges

- Government and Private Funding
- Timing of partner input
  - EPA Stoplight Analysis
  - Approval of new requests
  - Comments on protocols
- Test & Reference Substances
- Modernization of systems

Workload Issue-We have significant work to do in little time

- Food Workshop in September → NRPM in October →Spring research
  - Residue field trials assigned at NRPM
  - Product Performance, IS and Ornamental trial assignment occurs after NRPM
- We draft and vet protocols with companies & researchers before authorizing at the FUW→ delays protocols
  - Led to delays in getting protocols out on timely manner
- Test substance ordering is getting more complex
    - Company systems and larger demands for IS Projects

Significant stress on IR-4 systems and people

Challenges articulated by companies

- Projects with new products added after the Workshop
- Incomplete Directions for Use when reviewing PCRs
- Patchwork of Test Substance requests
- Disconnect between performance and residue protocols
- Quick turn around requested for review of new PCRs

Projects added after the Food Use Workshop

- Its our goal to have a solid research plan for residue and performance shortly after NRPM.
  - What additional steps can we take to minimize modifications to research?
- Integrated Solutions is the main driver of the issues.
  - IS Protocol development can be complex and takes time. We don’t know what will be included until closer to the field season.
  - How do we get IS Protocols, and associated needs for products aligned with company deadlines?

Incomplete Directions for Use (DFUs)

- Some PCRs that are submitted close to the PCR submission deadline come in with limited information
- Earlier deadline for submissions of new requests will help. In 2024, deadline modified to July 31. For 2025, July 1
- Potential improvements
  - Educate PCR submitters on the need for complete and logical directions for use. Reject/return if not complete
  - Just because DFU info is provided, it may not be logical.
    - Upon receipt of new PCRs Biologists shall look at labels, existing performance data. If DFU are not consistent, contact researchers and discuss discrepancies prior to vetting with company. With concurrence of primary submitter, HQ can modify submitted DFUs when appropriate.
    - Previous PCRs with little DFU information must be updated.

Test substances

- One person will be assigned to be the point person for all test substance requests to a registrant
  - Target date of all requests is Dec 15.
- Consider taking over the reference substance orders from the lab, and also monitor these from HQ.
- Limiting requests to GLP test substance and reference substance requests focuses on what we really need from the registrant.
  - Test material for performance trials and IS trials can be sourced elsewhere (except in the case of a new active ingredients)

Disconnect between performance and residue protocols

- For project where performance and residue are needed (about 75% of the studies in 2024), HQ will develop systems so that protocol development is connected
  - Both protocols will be sent to the company at the same time to facilitate ease of review.
  - Once protocol is ready for authorization, the Biologist would sign the performance protocol, and the SD would sign the residue protocol.
- For performance protocols where there is no corresponding residue study, the biologist would draft the protocol, and send to the registrant for comment.

Summary of Potential Solutions

1. Assign one person to perform test substance ordering for residue research. Discuss performance, IS and maybe ornamental research for future improvements.
2. Biologists would be responsible upon receipt of new PCRs to hone in on an acceptable use pattern. Work with companies to vet a sound DFU prior to FUW.
3. For project with a residue study and a E/CS project HQ will develop systems to ensure that the protocols are appropriately connected and that they are submitted to the companies at the same time.
4. Provide increased time between Integrated Solutions priority setting and start of research.
   - Maintain traditional timing for Residue and Product Performance Priorities; established at FUW in September will be in field next available season

HQ Preferred Option

Decouple IS Priority Setting from Food Use Workshop

- IS priorities established at virtual workshop in late March (or earlier is feasible)
    - Provide Biologist approx. 12 months to seek out products for testing, gain approval from company and obtain test substances
    - Set aside time at Food Workshop to share and discuss preliminary IS protocols and seek additional guidance
- RFC concern-limited time to properly prep for virtual workshop for them and the stakeholders
    - HQ concur with RFC, this is a real concern

RFC Preferred Option

Maintain IS Priority Setting at Food Use Workshop but delay research by approx. 18 months

- This will allow RFC to continue their existing process in preparing for IS priorities and give Biologist ample time to prepare
- HQ concern-This is a very long (more than needed) time to start research. It will extend time to registration of solution by at least one year.

Time Comparison

	HQ Preferred Option	RFC Preferred Option
Date of Priority setting	March 2025	September 2025
Start of Research	Approx. March 2026	Approx. March 2027
Results of two years of research	Approx. December 2027	Approx. December 2028
Start of Residue Study	Approx. March 2028	Approx. March 2029
Registration*	Approx. October 2032	Approx. October 2033

*This assumes approx. 30 months for IR-4 data development and 24 months for EPA review

Search for Hybrid Option

Goal is to develop a system to allow RFC to maintain existing IS priority setting process before and at FUW while giving Biologists ample time to develop protocols

Process Improvements in the IS Platform

Presenter: Dr. Alice Axtell

IR-4 Project

Process Improvements: IS Platform

Alice Axtell, PhD

As of 2023, the IS Purview Has Expanded

Research Areas

- **ORIGINAL:**
  - **Pest Problem Without Solutions (PPWS)**
  - **Pest Resistance Management (RESIS)**
  - **Organic Food Production (ORGNC)**
  - **Residue Mitigation (MITIG)**
- **NEW:**
  - **Plant Growth Development (PGD)**
  - **Other (OTHER)**

IR-4 Project

Products / Devices / Practices

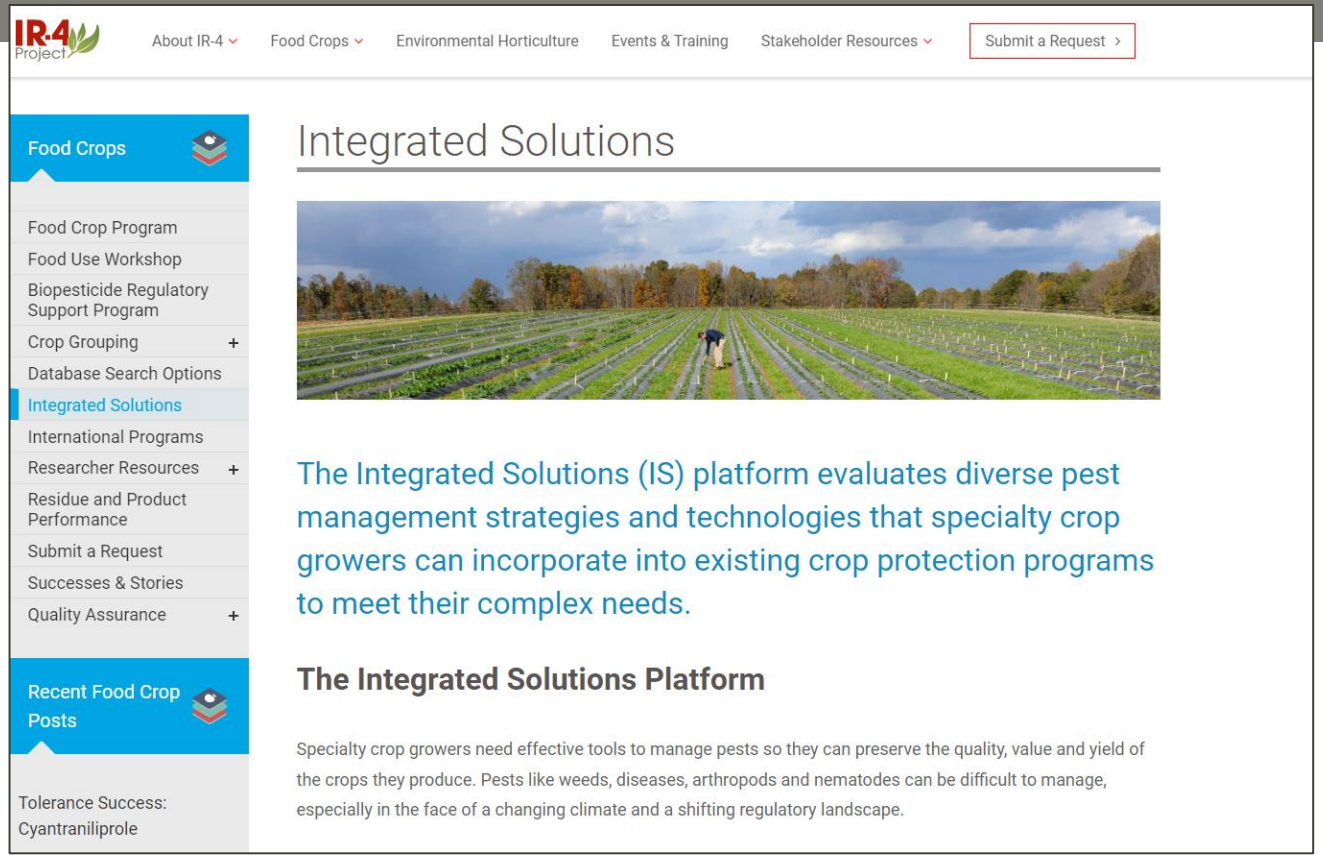
- **Products** such as, but not limited to, pesticides & biopesticides, plant growth regulators, attractants, repellants, **biostimulants**, **biocontrols**, etc.
- **Devices** such as, but not limited to, **precision agriculture technologies**, drone or bee-enabled pesticide applications, etc.
- **Cultural Practices** such as, but not limited to, cultivar resistance, cover crops, etc.
- **Other** reduced-risk pest management options.

NEW !

IR-4 Project

More Advanced & User-Friendly Tools

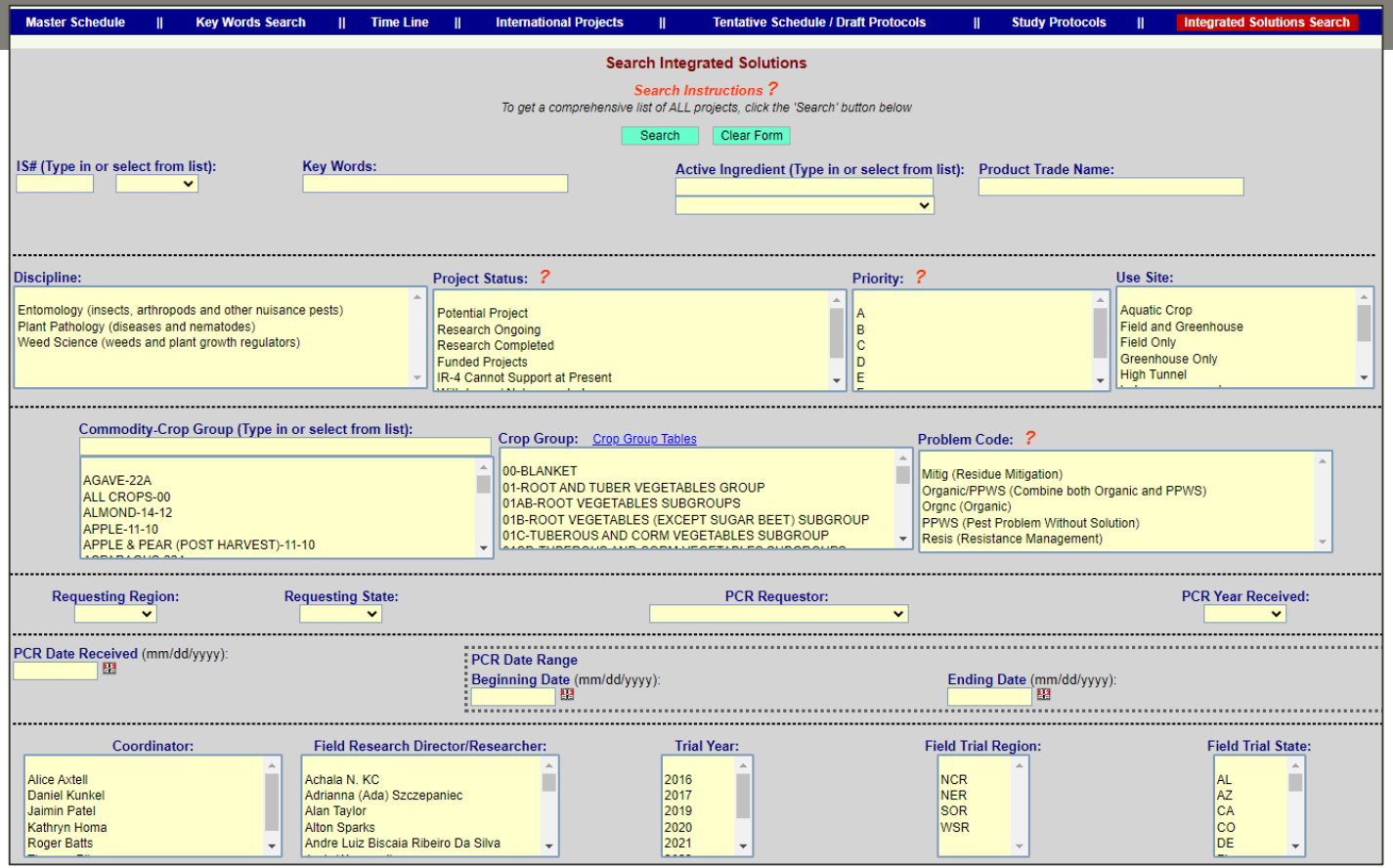
Website Updates



The IS Platform changes were strategically captured on the website.

IR-4 Project

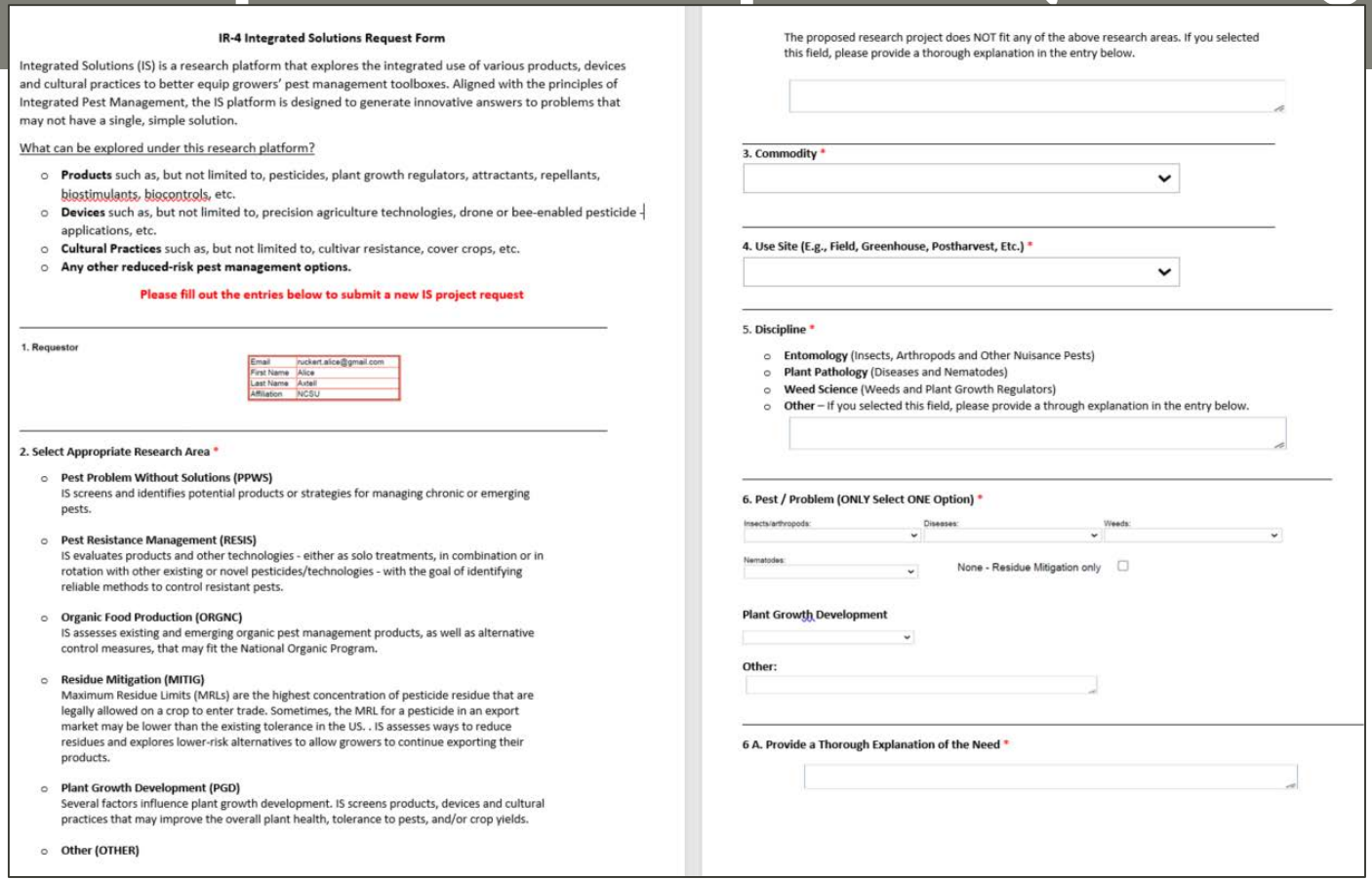
Database Updates



A more refined IS database search tool was developed to help stakeholders navigate IS studies.

IR-4 Project

Request Form Updates (Coming Soon)



IR-4 Integrated Solutions Request Form

Integrated Solutions (IS) is a research platform that explores the integrated use of various products, devices and cultural practices to better equip growers' pest management toolboxes. Aligned with the principles of Integrated Pest Management, the IS platform is designed to generate innovative answers to problems that may not have a single, simple solution.

What can be explored under this research platform?

- **Products** such as, but not limited to, pesticides, plant growth regulators, attractants, repellants, biostimulants, biocontrols, etc.
- **Devices** such as, but not limited to, precision agriculture technologies, drone or bee-enabled pesticide applications, etc.
- **Cultural Practices** such as, but not limited to, cultivar resistance, cover crops, etc.
- **Any other reduced-risk pest management options.**

Please fill out the entries below to submit a new IS project request

1. Requestor

Email	ruckert.alice@gmail.com
First Name	Alice
Last Name	Axtell
Affiliation	NCSU

2. Select Appropriate Research Area *

- **Pest Problem Without Solutions (PPWS)**
  IS screens and identifies potential products or strategies for managing chronic or emerging pests.
- **Pest Resistance Management (RESIS)**
  IS evaluates products and other technologies - either as solo treatments, in combination or in rotation with other existing or novel pesticides/technologies - with the goal of identifying reliable methods to control resistant pests.
- **Organic Food Production (ORGNC)**
  IS assesses existing and emerging organic pest management products, as well as alternative control measures, that may fit the National Organic Program.
- **Residue Mitigation (MITIG)**
  Maximum Residue Limits (MRLs) are the highest concentration of pesticide residue that are legally allowed on a crop to enter trade. Sometimes, the MRL for a pesticide in an export market may be lower than the existing tolerance in the US. . IS assesses ways to reduce residues and explores lower-risk alternatives to allow growers to continue exporting their products.
- **Plant Growth Development (PGD)**
  Several factors influence plant growth development. IS screens products, devices and cultural practices that may improve the overall plant health, tolerance to pests, and/or crop yields.
- **Other (OTHER)**

The proposed research project does NOT fit any of the above research areas. If you selected this field, please provide a thorough explanation in the entry below.

3. Commodity *

4. Use Site (E.g., Field, Greenhouse, Postharvest, Etc.) *

5. Discipline *

- **Entomology** (Insects, Arthropods and Other Nuisance Pests)
- **Plant Pathology** (Diseases and Nematodes)
- **Weed Science** (Weeds and Plant Growth Regulators)
- **Other** – If you selected this field, please provide a through explanation in the entry below.

6. Pest / Problem (ONLY Select ONE Option) *

Insects/arthropods: Diseases: Weeds:

Nematodes: None - Residue Mitigation only

Plant Growth Development

Other:

6 A. Provide a Thorough Explanation of the Need *

A request form that addresses the new IS research areas & possible resolutions was developed to help stakeholders submit concise, yet comprehensive requests for assistance.

IR-4 Project

What's Next:
Broadcast & Find the "Needle in the Haystack"

Help Us Spread the News!

- **Educate** the public @ conferences & workshops
- **Help** with a Video Tutorial (under scrutiny)
- **Solicit** stakeholders' project request submissions
- **Encourage** data publications / grant applications
- **What else?**

IR-4 Project

Thank you!

IR-4 Project

Biopesticide Regulatory Support Platform – Detailed Discussion

Presenter: Dr. Jerry Baron

IR-4 Project

PROCESS TO ASSESS A NEW REQUEST FOR BIOPESTICIDE REGULATORY ASSISTANCE

The IR-4 Project Executive Director will assign a staff member who will be responsible to process new requests for Biopesticide Regulatory Assistance Platform utilizing the following steps:

1. PRELIMINARY ASSESSMENT
    a. Assess if the Request for Assistance (PCR) is different than any existing request. IF YES, establish a new PCR entry in IR-4 Biopesticide Regulatory Assistance Database (BRAD). If the Request for Assistance is substantially similar to an existing request, add a comment to the BRAD about the submission of a substantially similar request including additional submitter(s) and additional requesting state(s).
    b. Assess if the PCR is relevant in the IR-4 Biopesticide Regulatory Support platform which includes
        i. Is the Request for Assistance from someone in the public sector or associated with that crop (i.e. commodity association) and
        ii. Is or will the technology will be regulated by EPA's Biopesticide and Pollution Prevention Division.
    c. If YES to 1(b) (i) and 1(b) (ii), proceed to Step 2. If NO, seek guidance from IR-4 Executive Director

2. COMPANY/SUPPORTING GROUP COMMITMENT TO REGISTER
    a. Solicit input from the company that owns/manages the technology to assess if they are willing to cooperate/partner with IR-4 in facilitating the registration, including (but not limited to) providing necessary data required by EPA and their willingness to register the product/use once approved. If company is willing to cooperate/partner with IR-4, make note in the BRAD and proceed to Step 3. If company or supporting group that owns/manages the technology has the proposed use(s) as a registration objective or they are not willing to cooperate with IR-4 make appropriate note in IR-4 BRAD and stop further assessment of PCR.

3. SECONDARY VETTING-Complete the following Survey for each potential PCR
   IR-4 Executive Director will appoint a team of reviewers who will assess each new PCR on a 0-100 scale. The Review team will focus on one or more sections.

Section 1- Biology (maximum of 20 points)

Does the product effetely control or suppress the target pest. Include documentation or reference to support the conclusion.

- If “Control” provide between 7-10 points
- If “Suppress” provide between 3-6 points
- If “Not Effective” or no hard data is available provide between 0-2 points

What is the importance of the pest in the requested cropping system?

- If “Always Damaging” provide between 7-10 points
- If “Under Certain Conditions can be Damaging” provide between 3-6 points
- If “Damage is Limited” or no data is available provide 0-2 points

Section 2 –Product Support (Maximum 10 points)

- Product is supported by company that is an experienced registrant in the US (7-10 points)
- Product is supported by company that is mainly based outside of the US (3-6 points)
- No company or company has no regulatory experience in the US (0-2 points)

Section 3-EPA'Experience with Technology (Maximum of 10 points)

- Known technology/Known data requirements(7-10 points)
- Novel technology/with known data requirements (3-6 points)
- Novel technology/with unknown data requirements (0-2 points)

Section 4-Estimate of Financial Support for Product (Maximum of 10 points)

- Company/group has significant resources to develop data needed for registration (7-10 points)
- Company/group has some resources to develop data needed for registration (3-6 points)
- Company/group has no resources available to develop data needed for registration (0-2 points)

Section 5-Path Forward to Registration/Likelihood of Waivers (Maximum of 50 points)

- All required studies are acceptable (50 points)
- Most (>75%) of the required studies acceptable, other required studies in progress (40 – 45 points)
- Some (<74%) of required studies are acceptable, other required studies in progress (30 -40 points)
- Testing for all studies in progress (25 points)
- Testing for most (>75%) required studies in progress (20 points)
- Testing for some <74%) in progress (5-15 points
- None of the required studies are available or in progress (0 points)

Review team members will be asked to provide the most appropriate score within each section. If there are multiple reviews for a section, their scores for that section will be averaged.

IR-4 will only provide regulatory assistance it the TOTAL score is above 70. The higher the score, the higher the project is in IR-4 Biopesticide Regulatory Assistance Que. If a PCR is below 70, the stakeholder submitting the PCR can request a reassessment every 12 months.

Closing out the current grant

Presenter: Dr. Krystal Chojnacki

IR-4 Project

Closing out NIFA grant

Krystal Chojnacki

Current Grant

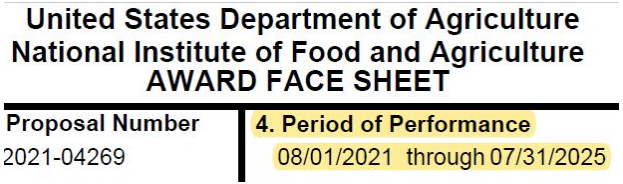
- Four Year Grant
  - NIFA decoupled FY 2022/FY 2023/FY2024 award decoupled from original FY 2021 award
  - FY 2021 award closed out effective July 31, 2024

- We are anticipating to receive the FY 2024 award letter on or prior to August 1.
  - After that, NC State will work to issue out subaward Amendments.

IR-4 Project

Period of Performance

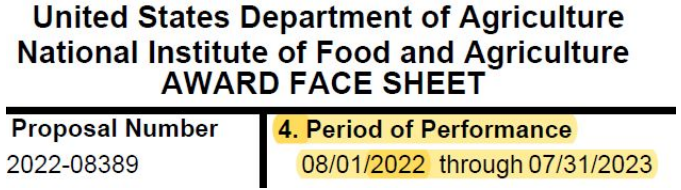
- In the original FY 2021 grant/award we were issued 1 year of funding but the period of performance was 4 years.



United States Department of Agriculture
National Institute of Food and Agriculture
AWARD FACE SHEET

Proposal Number	4. Period of Performance
2021-04269	08/01/2021 through 07/31/2025

- When NIFA decoupled the FY 2022 grant/award, funds were issued single year increments.
  - Subawardee's have asked for NCE so we have requesting them.



United States Department of Agriculture
National Institute of Food and Agriculture
AWARD FACE SHEET

Proposal Number	4. Period of Performance
2022-08389	08/01/2022 through 07/31/2023

No Cost Extension (NCE) issue

- In Amendment #4 Award of the FY 2022 grant/award, NIFA approved NCE
  - Amendments for subawards were sent.

- June 6, 2024, NIFA rescinded the NCE with Amendment #5
  - Justification-They will only issue one NCE for the continuation grant. **Need to save it for Year 5.**

This Award incorporates the following:

1. Correction to previous Amendment #2024-04505. The Admin NCE is rescinded and will revert current end date of award to 7/31/2024. NCSU will have the opportunity to submit the request after the 3rd year of the award.

- In discussions on how IR-4/CALS is planning to approach NC State Contracts and Grants.

IR-4 Project

Period of Performance - Moving Forward

- Moving forward if the grant is again processed as a continuation (1 year increments) then we cannot request NCE except in the last year.
  - Grant timing is mid field season - issues with keeping research going.

- We will request for NIFA to put the full performance period (but this is not guaranteed in a continuation grant).

- Alternatively, we will need to know your host institution will need to allow you to keep spending. Ideas:
  - The fact that it will be a 4 year grant is listed in the RFA. NC State can add the RFA as an attachment to the award.
  - A note in the award that this is a 4 year continuation grant.

Managing End dates

- We have been encouraging all to get in habit to spend an award in two years.
  - Some researchers have struggled to spend funds in two year period
  - We track NC State researchers, several did not use funds by end date.
    - We had to reallocate funds to prevent deobligation.
- The Year 5 (NCE year) will end July 31, 2026. All funding must be expended by this time by NC State.
- If a subaward returns funding, we need time to spend the amount returned prior to the grant closing date - which is tricky as it coincides with fiscal year end.
- *Proposal:* Consider having the end date for researchers and subawards 3 months prior to the award end date

WE DO NOT WANT TO RETURN FUNDS TO NIFA

IR-4 Project

IR-4 Project

Thank you!

LEARN MORE

ir4project.org
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