Summary Table

Inputs & Activities

SARE's R&E Program Integrated Research and Extension Project Funds to support

1. SWD Research Program Including the following partners and target individuals:

2. Scientists: Indiana University (Scheel, Mysore, Postdoctoral Trainee)

USDA-ARS (Kang, Field tech, PhD students)

> Lincoln Univ. Extension (Akotsen-Mensah)

who will collaborate with

3. Fruit Farmers: -Primary farms in Missouri where field studies will be conducted -Primary farmer product consultants (Indiana, Michigan, Missouri) -Regional NCR-SARE farmer webinar participants (~100-200)

with support from

4. Indiana University Technology Transfer Office (to help identify commercial partners) and ongoing consultation with

5. EPA and Extensions

to benefit farmers and consumers through the evaluation of

6. RNAi-Yeast ATSBs for Species-Specific SWD Control to be assessed through

1) Laboratory Trials at Indiana University to identify ATSB and membrane formulation, confirm mode of action, residual activity

2) Field trials: Conducted at USDA-ARS test plot and Missouri farms to evaluate attraction, yeast ATSB efficacy, residual activity

3) Stakeholder Engagement (Indiana, Michigan, Missouri farm visits, interviews, consultation, NCRwide webinar)

Outputs

1. Information/Decision Making Tool -Efficacy data -Information regarding feasibility -Stakeholder acceptance data

2. Education: Scientists and farmers teach each other through farm visits, consultation, webinar:

-Scientists: learn how SWD is impacting farmers, how they are combating it, and if/how the ATSB strategy can be optimized to benefit their needs.

-Farmers: Increased knowledge of new ecofriendly technology for sustainable agriculture to combat insecticide resistance, negative impacts of pesticides on the environment

3. Journal articles (three anticipated)

4. Dissertation and thesis chapter

5. Research conference presentations (two anticipated)

6. Local or regional news reports

Evaluation & Monitoring

1. Lab Evaluations: Efficacy, shelf life, residual activity, mode of action, dose-response assessment, and nontarget toxicity (statistical analyses with ANOVA)

2. Field evaluations: SWD attraction and non-target attraction, semi-field efficacy, residual activity (statistical analyses with ANOVA)

3. Stakeholder acceptance:

-Qualitative assessment through interactions with farmers throughout the study, which will inform product optimization -Concluding Webinar: Quantitative assessment through post-study survey provided in Qualtrics, to be statistically evaluated using StatsIQ software.

4. Feedback from peers: -Discussions with scientific colleagues following internal and external presentations -Feedback from farmers following the webinar -Through peer-review associated with publication of scientific journal articles, continued

5. Future large scale trials and stakeholder engagement activities: Identification of commercial partner(s) will permit future engagement during larger field trials.

monitoring of downloads

and citations.

Expected Outcomes

1.Validation of RNAi yeast ATSB Technology

-Confirmation of efficacy: ATSB kills SWD as well as or better than current tools -Confirmed stakeholder acceptance: Accepted as well as or better than current interventions.

2. Increased knowledge of barriers to or opportunities for sustainable ATSB adoption

3. Identification of farms: that may be willing to participate in larger field trials and potentially adopt this technology.

4. Trust and cooperation between farmers and scientists to build a community united to combat SWD

5. Identification of commercial partner(s) to assist with regulatory approval and commercialization.

6. Advancement toward broad long-term objectives:

-Improved environmental stewardship

-Increased economic wellbeing and quality of life for farmers

-Cost-effective production of healthy foods.

-Seamless integration of yeast RNAi ATSB technology into integrated SWD control programs.