2021 Apple Crop Protection Research Priorities

We are interested in having organic practices considered in all proposed work when appropriate. Also, proposals are expected to include an industry outreach component, if the sought-out project outcomes are anticipated to directly translate into management changes. Maintaining profitable and sustainable tree fruit companies is of utmost importance to our industry and economic considerations need to be included in project designs.

Novel ideas in areas not listed as priority are encouraged. It is suggested to contact Ines Hanrahan (hanrahan@treefruitresearch.com) to discuss any ideas outside of the priorities identified by the RFP, before submitting a preproposal.

RESEARCH PRIORITIES

HIGH PRIORITY

Codling Moth (CM):

- product efficacy testing of current and new materials **(#1 priority)**
- validation of monitoring **(#2 priority)**
- mass trapping and sterile insect release: comprehensive approaches **(#3 priority)**
- CM management on an area wide basis (education effort, SOP's, implementation, point person to contact) **(#4 priority)**
- Efficacy of chemical controls: SOP development and resistance management to continue staying abreast **(#5 priority)**
- efficacy of pheromones
- refinement of organic control

Fire blight:

- Program for product efficacy testing of new materials and development of SOP's for optimized efficacy (especially focus on shoot blight control, getting to the end of the season, orchard sanitation, new materials) **(#1 priority)**
- Continued product resistance testing
- non-tree host plant: ID & control

Postharvest decay:

Patulin: NEW: high priority **(#1 priority)**

- determine if new strains of blue mold affect patulin production
- develop SOP for organic apples to minimize patulin production
- develop updated whole supply chain SOP to manage patulin

Survey of decays in WA to ID new ones **(#2 priority)**

Resistance management for blue and grey mold

Reasons for new decay organisms (life cycle vs. commercial practices)

Organic preharvest products to manage postharvest decay

Soil health improvement:

- efficacy testing of wide range of new products (i.e., biological inoculants) to increase soil fertility (example: mycorrhizal fungi) including economic feasibility and suitability under Washington state conditions
- replant best management: steps after fumigation to restore soil health?

Pesticide residue management:
- Continue WTFRC work (include new fungicides)
- Get new materials on list to test ASAP (living document: new products, new challenges)

Extension:
- Update the orchard pest monitoring guide (bilingual)

Technology projects in apple crop protection or across several different crops are encouraged. Those projects may be moved into the technology committee. Specific interest:
- Automated insect monitoring and scouting programs
- Adoption of precision crop protection application methods

MEDIUM PRIORITY

Apple replant:
- Develop an SOP for mustard seed program

Beneficial insects:
- Determine timing, rates, release techniques of beneficial release
- Rearing techniques that are more economically feasible to growers

Mealybugs:
- Organic and conventional control strategies

Mouse and rodent control:
- Organic control methods

OBLR (organic & conventional): extension project
- New products or good tank mix beyond Bt
- Develop a detailed spray program
- Align model output vs. ground truth (effects of Bt on model)

Wooly Apple Aphid:
- Determine which beneficials to use and how to attract them to the trees to feed
- Organic materials, increase options

Powdery mildew (organic)

LOW PRIORITY

Apple leafcurling midge:

- How to manage it in newer plantings/young trees

Honeybees:

- Refugia for increasing pollinators

Brown Marmorated Stink Bug:

- Pesticides to control populations

Oriental fruit moth:

- determine location and distribution of the insect populations
- efficacy of commercially available pheromones (application method, type of pheromone)

San Jose scale (especially organic):

- Develop an effective spray program
- Determine which beneficials to use
- Use of pheromones

Spider mites, leafrollers, apple maggot