WILD BLUEBERRY ADVISORY COMMITTEE

2024 - 2025 WILD BLUEBERRY RESEARCH AND EXTENSION PRINCIPLES AND PRIORITIES

Guiding Principles for Wild Blueberry Research

1. **All research and Extension activities should seek to optimize net returns for growers and processors.**
2. **All research and Extension should seek to deliver concrete and practical recommendations.**
3. **All research and Extension should consider and serve the diversity of business scales and models.**

Plant Nutrition

1. Evaluate the cost effectiveness of foliar applied liquid versus granular fertilizers and develop recommendations that are based upon:
    - Efficacy of materials applied
    - Optimal application method, timing and rates, including potential fall applications, and crop vs. non-crop year
    - Fields with and without irrigation
2. Improve understanding of nutrient cycling, nutrient availability, and the soil and biological matrix of wild blueberry soil.
    - Evaluate practical management methods to improve nutrient update and plant and soil health.
3. Improve wild blueberry soil and tissue test-based management recommendations so that recommendations account for:
    - application timing, rates, and methods
    - soil type
    - cost-effectiveness
    - crop year vs. non-crop year
4. Investigate plant physiological responses to stressors (e.g., frost and drought) and develop fertilizer and management recommendations to mitigate the impact of stress on plant health.
5. Evaluate the cost effectiveness of micro-nutrients, and consider:
    - Application method, rates, timing, and potential fall applications
    - Efficacy
    - Crop year vs. non-crop year
    - Fields with and without irrigation

Integrated Pest Management

1. Update and refine monitoring and thresholds for existing, new, and newly impactful pests (insects, disease, weeds).
    - Update economic thresholds based on current yields and fruit value.
    - Update degree day models considering the trend towards longer seasons.
2. Investigate biological and chemical tools for organic and chemical control of Spotted Wing Drosophila (SWD).
3. Identify and test efficacy of low-risk biological and chemical replacements for products that may be phased out.

    - Test Maximum Residue Levels (MRLs) of any potential newly registered products.
    - Determine the cost-effectiveness of any potential newly registered products.
4. Determine optimal timing of application and materials for leaf disease control.
5. Develop cost-effective rotation recommendations for resistance management.

Climate Change

1. Refine research-based mulching recommendations and deliver updated fact sheet that includes:
    - Evaluation of hardwood vs. softwood (longevity, impact on fertility, pH)
    - Impacts on mycorrhizae, plant growth, productivity, and pests (insects, disease, weeds)
    - Evaluate mulch as mitigation for impacts of extreme freezes in low and no snowfall conditions (e.g., impact on rhizomes and whole plant).
2. Assess and deliver recommendations for cost effective irrigation technologies and techniques for drought and frost risk management.
    - Define optimal and minimum crop water needs in terms of frequency, volume, and timing.

Technology

1. Improve fresh pack processing technology.
2. Deliver mechanical and technological solutions that increase harvest and labor efficiencies and reduce harvest and post-harvest shrink and damage across scales and business models.

Pollination

1. Develop improved and updated pollinator stocking recommendations that consider colony size and include cost-effectiveness of pollination options.

Food Safety

1. Investigate microbial loads and prevalence of pathogens on fruit, soil, and irrigation water
2. Investigate possible points of contamination in the supply chain (farm to fork).
3. Investigate the efficacy of fruit surface treatments to reduce microbial load and/or cross-contamination.
4. Develop novel solutions that minimize foodborne pathogens in harvested, market-read wild blueberries with minimal to no adverse effect on sensory factors and quality.

Extension and Outreach

1. Deliver clear, concise, and easily adaptable research results to producers.
2. Distribute summaries and recommendations in a variety of formats (e.g., websites, fact sheets, in-person presentations and workshops).
3. Provide outreach programs that are accessible to all producers regardless of experience, geographic location, or rural connectivity challenges.
4. Promote the use of farm economic modeling tools and provide cost-benefit analysis of management practice options.

APPENDIX

RESEARCH SUPPLEMENT - Additional Guidance for Wild Blueberry Researchers

Consider including as response variables, producers' key benchmarks of sprout year crop potential, fruit set, carried fruit efficiency, and marketable fruit.

1. Increase sprout year crop potential (flower buds/acre) by developing management guidelines to improve stem density and production of flower buds.
    a. Understand parameters controlling plant dormancy, enhance rhizome spread, and develop techniques to improve stem coverage.
    b. Develop integrated plant health, nutrition, and pest (insect, disease, and weed) management protocols to optimize crop physiology, mitigate growing season drought stress, and improve dormant season winter hardiness.
2. Improve fruit set through advancements in plant health, mitigation of environmental risk, and enhancement of pollination efficiency.
    a. Develop protocols to maximize fruit set and mitigate drought stress through advancements in crop nutrition and physiology.
    b. Develop novel techniques and protocols to mitigate frost damage to floral tissue.
    c. Enhance crop and land management techniques to protect pollinator health – commercial and native – and the mutual sustainability of pollinators and the wild blueberry industry.
3. Improve carried fruit efficiency by developing precision crop load management techniques which support crop physiological needs at each fruit development stage.
    a. Develop integrated plant health, nutrition, and disease management protocols to reduce fruit abortion by mitigating growing season drought stress.
    b. Determine genetic and physiological factors limiting fruit sizing & quality (color, firmness, flavor, and ripening).
    c. Understand and mitigate fruit physiological response to heat stress.
4. Maximize marketable fruit by improving pre-harvest retention & quality, reducing harvest shrink, and developing post-harvest techniques to maintain quality to market.
    a. Assess/update protocols for monitoring of pests and diseases to inform management decisions and the development of action thresholds.
    b. Evaluate new or revised cultural, biological and synthetic methods for more effective control of insects, weeds and diseases.
    c. Develop whole crop protocols to improve fruit retention, color, firmness, and flavor for frozen, value-added, and fresh pack.
    d. Develop novel harvest technology to minimize harvest shrink, reduce fruit damage, and to commercialize across scale of production.
    e. Develop novel post-harvest environmental, material, and mechanical solutions that reduce post-harvest shrink and damage to berries, maintain color, firmness and flavor, and improve processing and fresh pack line efficiency.