PNW PEAR RESEARCH PRIORITIES FOR 2021

Fresh and Processed Pear Growers of Oregon & Washington

The task of the Pear Research Sub-committee is to solicit and support research on pears that can provide a favorable return on investment to the broader pear industry. The committee seeks research proposals that have clear, obtainable objectives. We encourage scientists to pursue other public and private sources of funding as appropriate, and to leverage pear grower funding to support applications for larger projects such as USDA Crop Protection, Sustainable Agricultural Research and Education (SARE), Organic Research Education Initiative (OREI), Specialty Crop Research Initiative (SCRI), or state Specialty Crop Block grants.

Pear industry stakeholders are clear in their desire for research projects that provide demonstrable value to the grower community. As such, we ask that **proposals include discussion of the project's potential return on investment (ROI)** to the pear industry. In addition, impactful **proposals should include a plan for outreach** to ensure that those who would benefit from the project's outcomes, whether pear growers, consultants, packers, shippers, retailers, and/or other scientists, may fully realize and apply the benefits of the pear industry's investment in that specific research. Given the increasing production of organic pears, proposals should also **consider the specific needs of organic practices** whenever possible.

The economic viability of the PNW pear industry is predicated on our ability to deliver consistently positive eating experiences with high quality fruit that trigger repeat purchases from consumers, all within a sustainable production cost structure with adequate margins to allow pear growers and packers to reinvest in their operations. To that end, we have identified four key areas or "legs of the table" that can most improve grower returns; research proposals that address these needs are highly encouraged:

1. Clean fruit produced under stable, sustainable pest management programs with reduced inputs
2. Consistent, productive yields (40-50 bins/acre) of high-quality fruit
3. Consistent delivery of properly ripened, delicious fruit to consumer
4. Reduced warehouse and marketplace losses due to decay, shrinkage, and repacking

Research Priorities

We welcome all research proposals that address challenges to pear production, packing, and storage in the PNW; we have identified the following areas as our highest priorities and offer some detailed ideas under each heading not to be restrictive, but in hopes of attracting proposals which address some of the specific needs and concerns brought forward by our stakeholders.

CROP PROTECTION

High priorities

Pear psylla – Sustainable best management practices (BMPs) to consistently produce clean fruit for harvest - How to enhance habitat for natural enemies (NEs)? What are threshold population densities for NEs to boost psylla control? Cultural practices to reduce psylla pressure - Spray programs designed to preserve NEs - More

options for organic systems

Mites – Options/strategies for conventional and organic systems, esp. 2 spot and rust mites

Fire blight – Alternative products for mid-season control and/or reduced preharvest intervals (PHIs) for existing products - Infections becoming more chronic than occasional – need organic control options that don't russet fruit

Medium priorities

Brown marmorated stink bug – BMSB is spreading through mid-Columbia district – how to manage?

Genetic mechanisms of pest (arthropod or pathogen) and host (pear tree) defense response for improved control – need a better understanding

POSTHARVEST/ FRUIT QUALITY

High priorities

Boosting eating quality – need more consistent ripening (esp. for Anjou) to satisfy customer and increase consumption – potential for Kupferman-esque assay/evaluation of postharvest handling methods of anonymous warehouses to help identify best practices – need universal metrics/standards to define good vs. bad fruit quality, esp. for early season Anjous – need improved traceability to track sources of "good" vs. "bad" fruit

Fruit storage – how can we extend the storage/marketing season and still deliver high quality fruit? Why do some pears store better than others? Need better postharvest tools for increasing organic production – how best to use 1-MCP? Need models to predict ripening time for 1-MCP-treated fruit, including use on Bartlett for processed pears - How do room loading strategies affect storage?

Medium priorities

Fruit finish – need better understanding of cuticle development & impacts on fruit storage – how to best use postharvest coatings/coverings to improve market appeal?

Nutritional value – study and promotion of health benefits of pears to help boost marketing

Decay control – need systemic understanding of areas for investment of resources to produce highest ROI – need standards to measure/monitor PH losses, esp. late in the marketing season - best methods for PH fungicide applications (drench vs. fogging vs. aerosol) – need to reduce repacks

Scald control

Novel packaging options

Development of value-added products (i.e. sliced pears)

Storage room sanitation

HORTICULTURE

Medium priorities

Cultural practices to reduce psylla pressure?

Decline in older trees – what's causing it (oils? Winter damage? Collar rot? Valsa canker? Nutrition? Other?) and how do we manage it?

GENETICS

High priorities

Rootstocks – need dwarfing/semi-dwarfing rootstocks to transform orchard systems and make them more grower and labor friendly – are Quince roots a viable option for PNW?

Medium priorities

New varieties – investing in new varieties with better ripening/eating qualities may be better solution than trying to fix current varieties

Genetic mechanisms of pest (arthropod or pathogen) and host (pear tree) defense response for improved control – need a better understanding

OTHER AREAS OF INTEREST

Predictive crop estimates – more accurate models of overall crop size could improve marketing strategies