Ontario Nursery Research Priorities

Nov 30, 2021

RESEARCH , DEVELOPMENT and MARKETING PRIORITIES

1. Water
    a. Volume and Efficiency:
        i. Improvement in overhead irrigation application uniformity
        ii. Efficient irrigation volumes and frequency for optimal root zone conditions (e.g. wetting front, aeration porosity)
        iii. Development of benchmarking technology and measurement technology that is cost-effective
        iv. Evaluation of overhead irrigation systems to improve pressure and maintain pressure along the system, e.g. pressure-compensating, pumps
        v. We need a company that would offer the service: technology and service. Need someone to take the time to implement.
        vi. Improved access to funding (smaller projects and higher % cost share and cost share of more material costs; ability to stack funding for top priorities like water)
        vii. Adoption of pulse irrigation methods for each system (manual vs. automated, time of day etc.)
        viii. Cost-share funding to install 3-phase hydro?
        ix. Wide open beds: reduced water use/area

    b. Water Quality
        i. Managing algae growth
        ii. Managing dissolved nutrients in runoff/collection ponds and evaluate treatment technologies
        iii. Managing pH and bicarbonates for large scale irrigation
        iv. Weed seed management systems in irrigation water (e.g. affordable macro filtration system)

2. Pest Management
    a. Effective, low toxic, systemic insecticides with good residual, neonicotinoid-alternatives
    b. More options for biocontrol
    c. Improved pheromone traps, better scouting services
    d. Establish and promote early research (working with US where possible) on emerging pests that will eventually cross the border
    e. Research on New and Emerging Plant Pests: Boxwood blight, Box Tree Moth, Spotted Lanternfly; Hemlock Woolly Adelgid, Brown Marmorated Stink Bug, Red Headed Flea Beetle, Japanese beetle adults, Root weevil, Greater Peach Tree Borer, Fireblight, Soil borne plant pathogenic nematodes; Sudden Apple Death (early in Orchard establishment); Cerambycid Borers on Fagus and Carpinus
    f. Reducing herbicide injury (e.g. glyphosate)

g. Use Cu to charge a spray tank for spraying ionic charge to water to increase coverage (application technology)
h. Alternatives to herbicides and mulches (Weed seed management in irrigation ponds)

3. Root Zone Management for Improved Growth
    a. Production practices for better root growth and structure in container production (on-farm demonstration)
    b. What species are the most prone to root circling in production? Can we just focus on production methods that reduce likelihood of root circling to those species?
    c. Improve Out planting Success: Add root structure guidelines for purchasing nursery stock, soil guidelines for out planting trees and shrubs
    d. how do we modify soil management practices for use in nursery production. E.g. trees: how many times its been transplanted, to develop more fibrous root system which allows smaller root ball, constant root pruning

4. Reducing Cost of Production
    a. Labour Costs: what changes can we make in our production systems to reduce labour costs? How can we set up fields to be more efficient? E.g Flow Vision (Lean Flow). Return on investment of fees within 2 years.
    b. Labour: how do we find the right people? How do we keep them?
    c. How can we set up fields to be more efficient? Look at high density orchards. Intensifying production to help improve return on investment
    d. Production Efficiency: not just automation but work station set-up, ergonomics, manual efficiencies
    e. Cost of Production: how to measure it, for benchmarking and informed business decisions
    f. Growing containers in wide open growing beds, higher #units/area; also saves on water; using forklift (single back wheel) out of Ohio dedicated fork size machines; need to pick more consistent pots for this to work; modified template for fork design (NVK)

5. Crop Nutrition
    a. Improving nutrient use (conservation, lower inputs, alternative sources)
    b. Cost-effective methods for correcting micronutrient deficiencies

6. Marketing Ontario Grown Nursery Stock: investigate opportunities to market “Ontario” brand for Ontario-grown nursery stock. How can Ontario nursery growers take advantage of their Ontario brand?

7. Frost/Low Temperature Injury
    a. Cost-effective methods to reduce low temp injury

8. Use of Wastes from other industries as inputs in Production
    a. Container and field soil amendments

9. Plant Breeding: new plants and traits that will improve sales or reduce costs

10. Education.
    a. Best practices for landscaping (e.g. on commercial nursery website)
    b.