

The Case for the Systems Approach:
New Approaches to Managing Plant Pest and Disease Risks



OREGON
ASSOCIATION OF
NURSERIES

29751
SW Town Center Loop W
Wilsonville, OR 97070

Phone
503.682.5089

Toll-free
1.800.342.6401

Fax
503.682.5099

Web
www.oan.org

John Aguirre
Executive Director
jaguirre@oan.org

John Griesbach, Ph.D.
Consultant
john@ascentag.com

Over the past decade, a litany of plant pests and diseases has undermined the nursery industry's long-term health and profitability as a result of diminished markets, increased restrictions and higher regulatory costs: examples include *Phytophthora ramorum*, Emerald Ash Borer, Asian Longhorned Beetle, Glassy Winged Sharpshooter, Plum Pox Virus, *Sirex* woodwasp, Pine Shoot beetle, *Ralstonia solanacearum*, Citrus Greening, and Light Brown Apple Moth. Unfortunately, these organisms can be transported with nursery stock and are often difficult to detect with traditional end-point inspections.

As the global economy boomed, federal and state inspection programs struggled to keep pace with dramatic increases in imports of goods, including live plants, from all across the world. Adding to the burden, a reorganization of U.S. import inspection staff for national security concerns has probably weakened efforts to intercept harmful pests and diseases at our borders. A U.S. General Accounting Office (GAO) report (GAO-08-96T) indicates the transfer of 1,800 U.S. Department of Agriculture (USDA) inspection personnel to the Department of Homeland Security has resulted in less comprehensive and effective phytosanitary inspection efforts. Under these conditions, the pace of new pest problems may well accelerate, placing the USDA, state plant health programs and industry under increasing pressure to respond.

Interest groups outside the nursery industry have taken notice. In a 2007 report, *An Ounce of Prevention: How to Stop Invasive Insects and Diseases from Devastating U.S. Forests*, The Nature Conservancy states: "Imported nursery stock – trees, shrubs, garden plants, roots and cuttings brought in from other countries for sale to the U.S. consumer – is one of the two chief pathways that bring invasive insects and diseases to American forests." The report calls on USDA to greatly limit the importation of plants and to only allow imports under a strict regulatory framework: <http://www.nature.org/initiatives/forests/news/invasivespecies.html>

There is growing recognition among policymakers, federal and state plant health officials and nursery industry representatives of the need to bolster our nation's defenses against plant pests and disease: increased funding for surveillance, inspection and eradication activities, new policies concerning importation of nursery stock (expected revisions to Q 37) and more research. That's why the Oregon Association of Nurseries (OAN) advocates for a nursery industry initiative, involving the U.S. Department of Agriculture, state plant health officials and research institutions, to promote and organize the research, development, test-piloting and dissemination of new systems of pest risk management aimed at preventing the introduction and spread of plant pests and diseases: i.e., the 'systems approach.'

What is the systems approach?

The systems approach means utilizing two or more different controls that work independently, with cumulative effect, as part of an integrated approach, to prevent or manage current or potential pest and disease problems within a nursery. The cumulative effects need to provide enough pest control to allow the products to meet an agreed-to standard, with the goal of avoiding, where possible, the need

for more draconian treatments such as fumigation or outright quarantine. Systems approaches can provide growers a new tool to both control pests and diseases and maintain access to national and international markets.

For individual nurseries, the goal of the systems approach is to unify a set of practices under a philosophy or mindset that emphasizes prevention and provides for rapid response when pest and disease problems arise. Elements of a systems approach should have overlapping and cumulative benefits that address a broad array of current and future pest and disease threats. This is distinct from waiting for pest and disease problems to appear and then responding with a spray program (or worse, having to operate under regulatory mandates and restrictions) aimed at suppressing those specific symptoms or problems.

The systems approach doesn't discourage the use of chemical controls, but the emphasis is on addressing current and future threats by identifying key points of vulnerability in the nursery operation where pest and disease risks can be readily excluded or managed (i.e., visual examination by trained personnel of incoming nursery stock for unusual or problematic symptoms). Likewise, it's important for a nursery to take prompt and meaningful action when pest and disease problems are detected to prevent spread and establishment within the nursery.

The systems approach is a knowledge-based approach to pest and disease management, so nurseries need to be able to –

- Recognize and prioritize the most likely and serious current and future plant pest and disease risks,
- Identify and implement practices or tools known to be effective against those risks, and
- Develop and operate a systems approach that can be readily managed and seamlessly incorporated into procurement, production, handling and shipping operations.

Consequently, programs of research, test-piloting and analysis are necessary to help nurseries develop and implement effective and economical systems.

How does the systems approach relate to the regulatory environment?

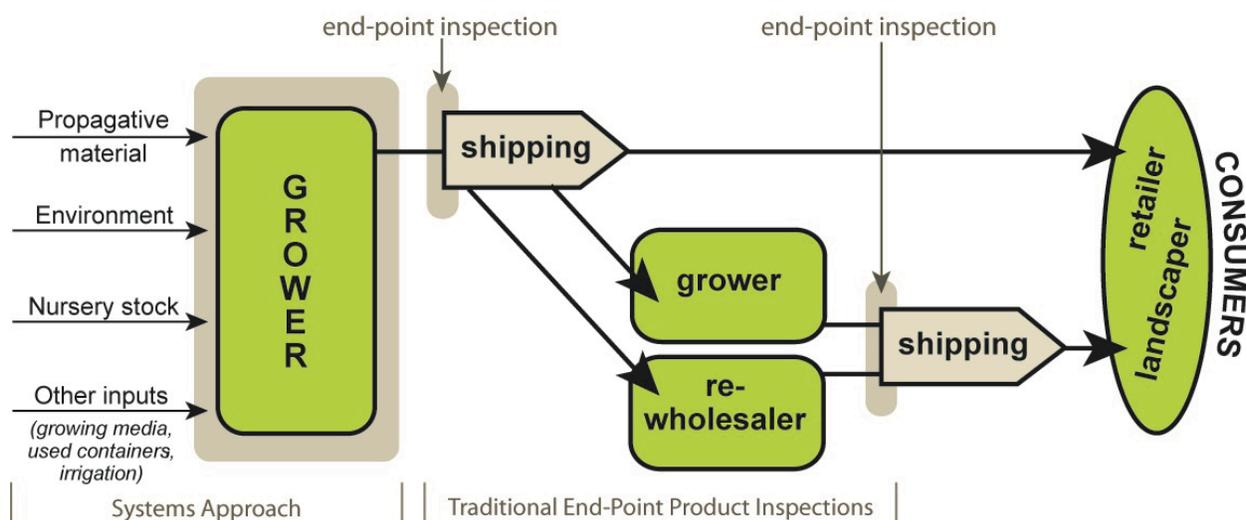
In light of the growing threat of plant pests and diseases, the question arises, where should industry, researchers and plant health officials focus their limited time and resources to better prevent the introduction and spread of pests and diseases? Should more focus and attention be paid to end-product inspection? Or, should more effort be made to provide growers the appropriate knowledge, tools and systems (and the incentive) to produce and ship plant material that is consistently free of regulated pests and diseases?

The food industry has wrestled with these same basic questions. Federal and state food safety officials and researchers have long recognized that it makes more sense to focus scarce resources to help food processors operate their facilities in ways that systematically prevent food safety problems from occurring, than it is to inspect the enormous volumes of food in commerce and to chase after unsafe food that may have been introduced into the food supply. In other words, spend more time inspecting the producer and less time inspecting the food. Research indicates clean, well run processing facilities with strong food safety controls will consistently produce safe food.

The Canadian Food Inspection Agency (CFIA) has embraced the idea that it is better to promote the adoption of sound systems of pest and disease risk management, rather than chasing pest and disease problems through programs of end-point inspection, as is current practice. CFIA launched the Canadian Nursery Certification Program (CNCP), which is a phytosanitary certification program for Canadian nurseries and greenhouses that ship nursery stock to the United States or within Canada.

The CNCP offers an alternative to traditional phytosanitary certification, based on final product inspection immediately prior to shipping. The CNCP uses a systems approach to mitigate pest risk. It has several components, including documenting production and pest management practices, auditing and reviewing the system, and determining pest prevalence during production. Under the CNCP, certified facilities implement procedures to ensure the plants they ship meet the requirements of the CNCP and are free of pests of concern.

The chart below illustrates the relative areas of emphasis between the systems approach and traditional end-point product inspections. The information provided by an inspection of plant material at an end-point, i.e., a loading dock, represents a single snapshot in time about the status of that specific load of plants and it reveals little about a nursery's success in managing pest and disease risks over time. In contrast, a nursery operating a system of pest and disease risk management based on a plan -- that has been inspected, audited and certified -- can verify success in shipping plants that consistently meet regulatory standards.



The USDA Animal and Plant Health Inspection Service, Plant Protection Quarantine (APHIS PPQ) endorsed the concept of the systems approach when the agency reached agreement with Canada and Mexico on a timetable for implementing a program of inspection, audits and certification for nurseries that want to ship product to Canada or Mexico. Such nurseries will need to adopt the systems approach (or operate under a program of equivalent effectiveness) as part of future requirements governing the movement of nursery stock between Canada, the United States and Mexico (the agreement is known as RSPM #24 under the North American Plant Protection Organization). See: <http://www.nappo.org/Standards/NEW/RSPMNo.24-e.pdf>

APHIS PPQ mirrored the CNCP with its own U.S. Nursery Certification Program (USNCP), which currently operates as a test-pilot program with a limited number of nurseries participating. Today, six West Coast nurseries are participating in the USNCP. The USNCP is seen as one example of a systems approach, paving the way for eventual compliance with RSPM #24.

A key issue for the CNCP and the USNCP is the ability of outside auditors and inspectors to track the effectiveness of a system, so recordkeeping is extremely important and valuable because examination and review of records allow management or an outside inspector to determine how effectively the system has worked over time.

Adoption of the systems approach should be voluntary and growers should always have the option to continue to operate under traditional programs of regulation and inspection. The key to successfully promoting the adoption of systems will depend upon research that demonstrates such systems are effective and providing growers access to technical expertise and information they can use to craft effective approaches that work for their specific circumstances.

Federal and state plant health agencies should create incentives that encourage interested growers to develop and implement a systems approach specific to their operations. Such incentives may include the ability to self-issue phyto-documentation to move plant material into commerce and the opportunity for nurseries to receive financial assistance to pay for costs of timely detection and eradication of quarantine pests and diseases.

What should be done to create awareness of the systems approach to promote adoption?

The concept of a systems approach as a means to better address plant pest and disease problems makes a great deal of sense. However, there is no one-size fits all 'system' to prevent pest and disease problems applicable to nurseries across the country. So, a substantial amount of research, test-piloting and industry dialog and discussion must occur before widespread promotion and implementation of the systems approach can be judged a feasible goal.

Researchers need to work with growers, from different industry segments and from around the country, and with plant health officials to identify appropriate management controls, tools and strategies that growers can utilize to develop a system best suited to their situation and that addresses the pest and disease risks most relevant to their operation. Moreover, growers need to develop and implement systems of pest and disease risk management that balances costs and ease of management against the need to be as effective as possible for the widest array of pest and disease threats.

What resources are available to aid the industry in the development of systems approaches?

The 2008 Farm Bill includes money to promote research and test-piloting of the systems approach in the nursery industry, and the FY2008 Agricultural Appropriations bill also includes funding to promote dialog and collaboration between industry, researchers and state and federal plant health officials to develop effective systems.

The USDA has the resources, experience and willingness to host a national summit to bring together nursery stakeholder interests to review and discuss current and future plant pest and disease challenges and to explore how the systems approach can address those challenges. By providing the table around which stakeholder interests can meet, USDA can provide opportunities for dialog, collaboration and goal setting to direct more resources toward the creation of practical new approaches to plant pest and disease risk management.