

Ornamental Research News

Central Florida Research and Education Center

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Where Do Plant Diseases Come From?

Plant Pathology

Dr. J.O. Strandberg, Plant Pathologist

Almost everyone realizes that bacteria, fungi, and viruses can cause disease in plants because they can relate to the effects of similar organisms which cause disease in animals and man. However, many agriculturists do not fully understand where plant diseases come from. If they did, they would probably do many things differently.

Organisms that can cause plant disease are not limited to bacteria, viruses, and fungi, though these pathogens are the most common. In general, all of them must somehow infect plants as part of their life cycles. Growth, development, and reproduction of pathogens in plants usually cause disease damage that results in economic loss. Many, but not all, pathogens are specific for a plant species and will only infect and damage that particular plant.

Contrary to popular opinion, plant diseases do not arise spontaneously. Plant disease is produced by populations of microorganisms that must develop over time. For example, in a nursery crop suffering from a foliar (leaf) disease, these populations begin with a few individuals, the primary inoculum. Under favorable conditions, these individuals infect, develop, and reproduce in the leaves and produce more individuals, the secondary inoculum. If the environment is favorable, the process is repeated many times. You can guess the eventual outcome, but it takes time and this is determined by the interval needed for a pathogen to infect a plant, develop, and reproduce. Commonly, the interval is from 2 - 4 weeks, or more, for fungi but much less for bacteria and viruses. Observant growers will see the early damage and take appropriate action. However, by the time disease damage is obvious, populations of the pathogen (more secondary inoculum) are so incredibly large that it becomes very difficult to alter the immediate course of events with any pesticide treatment.

It is also very helpful to know the sources of the primary inoculum so that disease can be avoided or reduced. Common sources of primary inoculum are plant debris, soil, nearby crops, closely-related plants in the wild or in the landscape, and can be introduced in or on seeds. However, the most common

source of inoculum for nursery crops is from propagation material that is already diseased, but at levels which usually go undetected.

CONSIDER PHILIPPINE VIOLET AS A FLOWERING POT CROP

Plant Breeding

Dr. R.J. Henny, Geneticist

Philippine violet (*Barleria cristata*) is an attractive flowering shrub found in landscapes around Central Florida. Both white-flowered and violet-flowered cultivars exist. Plants are apparently photoperiodic since they begin to set flower buds around Labor Day, as days become shorter and nights longer, and are in full bloom by the end of September. Blooming continues throughout the fall and winter unless plants are damaged by cold. Recent studies have examined factors affecting production of good quality barleria in 6-inch pots.

Single or double node cuttings of barleria root readily within 2-3 weeks. Two liners per 6-inch pot make a fuller finished product. Although plants in the landscape will grow well in light to moderate shade, a full sun production area is best for flower production. Plants are cold sensitive and need protection from frosts. Barleria responded well to Osmocote 19-6-12 at the rate of 5-7 grams per 6-inch pot. Good quality plants can be finished in approximately 10-12 weeks after potting.

Research also showed that barleria responds well to the growth regulator Cycocel applied as a single foliar spray to shorten internodes, maintain compactness and proportion in the finished product, and to enhance green leaf color.

The best quality plants were obtained in tests using Cycocel applied at 1000 ppm when plants were about half their finished size. The Cycocel treated plants were more compact and had darker green foliage than untreated plants, while the white-flowered cultivar seemed to show a greater response to Cycocel application than the violet.

WHO, ME, EXPERIMENT?

On Center Dr. C.A. Conover, Center Director

Are you of the If it's not broken, don't fix it school or are you of the I know there's bound to be a better way school? Either way, you're likely to make mistakes - so let's get to the point. Don't be afraid to try new things; potting media, pesticides, pots, spacing, new cultivars, etc., but don't make the mistake of

doing this with your entire crop. Why? I'll tell you some true stories:

- (1) The grower wanted to reduce his fertilizer/labor bill, so he switched brands and ratios and treated his entire potted crop. The result, no roots (he burned them off) and no crop.
- (2) Another grower wanted to irrigate less often, so he had a media facility make a custom blend to hold more water. It did, and he lost his crop to Pythium root rot because the medium stayed too wet.
- (3) A third grower's profit margin on philodendron was too low-so he switched to syngonium and made no profit-and went out of business.

To stay competitive in today's marketplace, you need to try new products, make changes in production, etc.; however, you should do this only after careful planning and trial of the products or plants in your greenhouse facility. In other words, don't try to fix it if it's not broken unless you experiment with the product/plant first.

CONTROLLING ARTILLERY PLANT WITH HERBICIDES

New Research

Dr. C.A. Conover, Center Director &
Dr. R.H. Stamps, Cut Foliage Specialist

Weed control in growing containers and nursery areas should be an integral part of pest management programs. Weeds in nurseries are not only unsightly, they can hinder growth of ornamental crops, increase production costs, diminish value of containerized plants if not removed, and harbor insects or diseases.

Artillery plant, (*Pilea microphylla* (L.) Liebm), is a creeping herb that thrives under the humid conditions typical of many nursery areas. By freely re-seeding itself, this plant spreads rapidly, and can quickly become a major problem.

For this reason, we tested six herbicides for control of this weed. Artillery plant growing in pots containing foliage plants or on a shadehouse floor were transplanted into 6-inch tubs using Florida sedge peat as the growing medium. Plants were then placed on ground pack under full sun or 60% shade and grown undisturbed until the surface of each container was covered by artillery plant foliage.

The plants were sprayed with one of six herbicide solutions: Barricade 65WG, Gallery 75DF, Image 1.5EC, Premier 1.2EC, Ronstar 50WP and Roundup. All herbicide solutions and a check solution contained a surfactant and were prepared and applied following label instructions.

Best control was obtained from Ronstar 50WP. Artillery plants growing in full sun or 60% shade were almost dead two weeks after Ronstar was applied and no new growth had appeared eight weeks after plants were sprayed.

Plants treated with Roundup exhibited significant phytotoxic symptoms two weeks after spraying. However, eight weeks after treatment, significant seed germination and plant regrowth had occurred and artillery plant covered nearly 50% of the growing medium in containers under full sun or 60% shade. None of the other treatments tested were very effective and artillery plant covered over 60% of the growing medium surface in containers within eight weeks of application.

Of the six herbicides tested in the two experiments described above, Ronstar 50WP was by far the most effective in controlling artillery plant for up to eight weeks. For maximum benefit and safety when using agricultural chemicals please follow label directions regarding use and disposal.

TIME IS UP!

On January 1, 1995 the Worker Protection Standard for Agricultural Pesticides will go into effect. Are you ready?

Do you know about posting treated areas, reentry requirements, or have a pesticide training program in place for all workers and handlers?

Seminars are scheduled to cover the provisions of the Standard, provide information to train your trainer, give examples on how to conduct pesticide safety training and exhibit available resources to help you comply.

For more information contact your county extension agent:

Orange County - (407) 836-7570

Seminole County - (407) 323-2500

Lake County - (904) 343-4101

NATIONAL TROPICAL FOLIAGE SHORT COURSE

January 19-21, 1995

Greater Fort Lauderdale/

Broward County Convention Center

For Information call Linda Van Der Zee
at the FNGA office - (407)345-8137

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Hours 7:30 am until 4:00 pm, Monday thru Friday.
Grower Diagnostic Clinic-every Thursday 1:00-3:00 pm.
Ornamental Research News-Chris Fooshee, Editor
