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A Regional Comparison Of The Flowering Plant Industry: Ohio Vs. Illinois, Michigan, Pennsylvania, And The United States

A nationwide survey of the flowering plant industry was conducted in 1985, by the Greenhouse Operations Management Team in the Department of Horticulture at The Ohio State University. The purpose of this survey was to obtain an improved understanding of industry production and marketing practices. Business demographics, crop marketing information, and product mix data were collected during Phase I of the Greenhouse Operations Management Project. The following demographic and production/marketing profile of the flowering plant industry compares respondents from Ohio with those of competing flowering plant firms in Illinois, Michigan, Pennsylvania, as well as respondents from the entire United States.

For purposes of this research, the flowering plant industry is identified as firms that produce potted flowering plants, bedding plants, and/or flowering hanging baskets. A mail survey was used to determine: 1) number of years in flowering plant production, 2) number of full-time employees, 3) total square feet devoted to flowering plant production, 4) channels of distribution, and 5) the mix of potted crops being grown on a regular basis. The survey was distributed to over 1,200 flowering plant growers across the United States; over 800 (67%) were returned. The following regional profile of the flowering plant industry is based on the respondents of that survey.

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INDUSTRY DEMOGRAPHICS

Years in Production

Businesses that had been in flowering plant production less than 10 years were categorized as **'new,'** those in operation between 10 and 60 years were considered to be **'established,'** and those in business over 60 years were termed **'third generation.'** The results of the survey indicate that just over 25% of the growers in Ohio are 'new' to the industry which corresponds with the national average. Illinois, Michigan, and Pennsylvania are well below that with 16, 14, and 12%, respectively (Figure 1). The majority of all respondents, nationwide, fall into the category of 'established' firms. The 'third generation' operations accounted for 13% of the flowering plant producers in Ohio, close to the U.S. average of 12%, while 25% of the respondents from Illinois were in the category of 'third generation' operations.

Number of Employees

Two-thirds of the survey respondents from Ohio had fewer than 5 full-time employees, which closely corresponds with businesses from Michigan. Nationwide, just over half of the producers of flowering plants had fewer than 5 full-time employees. The survey results from Illinois indicate that 30% of the firms had more than 20 employees, which was almost twice the national average of 16%.

Size of Production Facility

Production facilities were categorized according to the square feet of **bench space** devoted to flowering plant production. **Small** firms were those that had less than 25,000 square feet. **Medium** size operations had between 25,000 and 100,000 square feet. Greenhouse with 100,000 to 500,000 square feet were considered **large,** while those with over 500,000 square feet of bench space in flowering plant production were classified as **very large.** Over half of the growers in Ohio and Pennsylvania were involved in small production operations, compared to 43% of the growers in the U.S. as a whole (Figure 2). In the category of medium-sized firms, the results were very uniform across the 4 states that were compared, ranging from 35% to 38%, and were close to the national average. Ohio had fewer large and very large flowering plant producers than Illinois, Michigan, or Pennsylvania. Illinois and Michigan were about equal in the large category, while Illinois was more than double the other states and the national average in the very large category.

Distribution Channels

A distribution channel is an interdependent system of producers, wholesalers, and retailers providing the ultimate consumer with floral products and services. There are three major channels for distributing flowering plants: 1) from the

producer to retail florists and garden centers, 2) from the producer to mass market outlets, and 3) from the producer directly to the consumer. If 60% or more of the flowering plants produced by a grower were distributed through one channel, that was considered to be the primary channel of distribution for that firm.

Among the states compared, the percent of respondents who distributed their product to retail outlets was fairly uniform, ranging from 29% to 37% (Figure 3). Ohio ranked the lowest with 29% of the respondents distributing primarily to retail outlets, Michigan the highest with 37%, while the U.S. average was 34% of all the respondent firms in the country.

Mass markets were the major channel of distribution for 11% of the respondents surveyed. Ohio, Michigan, and Pennsylvania had fewer than the average, with only 2% of the Michigan producers marketing their flowering plants through mass market outlets. Illinois had the most with 19% of growers surveyed.

The most prevalent method of distribution used by Ohio growers was direct-to-consumer, accounting for over one-third of the survey respondents from Ohio. Illinois with 38% did slightly more direct-to-consumer than Ohio. The other states as well as producers nationwide did less, the average being 27%.

Firms that split their product distribution over 2 or 3 channels were considered to have a mixed marketing strategy. This type of strategy was employed by over one-fourth of the Ohio respondents, which closely corresponds with the industry as a whole. Only 14% of the growers in Illinois use this strategy.

Product Mix

The survey of the flowering plant industry also ascertained the types of flowering plants produced. From a list of 63 major flowering plant crops, the growers indicated the crops being produced. For this research, a crop was determined by the following: 1) common name, 2) container size, and 3) specific cultural practice used to produce the crop, i.e. pinched vs. unpinched poinsettia. From the survey data, the number of individual crops produced was computed, as well as the number of 4- and 6-inch potted crops from each firm. The following statistics provide a product mix profile of the industry, indicating the specialization and diversification of flowering plant production in each state.

Crop Specialization/ Diversification

The individual Ohio firms, in general, produced between 14 and 18 different potted crops, while the U.S. average was between 18 and 20, indicating that Ohio growers were slightly more specialized than the industry as a whole. Pennsylvania and Illinois were the most diversified of the states compared, with producers in those states growing between 18 and 24 different crops. Although the averages indicated that Ohio was somewhat more specialized than the other states, certain firms in Ohio were producing as many as 48 different potted crops, more crops than firms in any other state in this comparison.

The analysis of 4-inch potted crop production also indicated that Ohio growers, on the average, were producing fewer 4-inch crop types than the other states compared (Figure 4). Ohio growers produced 4 to 6 different 4-inch potted crops, while the producers in Illinois and Pennsylvania produced as many as 8 different crops. Again, although the averages suggested fewer types of 4-inch crops in Ohio, some Ohio firms were producing as many as 17 different 4-inch potted crops throughout the year. Ohio had the fewest and Illinois the greatest number of crops being grown in 6-inch pots. These data do not reflect the actual number of pots produced, but indicate the number of different crops produced.

Figure 1

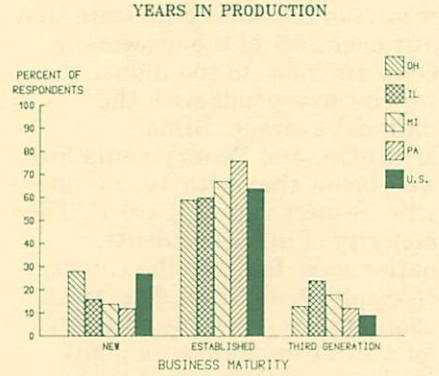


Figure 2

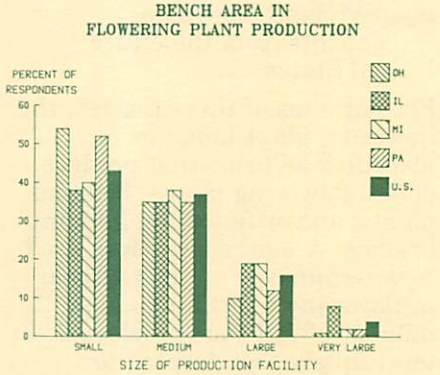


Figure 3

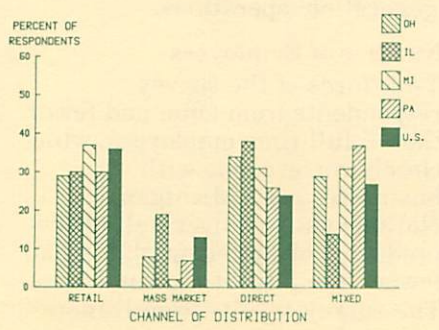
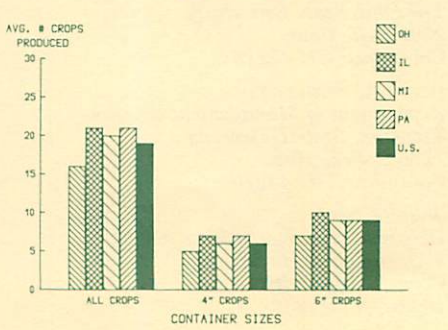


Figure 4



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SUMMARY

The regional demographic, marketing, and product mix analysis of the flowering plant industry has provided benchmark statistics for Ohio producers, as well as the industry at large. By comparing Ohio producers with producers in neighboring states and the U.S. as a whole, Ohio growers can more easily assess their current position in the industry and define their production/marketing strengths and weaknesses. The dissemination of this type of information helps to improve communications among all segments of the industry, and helps provide a healthy competitive environment for the industry, which benefits all consumers.


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Metalaxyl Spikes For The Control Of Pythium Root Rot Of Poinsettia, Chrysanthemum, And Easter Lily

Most pot grown greenhouse flower crops are subject to root rot caused by one or more of the species of *Pythium* water mold fungus. The disease is relatively common. Root environments of potted plants are often conducive to the development of disease because of low aeration levels, excessive wettness, and/or stressful temperatures. In addition, roots stressed by soluble salt toxicity may be more subject to infection by *Pythium*. This condition is often induced by excessive drying between waterings.


C. C. Powell

Pythiums are widespread contaminants of soils and some potting media. Failure to properly sanitize potting media prior to use will often lead to *Pythium* root rot. Poor greenhouse sanitation, splashing water and soil from pot to pot, use of old pots and flats, etc. can all lead to this disease.

Since *Pythium* root rot is so common, it remains a constant threat to the production of healthy potted ornamental crops. Most growers use soil fungicides to protect their crops. Several fungicides are registered for *Pythium* root rot control. They are applied to the potting media as incorporated granules, drenches, or top dressed granules. Such application methods are effective, but difficult to carry out properly. Drenching entails time and great quantities of water (sometimes more than 10,000 gallons per acre). Granulars are often applied unevenly, resulting in some pots with ineffective or damaging dosages.

Several months ago, we initiated a series of trials to evaluate the effectiveness of metalaxyl fungicide incorporated into a 6.0 gram fertilizer spike. The spike is designed to be placed into the soil at the time the plants are placed into the pot. It provides a starter fertilizer consisting of 3-2-2 (N-P-K) as well as a dose of metalaxyl fungicide. The administered dose of fungicide in the pot via this spike delivery system should be constant. In addition, it is relatively easy to apply.

Metalaxyl in other formulations is currently registered and highly effective for control of *Pythium* root rot diseases on potted ornamental crops. The objective of these tests was to determine if metalaxyl in a spike would be as safe and effective at providing control of root rot as other available formulations. Also, we wished to see if the protection afforded from a single application would last for the duration of the pot crop's life. Poinsettias, chrysanthemums, and Easter lilies were treated, inoculated with *Pythium* at varying periods after treatment, and observed at maturity for freedom from chemical damage and root rot disease.

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PART I. POINSETTIAS

Methods: Rooted poinsettia cuttings (cv Annette Hegg Dark Red) were potted into 6-inch pots containing a steamed 1:1 soil:peat potting mix on October 10, 1985. All treatments were made on October 14, 1985. One 6.0 gram spike was placed into the soil in each pot at the edge of the roots emerging from the cutting's rooting medium. Two, four, and eight weeks after treatment, plants in each of the treatments were challange inoculated with *P. ultimum* cultures growing on soil containing potato pieces. The inoculum was finely ground and inserted into holes made in the root balls at two different spots in each pot. The pots were placed in standing water (in saucers) for 48 hours after treatment. There were 10 plants per treatment for each of the inoculation groups and the control group. Plants were grown according to normal procedures in our research greenhouses. This included constant fertilization (200 ppm N) at each watering with 20-20-20 soluble fertilzer (Peter's).

Observations and discussion: Three root rot evaluations were

made on the various inoculation groups (Tables 1-4). Roots were observed in the pot and after washing soil from roots at the end of the experiment. The following was noted:

1) The treatments did not appear to be phytotoxic (Table 1).
2) In all inoculation groups, fertilizer spikes without fungicide appeared to result in more development of disease. The reasons for this are unknown. It may have been that the fertilizer spike resulted in more root branching and root tip development. Thus, increased sites were present for the *Pythium* to infect. It also could have resulted from localized areas of high soluble salts resulting from initial placement of the spike.
3) The fungicide was significantly effective in protecting the roots from disease in the treatments inoculated at both 2 weeks and 4 weeks after treatment (Tables 2 and 3). Metalaxyl was equally effective whether applied as a drench, top dressed as a granular, or inserted into the potting media via the spike.
4) In the third inoculation group (Table 4), not much root rot developed between the date of inoculation and the observation of the crop at maturity. However, a non-significant protective trend was still noted in some treatments.

Table 1. Root rot ratings of non-inoculated poinsettias.

Treatment	Results On 12/16/85	Washed Roots Results On 1/15/86
No treatment	3.56 A*	3.44 A*
3-2-2A Fertilizer spike only	3.11 A	3.44 A
3-2-2A plus 0.3% A.I. metalaxyl	2.67 A	3.44 A
3-2-2A plus 0.5% A.I. metalaxyl	2.67 A	3.11 A
3-2-2B plus 0.3% A.I. metalaxyl	3.56 A	3.67 A
3-2-2B Fertilizer spike only	2.89 A	3.89 A
2 oz/100 gal metalaxyl 2E drench	2.89 A	3.33 A
1 oz/100 gal metalaxyl 2E drench	3.44 A	3.67 A
12 oz/1,000 sq ft metalaxyl 5G top dressed on soil	3.44 A	3.67 A

Table 2. Root rot results on poinsettias inoculated on 10/29/85, two weeks after treatment.

Treatment	Results On 12/16/85	Washed Roots Results On 1/15/86
No treatment	2.22 B*	2.78 B*
3-2-2A Fertilizer spike only	1.33 A	2.00 A
3-2-2A plus 0.3% A.I. metalaxyl	3.22 CD	3.11 BC
3-2-2A plus 0.5% A.I. metalaxyl	2.67 BC	2.89 C
3-2-2B plus 0.3% A.I. metalaxyl	3.33 CD	3.11 BC
3-2-2B Fertilizer spike only	2.11 B	3.22 BC
2 oz/100 gal metalaxyl 2E drench	3.00 CD	3.11 BC
1 oz/100 gal metalaxyl 2E drench	3.67 D	3.44 BC
12 oz/1,000 sq ft metalaxyl 5G top dressed on soil	3.00 CD	3.67 C

Table 3. Root rot results on poinsettias inoculated on 11/12/85, four weeks after treatment.

Treatment	Results On 12/16/85	On 1/15/86	Washed Roots Results On 1/16/86
No treatment	2.11 BC*	2.22 B	2.78 BC*
3-2-2A Fertilizer spike only	1.33 A	1.44 A	2.00 A
3-2-2A plus 0.3% A.I. metalaxyl	2.78 D	2.78 BC	2.89 BC
3-2-2A plus 0.5% A.I. metalaxyl	2.56 CD	3.00 C	2.78 BC
3-2-2B plus 0.3% A.I. metalaxyl	2.78 D	2.67 BC	3.11 BC
3-2-2B Fertilizer spike only	1.78 AB	2.22 B	2.44 AB
2 oz/100 gal metalaxyl 2E drench	2.89 D	3.33 C	3.00 BC
1 oz/100 gal metalaxyl 2E drench	2.78 D	3.22 C	3.33 C
12 oz/1,000 sq ft metalaxyl 5G top dressed on soil	2.67 CD	3.22 C	3.00 BC

Table 4. Root rot results on poinsettias inoculated on 12/9/85, eight weeks after treatment.

Treatment	Results On 1/15/86	Washed Roots Results On 1/16/86
No treatment	3.33 BC*	3.56 C*
3-2-2A Fertilizer spike only	2.11 A	2.44 A
3-2-2A plus 0.3% A.I. metalaxyl	3.56 C	3.56 C
3-2-2A plus 0.5% A.I. metalaxyl	3.44 C	3.56 C
3-2-2B plus 0.3% A.I. metalaxyl	3.11 BC	2.89 AB
3-2-2B Fertilizer spike only	3.00 BC	2.78 A
2 oz/100 gal metalaxyl 2E drench	3.00 BC	3.44 BC
1 oz/100 gal metalaxyl 2E drench	3.33 BC	3.78 C
12 oz/1,000 sq ft metalaxyl 5G top dressed on soil	2.78 B	2.78 A

*Note: The letter(s) following each average indicate the Duncan's New Multiple Range Groupings. Averages followed by the same letter(s) do not differ significantly at the .05 level. Root rot was rated on a 0-5 scale with 5 being no disease.