

## EXPECTED ADVANCES IN THE BEDDING PLANT INDUSTRY

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In North Carolina the number of growers involved in bedding plant production almost doubled in the period of 1949 to 1959. The monetary value of the bedding plant industry in this state increased nearly five times in this same period. Also, considerable progress in bedding plant culture has been realized in the last decade. This article is intended to forecast some advances that appear likely in the next couple of years.

The progressive bedding plant grower might well be contemplating the following practices:

### 1. Use of lights.

A great deal of research work has been conducted on the lighting of annuals, generally for the first 3 weeks from the date the seeds are sown. One of the chief contributors of information is Dr. James W. Boodley, Cornell University. Using marigolds, celosia, alyssum and petunias as his test material he studied the effects of various light intensities and determined the length of time certain garden annuals could be grown under artificial light without any detrimental effects.

He noted uniform germination, stocky growth habit, and dark green color of these annuals when the containers were placed 6 inches from the light source (the light intensity at that distance was 560-800 foot candles). Boodley reported that satisfactory plants could be ready for transplanting 2 weeks after sowing if:

- a. A constant temperature of 65-70° F was maintained.
- b. A daylength of 18 hours was given, with a minimum light intensity of 500-800 foot candles, provided by four, 4-foot long, 40 watt warm white fluorescent tubes.
- c. The seedling container was placed 6 inches from the light source.

When seed are sown under natural light conditions in the greenhouse, there are irregular fluctuations in light intensity and temperature. Consequently the grower generally will not have uniform results from year to year, or even from one sowing date to another in the same season. The use of artificial lights, properly placed and of adequate intensity, will enable the grower to grow his seedlings with more precision and control.

By using artificial light, the grower would not have to use greenhouse space for the first 2 weeks. Artificial light could be supplied in a basement, a shed, or any site having electricity and a temperature of 65-70° F. Some form of ventilation should also be provided to lessen the possibilities of damping-off in areas with poor air circulation. Recommended sanitation procedure should be followed.

Detrimental effects of prolonged lighting have been obtained. Boodley's seedlings were ready for pricking-off 2 weeks after sowing. He suggested this could be the maximum time needed for supplementary lighting.

The use of lights on petunia seedlings has recently been reported by USDA workers at Beltsville. However, as early as 1954, Seeley, then at Penn State, devised a method whereby petunia seed could be sown March 1, transplanted to larger containers

April 1, and in flower the latter part of May. Lights from 10:00 PM to 2:00 AM hastened flowering, but plants were tall and leggy. A well prepared soil, adequate watering, regular fertilization, a night temperature of 60°, and adequate spacing resulted in flowering petunias 8 weeks after the seedlings were transplanted.

Cathey and Piringer ran elaborate tests on the influences of various daylengths, chemicals, and temperatures on flowering and growth habit of petunias. They found that plants grown under daylengths of 10 hours or less were branched and short stemmed, with delayed flowering. Plants grown under longer days were single-stemmed and flowered early. When the artificial light source was incandescent light, the plants flowered earlier than under fluorescent light. The internodes were longer and flowering was hastened when the night temperature was increased (50, 60, 70 and 80°). The application of phosphonium resulted in shorter plants, but branching or flowering was not affected.

Petunia studies were conducted at N. C. State College in the spring of 1962. Three daylengths (9-hour, natural, and natural plus lights 10-2), four varieties (White Magic, Blue Magic, Sugar Plum, Comanche) and 3 growth-retardants (CCC, Phosfon-L, CO 11, plus a check) were included in the study. A 60° night temperature was maintained.

Short, stocky, branched plants were produced under the 9-hour daylength regardless of variety or chemical treatment. The fastest flowering occurred under the natural daylength, while plants subjected to lights from 10:00 PM to 2:00 AM was intermediate in growth habit and flowering time. The growth habits under the 3 daylengths are shown in Figure 1 for the variety Blue Magic and Figure 2 for the variety Sugar Plum.

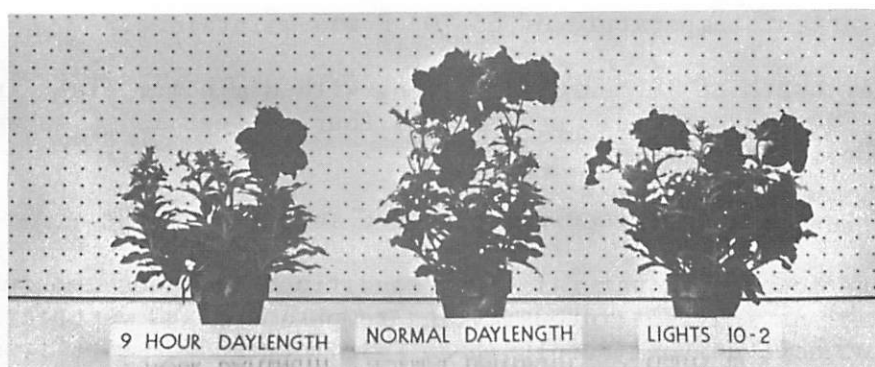


Figure 1. Blue Magic, grown under 3 daylength regimes at 60°

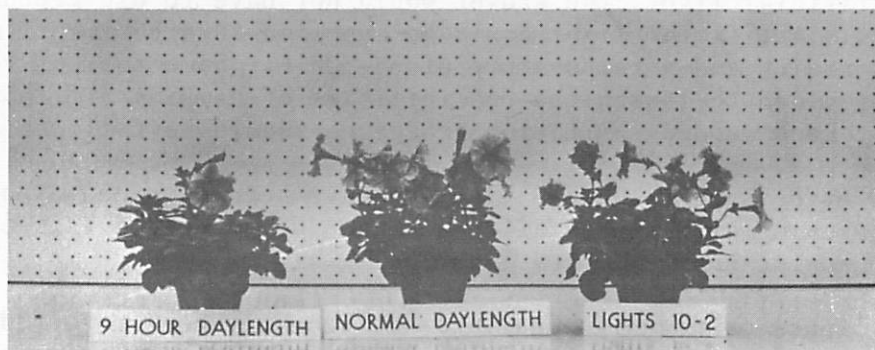


Figure 2. Sugar Plum, grown under 3 daylength regimes at 60°

## 2. Use of chemicals.

Growth-regulating compounds will be making inroads in the bedding plant industry, just as in the production of shorter poinsettias, Easter lilies, pot mums, and year-around flowering of azaleas. The results obtained at N. C. State College in last year's bedding plant studies were generally inconclusive, but refined techniques and a new chemical show promise for 1963. Cathey, a leader in the research on chemical control of growth and flowering, has been applying several growth regulators on annuals with successful results. However, a recommendation for the 1963 bedding plant season can not be made at this time, as experimental evidence is not available in sufficient quantity to justify such a recommendation. The progressive bedding plant grower will very likely be using some growth regulator in the next few years, however, in the constant effort to produce better plants faster.

One of the newest chemicals supposedly results in increased heat and drought resistance. This property would be even more valuable than any effect it might have on growth habit or flowering time.

## 3. Artificial "soil" mixtures.

Once again Boodley would have to be mentioned as a chief contributor of information on the use of artificial media (soilless media) for the production of bedding plants. Artificial media are coming into prominence because of increased difficulty in obtaining good soil mixtures and good top soil.

The UC soil mix system has contributed a great deal towards this search for a good artificial medium, and many of the studies are patterned after the University of California work.

The most important requirements for a good medium are that it be readily obtainable, reasonable in price, well-aerated, well-drained, sterilized, and light in weight. At the present time perhaps no one medium has all of these qualities.

## 4. New types of containers.

New types of containers are already in use, with the advent of plastic packs, pressed-peat strips, and numerous other types. All have the essential requirement of being light in weight. Not all are inexpensive in cost, nor can a poor plant be easily replaced in some of the packs or flats. Bedding plant containers are being improved constantly and perhaps even greater advances can be anticipated in the near future.

A recent development is the bagasse pot. Bagasse is the residue of sugar cane after the juice has been extracted. One of the reported advantages of the bagasse pot is improved root aeration compared to other organic pots. The bagasse will be evaluated at N. C. State College, and these results will be made available in a future issue of the bulletin.

In the preceding section "soilless" media were mentioned. In this section "potless" pots could be discussed. Soil-blocks or soil-cube machines are in use in a few places in this country and excellent results have been obtained. Asters and garden snapdragons, grown in 3" peat pots and 3" soil-blocks, are shown in Figure 3. In 1962, 20 species of bedding plants were included in a soil-block study. Only pansies were more vigorous in peat pots than in soil-blocks.

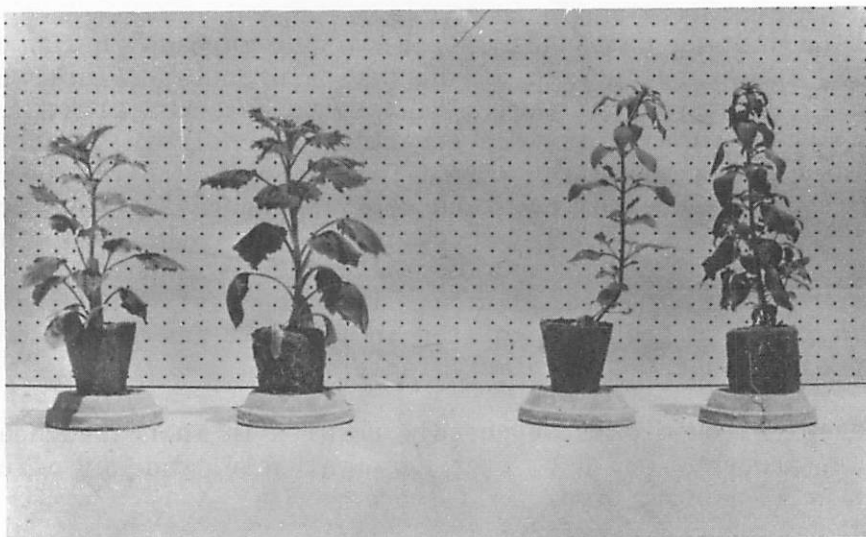


Figure 3. Asters and snapdragons, grown in 3" peat pots and 3" soil-blocks

There are some serious disadvantages of soil-block culture at the present time. These disadvantages are:

- a. Initial cost of equipment.
- b. High labor cost with the manual equipment.
- c. A 3" soil block requires 3 times more soil medium than a 3" peat pot.
- d. A good soil mixture is required, and a lack of good soil mixtures has already resulted in a demand for artificial media.
- e. Flat of soil blocks can be extremely heavy.

Soil-block culture may become a reality in the United States if a light, artificial medium that can be compressed into a block is ever found, and when several hundred blocks can be made in an hour. The end-results of soil-block culture are satisfactory.

#### 5. Improved disease control.

Damping-off is still a primary hurdle in the bedding plant industry. Cheaper fungicides have lessened the cost of control, and improved sanitation (prevention) in greenhouse operations have lessened the need for emergency control. Botrytis, Pythium, and the other pathogens which plague the bedding plant grower still are present in abundance, however, and the investigations on newer and better fungicides definitely will continue.

#### 6. New varieties.

New varieties having improved flower color, floriferousness, and disease and heat resistance continue to be introduced. The sales representatives of the seed companies can give a more detailed account of the new varieties than can be presented in this article.

The above-mentioned items indicate that progress can be expected in the bedding plant industry insofar as culture is concerned. The problem of selling is still paramount. Norman Butterfield, University of Massachusetts, listed the following ways to help sell more annual seedlings:

Ten Helpful Merchandising Aids to Sell More Annual Seedlings

1. Have some kind of display rack - keep them off the ground if possible. They sell better when they are up where the customer can take a good look at them.
2. Keep the area clean - throw out any undesirable or dead plants.
3. Keep old blossoms and leaves picked off and never allow them to become dry or lacking for food.
4. Always have the flat properly labelled as to genus and variety. If you become careless with labels, people will not have confidence in the product you sell.
5. Where possible either display a colored print of the plant in flower or start a few plants (of early variety) early to illustrate the color from live materials. This is expensive but very effective.
6. Keep the price tags up where the customer can see them and do not be afraid to price them right, particularly if you have some strong competition.
7. Maintain a constant supply of fresh young plants for top quality and top pricing.
8. Be kind, courteous and helpful to your customers but don't let them bend your ear too hard. This can become very costly.
9. Train your sales people in the techniques of selling in advance of spring rush and as to what you expect of them and the problems they will encounter in selling your product.
10. Build good ethics in your business for this will bring you repeated orders.

DATES AND EVENTS TO REMEMBER

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| January 6-8    | Annual Nurserymen's Short Course, Raleigh.<br>Tuesday afternoon, January 8th, will be devoted entirely to Bedding Plant Production. Everyone is invited and encouraged to attend.                                                                                                                                                                                                                                  |
| February 15-19 | Southeastern Flower and Garden Show, Merchandise Mart, Charlotte.<br>Remind your friends and advertise the show at your place of business.<br>(See cover picture for Flower Growers exhibit at the 1961 show).                                                                                                                                                                                                     |
| May 19-21      | Annual Commercial Flower Growers Short Course, Raleigh.<br>The Directors and officers of the North Carolina Commercial Flower Growers Association will meet in Raleigh on Wednesday, January 9, to discuss our May meeting. All members are requested to submit their suggestions for speakers and topics and any other ideas for improving our Short Course to me or one of the directors before January 9, 1963. |