Can Stock be Grown as a Profitable Crop in Northern Greenhouses

Richard S. Lindstrom

There is a need, especially for the retail grower, for important cut flower crops other than chrysanthemums. In Michigan, we have watched the stock (Mathiola incana) production move to Arizona, yet some retailers in our part of the country have been hesitant to buy stock from the West. As one retailer said to me just the other day, "Why buy something that I'm always in doubt about?" The stems are usually very hard and they do not always take up water. Yet, there are still a lot of stocks sold in Michigan because there is a need for a spiked flower.

In growing stock in the greenhouse there are some problems that should be solved before it can be expected to be profitable. One problem is the lack of a completely double-flowered strain of stock. The European literature says that seedlings grown under mercury vapor lamps will be yellow if double and green if single. This is due to a single gene which is not apparent in our United States grown stock. In our situation, we plant approximately two to three seeds to a hill and then after several weeks we leave the most vigorous seedling and hope the plant will be double. In our program, we usually end with 75 to 85 percent doubles.

Another problem is the length of time the stock must remain in the bench from transplanting until flowering. Under present cultural methods, stock sown in September or October and grown at 50° will take five to six months to flower.

Flowering can be hastened, according to Laurie, by sowing the seeds in flats in August, benching the transplants in October, and using lights as in the chrysanthemum program, to obtain Christmas bloom when grown at 48 to 50° F.

Gibberellin

In 1956 we received a small amount of gibberellin and began spraying almost every crop that we had in our greenhouse. In Table 1, you will notice that we planted stock in July, August, November, and January, 1957. Each one of these crops was sprayed with gibberellin. You will note that the most spectacular results were seen when the seed was directly sown on the bench in August and sprayed with gibberellin in September. Flowering in late October or November followed.

We cannot use stock sown on the greenhouse bench in July or August because it takes too much gibberellin to keep the plants from going blind. Treating with gibberellin in August or September requires approximately 1000 ppm in order to overcome the blindness in stock. At these rates the cost of gibberellin is much too high to be practical. Secondly, the stock would flower around the same time as we normally have our chrysanthemum gluts, thereby lowering the sale price of the stock. It addition, certain varieties will require higher amounts of gibberellin at this time of the year. As an example, Balls White No. 16 requires more gibberellin to induce flowering than does Lilac Lavendar No. 1.

The most profitable time to plant stock with regard to earlier flowering and gibberellin is late September through the middle of November. During these months the temperature is much lower and as little as 10 to 100 ppm of gibberellin will induce earlier flowering. In our work this year we sowed stock seed on the 15th of November and it flowered approximately the 15th of February. When we can get stock to bloom from seed to flower in approximately three months, we believe stock can be a profitable crop. Our fourth sowing in late January is about as late as we can recommend for profitable stock production in northern greenhouses. At this time of the year there is no need for gibberellin because the plants flower almost

Table 1. Response of stock variety Lilac Lavender No. 1 to treatment with gibberellin.

Seed Sown	Night Temp.	Conc. of Gibberellin	Treatment (foliar spray)	Height (inches)	Days to flower
7-2-57	-*	Control	-	15.5	202
	-	1000 ppm	August 9-16-23	37.0	100
8-8-57	60**	Control	-	12	161
	60	1000 ppm	September 15-22-29	27.5	80
11-11-57	50	Control	-	13	124
	50	250 ppm	January 2-9-16	15.5	113
	60	Control	-	22	105
	60	250 ppm	January 2-9-16	24.5	90
1-23-57	50	Control	-	21	79
	50	100 ppm	March 3-10-17	27	88
	60	Control	-	22	83
	60	100 ppm	March 3-10-17	24	75

Swedish Stock - W. Wiebull, A. B., Originalutsaden Landscrona, Sweden -- 3664; 3768; 3696.

* Temperature held at 50° F. when possible
** Temperature held at 60° F. when possible

as readily without gibberellin. Stocks sown in late January will flower by April 15.

We recommend sowing directly in the bench rather than sowing in a flat and later transplanting to the bench. This is especially true when growing at 60°. Plants at this temperature germinate so readily that you lose time in sowing in flats and transplanting. When the plant has reached the four- to six-leaf stage, we spray the foliage with gibberellin once a week for three weeks.

Carbon Dioxide

An interesting aspect which I might discuss briefly here is the use of carbon dioxide with stock. This fall we grew some stock and have been treating it with carbon dioxide. There are several varieties in which it seems that the carbon dioxide is definitely a help both in increasing the height of the plant and in hastening flowering.

Swedish Seed

A somewhat different angle with regard to stock is the use of Swedish stock seed. With the help of a foreign student we located some summer stock seed in Sweden. Basically there are three types of summer stock which flower in 10, 11 and 12 weeks from sowing. These plants do not normally get as tall as the regular common stock that we know here in the States, but the interesting thing is that they can be sown in April or May in northern greenhouses and flower in a very short period of time. They will average approximately 20 to 30 inches in height and work out very well for a short-term crop. A fall sowing proves unsatisfactory. There are a number of different colors within each strain and some colors are more satisfactory than others. A grower in Kentucky tried the Swedish stock in the summertime, but apparently it is too hot there for this strain. I feel that you growers in Minnesota who have just as cool summers as we do would find this item very worthwhile.

In summary, we may say that the effect of gibberellin on stock is very spectacular at certain times of the year. Because of the relatively high cost of gibberellin additional work is necessary to determine minimum effective rates on individual varieties.