FORCING CAULIFLOWER IN THE FALL

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Prices for fall grown greenhouse vegetables are low, therefore, growers are constantly seeking crops that will provide maximum return with minimum production costs. Growers of bedding plants who utilize their growing structures only part-time, may also be interested in growing such crops.

The growing of cauliflower in unheated structures is still being practiced in Europe, but in this country it is not grown in greenhouses. We studied the feasibility of growing a fall crop

of cauliflower in the greenhouse without the use of heat and minimum of labor during the fall of 1974 at the Michigan Agricultural Experiment Station. Planting of the crop was programmed so that a greater portion of the field grown crop would be harvested before the greenhouse crop matured. Thus, they would not be competitive with the protected crop. In order to produce high quality blanched heads without tying, which is an expensive production cost, the variety Self Blanche was used.

Four-week-old Self Blanche plants were transplanted in the greenhouse into steam sterilized well manured soil on August 20. (Manure was applied at a rate of 100 tons per acre.) Two spacings 18 x 18 and 24 x 24 inches were used since we found these to be desirable to produce 5 to 7 inch diameter heads. The plants were spaced in blocks of four rows with a 3 foot spacing between each block for alleys to be used for harvesting, etc. Each spacing was replicated 3 times.

Soil fertility test prior to planting was similar to the nutrient levels that give consistently high production of greenhouse tomato. Soil nutrients were 100 lbs of nitrogen, 500 lbs of phosphorus and 750 lbs of potassium per acre. A starter solution of 11 lbs of nitrogen, 16 lbs of phosphorus and 8 lbs of potassium per acre was used at transplanting. One side-dressing of 40 lbs of nitrogen per acre was applied 7 weeks after transplanting. Granulated diazinon (5%) was broadcasted 2 weeks after transplanting to control cabbage maggots. Irrigation was provided as necessary and the frequency increased as the plants became larger. Infestation of cabbage looper was controlled by use of biological insecticide (Dipel) while aphids were controlled by use of nicotine fumigants.

No heat was provided for the growing of the crop. Thermostats were set so that the ventilators opened at 55 degrees. Night temperatures during the study did not fall below 40 degrees. The heads reached maturity 3 months after transplanting. Sixty-three percent of plants spaced at 24 x 24 inches and 51 percent of plants spaced at 18 x 18 inches were harvested the first week and the remainder was harvested the following week.

For the 24 x 24 inch spacing the head size ranged from 4½ to 8 inches in diameter while 95 percent of those grown at 18 x 18 inches were of this range. For the 24 x 24 inch spacing, 80 percent of the heads were 5½ to 7 inches in diameter while 65 percent of the 18 x 18 inch spacing were in the same size range. Average head weight with all leaves removed for a 6½ inch head was 2 lbs and for the 5½ inch head, 1¼ lbs. The cauliflower harvested were of marketable quality and well blanched, a trait associated with the variety which produces wrapper leaves that curl over the heads when grown at cool temperatures.

Soil analysis following the experiment showed that nitrogen was adequate as provided through the decomposition of the manure and supplementary nitrogen provided in the starter solution and sidedressing. The crop used 20 percent of the phosphorus and 33 percent of potassium available in the soil. Cauliflower is known as a heavy feeder of nutrients and post-

harvest soil tests showed that this was so. Perhaps, potassium should also be added at the time the crop is sidedressed with nitrogen.

Although 24 x 24 spacing appeared to be most suited for the variety Self Blanche other spacings may be better suited for other varieties that are not as vigorous and produce less leafy growth than Self Blanche. Such varieties may mature earlier, require tying and less time to grow.