of production amounted to $82,053 with the resulting profit of $35,596.

The company has each year purchased about $105,000 worth of bulbs over the last several years. By a combination of bulblet and planting stock crop over a two year period we were able to save our bulb bill by 30%.

In addition we have planting stocks over our needs valued at $12,320. The flowering stock would be planted on both our farms so there would be no overage unless our bulb loss can be reduced. Other factors involved, we have saved $7500 in freight and have 400 bushels of bulblets valued at $14,000 to start next year's crop. We produced $3,747 worth of flowering bulbs from the bulblet crop.

SUMMARY

For a bulb growing operation to be successful on a gladiolus flower farm it should be a completely independent operation so as not to be neglected in preference for the flower crop. This has been the case in many instances in the past. All equipment and personnel should be separated so that it can be operated independently.

The bulblet crop can be almost completely mechanized and produced for a cost of $2.90 per 1000. By increasing production per acre we would be able to offset part of the rising cost of production.

Flowering stock can be produced for $11.84 per 1000 if at least 80 percent production is maintained. Any increase above this would help maintain the increasing cost of production.

By a combination of a bulblet and planting stock crop the company was able to save 30% of the annual bulb purchases. All the surplus inventories plus freight savings amounted to $33,820.

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THE EASTER LILY INDUSTRY IN FLORIDA

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The Easter Lily industry in Florida began as a bulb crop. In the early '30's a Mr. Renniger, who lived in Bartow, was given a handful of bulbs. As they multiplied, he enlarged his garden. In about '35 or '36 the Rennigers moved to Lake Placid and brought the bulbs with them. There, on the east shore of Lake Huntley, the first commercial crop of lily bulbs was harvested.

Having a good stock of bulbs at the time of the Japanese attack on Pearl Harbor was the beginning of a success story and a new industry for Florida. These lilies were of the Creole type and as the years went on, some wild-eyed promoters renamed them from either a selection or a whim, but the only name that stuck was *Floridii.*

Rex Beach was also one of the pioneers in this area and was doing rather well until he imported bulbs from Mexico that were heavily infested with "lily fleck virus" which spread to his entire planting, and he went out of the business. The few other growers were fairly isolated, and remained clean. Soon many small acreages in the Lake Placid-Sebring area were being planted on the south and east sides of the lakes in the area. The soil in these spots was generally peat muck type with good drainage, and with a minimum of fertilizer, these growers could produce large crops of very fine bulbs. Each farm was separated enough so at first the spread of disease was due to the lack of knowledge of the diseases and how to control them, or neglect, and to be very frank, many of the growers could have cared less, as long as they could sell the bulbs. Of the 30 to 40 growers in the Lake Placid-Sebring area, only about 5 or 6 remain, producing comparatively virus-free bulbs for the early bulb market in this country, and some for foreign trade.

The USDA at Beltsville saw the potential in those early days and spent a great deal of time working with the growers. Some of this work had its drawbacks because of the distance between field and laboratory. Some of the earliest work done was by Dr. Neil W. Stuart on "The Influence of Temperature Storage Period on Forcing Lilies" 1941-42. Of course, this was

[1]H & H Lily Growers, Stuart.

for the greenhouse operator, but it also had to do with maturity of the bulbs at digging time. How times and work change is illustrated in the last sentence of this paper (I quote):

"The practice of keeping lily bulbs for forcing in a common storage for several weeks or months prior to cold storage cannot be recommended." But now the recommended way is to store freshly packed bulbs in warm storage for two to three weeks, then into cold storage, 45-50 degrees for 7 weeks. The results are fantastic! Leaves on stems are more, with closer nodes, and generally greater number of blooms.

On the sandy muck east of Sarasota, some very fine bulbs are being produced. This operation is unique in its proximity to the Experiment Station at Bradenton, and the cooperation between grower and Station personnel is very close. A great deal is being learned about land preparation, such as pre-plant soil management, planting time, fumigation, bulb dips and sprays during growing season, at harvest, bulb treatment for black scale, nematodes, basil rot, etc. and Mrs. A. J. Overman was able to work closely with this operation on her work with per-storage treatment of bulbs for nematodes with Phorate, Systex and Parathion.

Lily growing in the Ft. Myers area has been limited to the production of cut flowers and pots and except for one grower, these have been limited to Easter flowering. Pots have been tried with very limited success. And without the controlled conditions of greenhouse culture pot plants of lilies can become a well-traveled item between cold room and field or sunshine. This treatment soon wears off the profit, plus the fact that such growing conditions also wear off the quality of the plant, and yellowing of the foliage, cracking and misshapen flowers are the end results.

The solution to the pot plant business may be the new idea of planting 4-5 inch bulbs in pots in September, lighting them after they have grown to the rosette stage, then in January, shipping to the northern greenhouse to finish off for Easter. I believe this could be worked to great advantage for the greenhouse man in the North. No clutter at Christmas time as is the case with early Easters. It could work into a big pot business with the aid of the lighting program which Dr. W. Waters has worked out.

Growing Easter Lilies as Cut Flowers

Growing Easter Lilies for cut flowers is quite a different operation than that of growing for bulb production, although many of the basic operations are quite similar.

Soil fumigation is a must. We started out in 1950 using MC2, Methyl Bromide, and at first with tremendous success, but soon it seemed we were just getting weed control. Mylone came next, and it too, served its purpose. Now all we use it for is nut grass control. Vapan came and went, and all this time we would try going back to Methyl Bromide. Brozone and Bromex, the drill-in type of Methyl Bromide, came into being a few years ago, and have been giving very good control. With the tarp layer, it is giving excellent results WHEN the ground is properly prepared. That statement may seem ambiguous, but for every piece of ground properly prepared, there are 100 that are not.

We are now trying Vorlex EP-201. This has 15% chloropicrin with vorlex and it has shown some very promising results in lily production for the control of black scale. Many believe this does not have much effect on production, but any disease cuts down on root and plant life, so quality diminishes along with quantity.

In our sandy soils, we are only one step away from hydroponics. Peat moss, bagasse or other fibrous materials are incorporated along with sludge and castor pomace and Thimet as a pre-plant. This is tilled into the top 4 inches and a bed press follows. Six x 8 wire mesh is laid on top of the bed; this not only supports the plants later in growth but takes the mental strain out of where to place the bulbs.

About 10 days after planting, the fertilizer program begins, and all this depends on rainfall. The first application is generally Calcium Nitrate, and during the next 70 days, if no heavy rainfall occurs, there applications of a high grade organic base dry fertilizer with a beef up of Calcium Nitrate and Muriate of Potash through the irrigation.

Of course, throughout the growing period we spray. This is mostly fungicides as the Thimet in the pre-plant application will carry the crop through to flowering. Fungicides are changed weekly. M-45 is used in early growth. Because of the heavy deposit left on foliage, we can't use this later when the plants are finishing off. In bulb production this makes no difference.

Z-78 or Captan-Manzate mix is usually used from eighteen inches on up to cutting.

Cutting the flowers (harvesting) is planned to get the most return from each bulb. Buds are picked from the plant as they mature and shipped as heads, until only 2 or 3 buds remain on the stem. Then the stem with its remaining buds is picked and shipped. Heads are packed standing on the stem end, 150 to the small box. The stem lilies are bunched 1 dozen buds to a bunch, which means from 4 to 6 stems to a bunch.

One of the strange things that happens with the lilies is the effect of temperature. When planted in August after being given cold treatment for vernalization, they will grow to mature plants in as little as 55 days, yet given the same storage time, etc. and planted September 25th, they take 90 to 100 days to reach maturity.

The bulbs planted between August first and October first will generally come back and give a second crop of bloom in late April and May. The others planted later remain dormant after blooming, and as a rule are ready to dig 8 to 9 weeks after peak of bloom. The bulbs that have had the stem left on them for one reason or another will be good for forcing again the following season.

Dug and dusted with a fungicide and packed in dry peat moss or sawdust, and as I mentioned before, stored at an even 75-78° F for a minium of two weeks, the bulbs will mature more evenly. This warm storage work is not completed as yet, but Beltsville and a grower in the Sarasota area have been keeping data on their findings. The temperature must be 75 to 78° to be effective on Florida bulbs. After the warm storage the bulbs should be given at least one extra week in the cold, regardless of the storage temperatures—32, 40 or 50°.

In summary, I would like to say that I believe that the lily industry in Florida (both cut flowers and bulbs) could flourish. We have a number of fine research people who are interested in our problems. All we need is cooperation among the growers themselves.

EFFECTS OF FERROUS SULFATE, CHELATED IRON AND VERSENE-T LEVELS ON GROWTH AND CHEMICAL COMPOSITION OF CENTIPEDEGRASS

H. G. Meyers and J. N. Joiner[1]

Abstract

A 3 x 3 x 3 factorial experiment in randomized block design with treatments replicated 4 times was initiated to test effects of 3 levels each of ferrous sulfate, chelated iron and Versene-T on growth and chemical composition of centipedegrass. Iron content in leaves of centipedegrass was greatest at the highest levels of ferrous sulfate and Versene-T when either material was applied separately. Tissue iron content and dry clipping weights decreased when both materials were applied as a mixture at the highest levels supplied.

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Introduction

Centipedegrass is becoming more desirable as a lawn grass in Florida due to increasing cost of maintenance for St. Augustinegrass. St. Augustinegrass normally has more shade tolerance and better appearance than centipedegrass, but chinch bug damage and accompanying control and renovation costs are decreasing its appeal as a lawn grass.

Centipedegrass has several disadvantages such as iron chlorosis and low wear and shade tolerance. Iron deficiency is generally not a major problem under low soil fertility conditions; however, heavy fertilization to improve its appearance and increase density often induces chlorosis as a result of iron deficiency.

Iron sources and chelating agents correct iron deficiency for varying periods of time when