Special Sessions

ROSES AND GARDENIAS

Dr. James Kamp,
University Illinois - Moderator

Q. What would be the advantage of more plants per bench?

A. Dr. Kamp - It has been shown at the University of Illinois that more rose plants per bench did not increase the total flower production per square foot of bench area. Plants in center rows give the lowest production. The largest production was obtained when planted three plants across the bench in rows 15 inches apart with a 30 inch space every third row. With this method 8 of the 9 plants are on outside rows accounting for higher production. During the first season production favored normal spacing; after the first year the wider spacing gave higher production per square foot. It was also noted that widely spaced plants required approximately half the amount of water.

With gardenias planted close together and every other plant removed at the beginning of the second year never attained the high production of those plants originally spaced at the greater distance.

Q. What has been done about blind wood?

A. Dr. Kamp - Partial defoliation caused more of the buds to break and form flower shoots. The breaks, however, are usually weaker than other breaks.

Conditions at the time when shoots are 1 to 1½ inches long determine if the shoot will be blind. The per cent of blind wood is not affected by season. Blind shoots are noticed more in the winter time because flowering shoots are more valuable at that time.

A. E. S. Boerner - Breeding may provide a solution to the problem through increased production or through elimination of blind wood.

Q. What effect does Krillium have on greenhouse soils?

A. Dr. Kamp - Krillium flocculates the soil in pots or in the bench if used at the recommended rate or at one half the concentration. Twenty minutes after application there is a definite change in the soil structure and it will last for two years.

Q. Why is constant water level method of watering going out of most commercial ranges?

A. Dr. Andreasen - The main reason for the abandonment of the constant water level method is that most growers have been unable to keep the water at a constant level. Soil becomes deficient in oxygen and gives considerable trouble.

Q. Would the green sand of New Jersey be of any value to increase the potash content of greenhouse soils?

A. Dr. Andreasen - Yes, the potash content would be increased.

Q. What is the best method to change the buffer capacity of adobe soil?

A. Dr. Andreasen - The addition of acid peat may do so.

Q. Are aluminum bar caps necessary.

A. T. E. King - If one follows a maintenance program in which the houses are painted and kept tight, one does not need bar caps. However, bar caps help keep a house tighter over longer periods of time. One should keep drip gutters clean so that condensation water is removed properly.

Mr. King also explained that the aluminum greenhouse just built at Van Bourgondien's on Long Island is an Orlyt type with an aluminum frame, the glass is supported on wooden sash.

Notes on greenhouse costs - the smaller the unit of coverage, the greater the cost. The Orlyt is somewhat cheaper to build than a conventional greenhouse for the same dimensions covered.

Q. How would you handle roses from time of cutting through storage, to shipment to market?

A. John Mastalerz - Cut Better Times roses preferably in the afternoon, place them directly in the storage container without putting in water. Store dry at 31°F for 15-18 days. Upon removal, cut stems, place in warm water (85°-100°F) and harden off for 6-8 hours at 40°F. Cutting of stems is not necessary if warm water is used, but insures water uptake. Those placed in water before storage will turn blue in 15 days when compared to those not placed in water. Other varieties, except those that blue, may be placed in water before storage.

Q. What causes curling or crinkling of petals when roses are placed in a cold box directly from a warm greenhouse?

A. Mr. Mastalerz - The crinkling results from a slowing down of the growth of the petals by the low temperature. Upon removal from the low temperature to a higher temperature, growth will continue and the blooms will correct the condition.

Q. Is an air tight container absolutely necessary for storage of roses?

A. Mr. Mastalerz - Water loss is the important consideration. We have no evidence that an absolutely gas tight package is bene-

ficial or detrimental in storage.

Q. What causes black necks on roses?

A. Mr. Mastalerz - It is physiological but conditions causing it have not been determined. A rose with black necks absorb water and opens normally but appearance and sales value is affected.

Mr. Johnson - He used a cold cathode ultra violet lamp and prevented any blackening of necks on roses handled in a normal manner.

Q. What are you recommending for the control of mildew?

A. Dr. Dimock - Our basic recommendation is that heat and ventilation be used more effectively to maintain lower humidity and in consequence reduce the seriousness of the mildew problem. Heat should be started earlier in the afternoon and ventilation should be maintained until inside temperature is stabilized and outside temperatures are well below those inside. Consistant use of sulfur on the pipes has been very effective in mildew control.

A spray of wettable sulfur seems to be the best combined eradicant and a preventative. Iscothan controls mildew but must be used with care. More attention to weather is necessary with the use of this material - spray on days when rapid drying occurs and use every means available to speed the drying. Too much or too powerful wetting agents may be responsible for some injury.

Q. Is the amount of sulfur on pipes related to the cubic content of the greenhouse?

A. Dr. Dimock - There is no real answer. Dr. Forsberg of Illinois used one pound in one pint of water per 90,000 cubic feet. One pound per 100,000 cubic feet should be satisfactory.

A. Dr. Kamp - A grower in Illinois who applied sulfur twice a week for an extended period now has no mildew with fewer applications of sulfur.

Q. Should the house be ventilated all the time?

A. Dr. Dimock - It is probably best to keep vents cracked at all times except in severest weather. Use steam to maintain temperature. There is probably less danger of mildew on dark cold days than on dark warm days; the relative humidity in the greenhouse would be lower if the glass were colder than the greenhouse air.

Ernest Kimbal and John Mastalerz

▶ CARNATIONS, CHRYSANTHEMUMS, ◀ SNAPDRAGONS, BULB CROPS

Paul Krone,
Michigan State College - Moderator

Direct benching of rooted carnation cuttings was the first topic of discussion. Dr. Krone presented data obtained at Michigan with several Yoder Brothers varieties. Cuttings benched in May and pinched on June 24 began to flower in September. The production for the period from September through December for the following varieties is as follows:

		Flowers
Cerus (Red)	9.3	per Sq.Ft.
Aurora (White)	13.0	"
Diana (Light Pink)	13.6	"
Jupiter (White)	14.0	"
Midas (Yellow)	5.3	"
Neptune (Scarlet)	9.5	"
Venus (Salmon Pink)	9.0	"
Adonis (White)	13.2	"

Q. Are we going to give up growing 2 year carnations in favor of direct benching of rooted cuttings?

A. Dr. Krone - We do not know how rooted cuttings will respond when planted at other times of the year. Two year carnations will most likely be with us for a long time.

Q. How should carnations be cut back for 2 year production?

A. Emil Oberle - June 10 is the last date for cutting back carnations on Long Island and we cut them back right down into the hard wood.

A. Dr. Krone - In Michigan we do not shear them back as severely as is suggested by Mr. Oberle.

Q. How high should the soil temperature get for good sterilization?

A. Dr. Krone - The soil temperature should be at a minimum of 180°F. After the soil reaches this temperature, the steam may be shut off.

Q. What is the best way to cover soil for sterilization?

A. Sisal kraft paper and Visqueen are satisfactory materials.

Q. What is the best way to sterilize soil if steam is not available?

A. Dr. Dimock - Chloropicrin or formaldehyde drench are effective but can be used only in an empty house. Avoid methylbromide which causes injury to carnations.

Q. How can you avoid cracking concrete benches that are being steam sterilized?

A. Dr. Krone - Raise the temperature very slowly and cool very slowly by dropping the cover to the ground.

Q. What is a good calcium content for

carnations?

A. Dr. Krone - In Michigan we keep the calcium content between 150 - 200 ppm. by the Spurway Test.

Q. Can you suggest a good soil mixture for carnations?

A. Dr. Krone - In Michigan we use equal volumes of peat and sand and fertilize once or twice a week, using a 12-12-12 fertilizer dissolved at the rate of 3 pounds of fertilizer per 100 gallons of water. The peat and sand mixture is giving greater production than soil alone.

Q. What is the best way to apply liquid fertilizers?

A. Dr. Krone - Use an old orchard sprayer or a tank.

A. Grower - We use two 50 gallon oil drums.

A. Grower - We use a hozon 1:10 proportioner which has been re-bored to give a dilution of 1:25.

Carl Ball of George J. Ball, Inc. described some of their 1951-52 F_1 hybrid snapdragon seedlings which he had on display. Carl remarked that:

Snowman #5 is a good, early, pure white for single stem snaps.
Rosana (Rose) is the answer to Christmas Cheer.
Christina is also good for growing as single stems.

Q. How far apart do you plant your snaps?

A. Carl Ball - For pinched plants 8x8" in winter; 7x8" in spring. For single stem plants space 4x6" in winter and 4x5" in spring.

Q. At what temperature do you grow your hybrid snaps?

A. Carl Ball - On cloudy days, we keep the night temperature between 45-50°F; on bright days, we run the night temperature as high as 50-55°F.

Q. How can I control downy mildew on my snaps?

A. Dr. Dimock - The best control is to prevent its formation by maintaining proper temperature and ventilation. Repeated sprayings with parzate or fermate will eradicate it.

Q. Will high nitrate levels delay flowering in snaps?

A. Dr. Krone - No. Levels as high as 50 ppm. have not delayed flowering. 20 ppm. after the crop is established is about a normal level to carry.

Q. What is the best high producing mum, delayed by light, to flower for January and February?

A. For the best production, grading mostly in fancy or extra, pinched once, and giving a little less than one bunch per square foot -- Silversmith is the variety. In other experiments from Michigan, they used two plants per hill, spacing 10 x 10, pinching once, on the variety Long Island Beauty (using CSW Standards) they produced 2.0 - 9-ounce bunches per square foot. They did grade in the shorter grades.

Q. What is the best way to prevent lily scorch and reduced bud count in Croft lily?

A. The best method is to use high calcium to keep up the pH and feed every two weeks after the leaves reach the edge of the pot with ammonium sulfate (at the rate of 2½ lbs per 100 gallons). Of interest, the lily growers from the West Coast reported that they could grow a 6-7 in one year from a scale. By using this method, the price on lilies would be cheaper and the plants would produce the same number of blooms as a larger bulb with two years growth.

Alfred Gianfagna and Marc Cathey

► POT PLANTS ◄

Dr. Conrad B. Link,
University Maryland - Moderator

During the first portion of the session, Dr. Andreasen discussed problems related to soil management.

Q. What causes Croft lily leaf scorch and how can it be prevented without a drop in bud count?

A. Dr. Andreasen - Bud count depends largely on water and light conditions. There is no direct connection between leaf scorch and bud blast. Frequent applications of nitrogen with medium phosphorus and potassium levels give least injury. When all nutrients test high, much injury has been observed.

Q. Does nicotine fumigation cause leaf scorch?

A. Dr. Andreasen - No, this is a similar appearing but unconnected injury.

Q. Does soil pH affect such injury?

A. Dr. Andreasen - Yes, a pH of about 6 to 6.5 should help reduce it.

Q. How much lime should be applied per pot?

A. Mr. Woodriff - Apply lime at the rate of ½ oz. per pot.

Q. How can you keep lilies shorter?

A. Bill Stimming - Run house cool (below 60°F) and run plants dry.

Q. Is the use of lights a good idea on lilies?

A. Bill Stimming - Lights used at a low temperature may be advantageous, but are harmful at higher temperatures.

Q. What effect will lights produce on lilies?

A. Dr. Andreasen - Lilies are not responsive to photoperiod, but may be induced to come in a little earlier. However, the growth will become weak, soft, and elongated due to the lights.

Q. Do previous field conditions affect leaf scorch of lilies?

A. Dr. Andreasen - Yes, but we are not sure how much.

Q. Is the Ace lily resistant to leaf scorch?

A. Dr. Andreasen - Yes, it seems to be a varietal characteristic of Croft.

Q. What are the relative advantages of Ace over Croft lilies?

A. Ivar Ringdahl - Ace lilies can be placed closer together and take up less space.

Q. What temperature is best for forcing Crofts?

A. Charlie Wilton - 60°F

Q. How long will Crofts take to bloom at a 60°F forcing temperature?

A. Bill Stimming - 90 to 110 days. This year the shorter time.

Q. Is it possible to store sprouted lily bulbs?

A. Bill Stimming - Yes, if they are stored at 31°F they will not develop further.

Q. What caused the sprouting of lily bulbs previous to planting this year?

A. Dr. Andreasen - They apparently received storage conditions while still in the field. They sprouted when packed for shipment to the East.

Q. What causes uneven lily sprouting?

A. Mr. Woodriff - Uneven field watering and uneven storage conditions.

Q. What is the effect of newspaper in the bottom of flats?

A. Dr. Andreasen - Through decay, it will cause a nitrogen deficiency and will impede water drainage.

Q. Are wood preservatives desirable to use on pots to prevent algae growth?

A. Dr. Link - A grower near Washington, D. C. has found a Cuprinol dip very desirable for this.

Q. Are there any new ways to clean old pots?

A. Place pots in water and pass in steam and cook them. The algae will be killed and loosened and can then be washed off before the pots dry.

The second portion of the session was mainly on disease problems which were discussed by Dr. Dimock.

Q. Can poinsettia stock plants be treated to prevent root rot?

A. Dr. Dimock - Not as yet, but we hope to have the answer soon.

Q. Will cuttings from stock plants infected with root rot produce clean cuttings?

A. Dr. Dimock - Yes, if any cutting material is produced.

Q. Has any work been done on water temperature effect on root rot of poinsettias?

A. Dr. Dimmock - If the water is cold enough and the effect lasts long enough, root rot injury would be increased.

Q. Did poinsettias have root rot forty years ago?

A. Yes probably.

Q. What is the effect of root rot on leaf drop in the home?

A. The reduction in root system may cause wilting due to inability to replace transpired water.

Q. Can Parzate be dusted effectively?

A. Dr. Dimock - Yes, but in our experience it has been somewhat less effective than the spray and leaves a more conspicuous residue.

Q. What are the relative values of Fermate and Parzate?

A. Dr. Dimock - Fermate contains iron and nitrogen and will reduce chlorosis in plants deficient in iron or nitrogen. Parzate is just as effective fungicidally but contains zinc rather than iron and will not correct iron deficiency; zinc-sensitive plants, such as some chrysanthemum varieties, may show bronzing and chlorosis when Parzate is used repeatedly.

Q. Are Fermate and Parzate suitable for use on begonia leaf cuttings?

A. Fermate and Parzate have both been known to injure begonia leaf cuttings, but some growers have used both materials successfully. The reason for this variation is not known.

Q. Will other plants pick up Thielaviopsis root rot?

A. Dr. Dimock - Yes, such plants as petunias and geraniums will carry it along as will many other bedding plants.

Q. What fungicides should be used to combat mildew on hydrangeas and roses?

A. Dr. Dimock - Frequent, light applications of dusting sulfur give good mildew control both on hydrangeas and roses; other materials for use on roses were discussed in the rose session.

Q. Would Parzate be better than Fermate to combat botrytis on hydrangeas?

A. Dr. Dimock - Parzate would probably be better since it has usually proved more effective than Fermate.

Q. Is zinc oxide good to use on geranium cuttings?

A. It is all right, but there are others which are better.

Q. Is Dithane the same as Parzate?

A. Dithane has the same active ingredient as Parzate; also Karbam Black, Ferradow, NuLeaf Black, and some others have the same active ingredient as Fermate; and Opalate White, Karbam White, and some others have the same active ingredient as Zerlate. I have used the DuPont names from force of habit, not because I recommend them over the others.

Q. What is the reason why Zerlate will not always control black leg in geraniums?

A. Dr. Dimock - If the condition is caused by internal bacteria or Pythium a surface application will have no affect.

Q. What causes rot at the bases of the leaves on greenhouse asters?

A. Dr. Dimock - It usually is caused by botrytis, and better air circulation will reduce it.

Q. What has nutritional level of the stock plants to do with cutting performance?

A. Dr. Link - It is expected that there would be a carry-over of good nutritional conditions in the stock plants, to the cuttings. It was found at the University of Maryland that adequate potassium, plus phosphorus will give more cuttings and better rooting and subsequent flowering.

Q. What is the best temperature to propagate geraniums at?

A. Charlie Wilton - 60°F.

Q. When should you propagate geraniums for spring sale?

A. By using large soft growth and potting direct to 4 inch pots, it is possible to get good sized plants in 6 weeks. Such plants hold up well after sale.

Q. What covering material besides canvas would be suitable for a steam sterilization cover?

A. Charlie Wilton - Rubberized material produced by Firestone. Others suggested such things as plastics, Schram, and rubberized sheeting.

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▶ ORCHIDS ◀

Gavino Rotor,
Cornell - Moderator

The orchid session opened with a discussion of plant diseases. The black spotting of leaves of orchid seedlings in community pots was accompanied by lack of chlorophyll in the cells in the injured areas (according to Carl Smith, of Thomas Young's, who had sectioned them). A. M. Dycus of Cornell said that it was possibly a photo oxidation reaction within the cell, due to high light intensity, since it only appears on exposed leaves. Shaded leaves will only show it if a portion of the leaf is exposed. Dr. A. W. Dimock knew of no one who had isolated any fungus which proved pathogenic from these areas.

The Botrytis on orchid flowers results in small circular black spots on the flowers making them unsalable. Although Botrytis has not as yet been isolated from these areas by Dr. Dimock, he believes that this organism is the cause. The growers can avoid most of the trouble by preventing condensation on the plants during cloudy periods. The infection may occur in the greenhouse and the spots develop in the refrigerator. One grower said he was not bothered by it as he kept a heated cable below his refrigerator coil and thus was able to maintain a lower humidity in the box. Dr. Dimock said that the effect of Botrytis on orchids was similar to the Botrytis injury on Easter lilies. He further stated that you cannot eliminate Botrytis from the greenhouse. Keeping the range as clean as possible would cut down the amount of infection. This would also hold true in wholesale houses and retail stores, as good clean refrigerators would cut down the amount of infection.

What can be done to prevent molds that grow on the pots after fish emulsions has been applied? Dr. Ark in California is working on this problem. Dr. Dimock said he was not familiar with the trouble but said fermate and anti-Damp might help.

Natriphene 1/2000 - sprayed on Vanda orchids has prevented Botrytis in shipment.

In a discussion of possible nutritional effects of fungicides such as fermate, Dr. Dimock and Dr. Davidson (Rutgers) agreed that they had nutritional value. Dr. Dimock stated that application of fermate did increase the amount of chlorophyl in the plant but the amount depended on the nutritional status of the plant. Dr. Davidson cited his work with geranium cuttings. Tissue tests of the treated cuttings showed they had a high nitrate and iron content when compared to the untreated cuttings.

Methylbromide has been used to sterilize osmunda in air tight drums. Dr. Davidson

recommended the use of 180cc of a 25% methyl-bromide solution to a 50 gallon drum. In the summer it will take only a few hours if the can is placed in the sun and a few days at room temperature in the winter. This method kills the insects and also the weed seeds. If the peat is moist the seeds which are starting to germinate are easier to kill.

Scale can be controlled by using Plant-fume #103 and will not injure the flowers.

A.M. Dycus (Cornell) who is working on the roots of orchids, was the next speaker.

"Aerial roots of orchids are assumed to be of benefit to the plants. It is believed that the peculiar qualities of the velamen make it possible to absorb water vapor from the atmosphere as well as to take up water brought in contact with the velamen. The view is held also that dust of the air may yield nutrients to the velamen layer. It is assumed that water and nutrients pass into the cells of the central core, that is into the living portion of the root.

My experiments reveal the following:

(1) The velamen takes up large quantities of water. This water is lost to the atmosphere with equal rapidness when the humidity is relatively low.

(2) Radioactive phosphorus provided as a phosphate to the velamen does not reach the living cells.

(3) Neither potassum nor nitrogen provided as potassium nitrate to the velamen appear to be absorbed by the living cells from the velamen.

(4) Chloroplasts are present in the cells of the cortex. Photosynthetic production of organic food should occur. Experiments reveal that the rate is very low. The rate of photosynthesis is approximately one third of the consumption of organic food by the aerial root.

These data indicate that aerial roots are of no value to the plant".

The next topic to be discussed was storage of cut orchid flowers. Work is still continuing along the lines of long term low temperature storage. However, to date, we have no conclusive data but do hope to have some results soon.

Dry Sepal is still a problem among many growers. It is still very evident on the west coast around Christmas and around August and September on the East Coast.

Dr. Davidson said their studies show that ethylene is the cause. His latest treatment has shown no dry sepal in over 800 blooms tested. They filter the air through B.A.C. and change the air in their small chambers 90 times an hour. This work will be published soon.

Tom Sheehan