TO: County Agents

IN THIS ISSUE: Vegetable Research Summary (Belle Glade, Ft. Pierce and Ft. Lauderdale Stations)

The Annual Report of the Florida Agricultural Experiment Stations for the year ending June 30, 1960, is already out. Nevertheless, we felt that research on vegetables should be pulled together in summary form for quick reviewing. In this issue, (a continuation of Vegetarian No. 53 and 55), we summarize high points of vegetable research conducted at the Everglades Experiment Station, Indian River Laboratory and the Plantation Laboratory.

Many of the chemicals mentioned in this report are for experimental purposes only and should not be used on vegetable crops until approved by the Food and Drug Administration.

I - Bacterial Spot of Pepper and Tomatoes - (Ft. Pierce)

Results indicate strain difference in the bacterial spot organism. Ten isolates of this pathogen varied in their susceptibility to streptomycin. This may explain difference in response to streptomycin under field conditions.

II - Comparison of Air Blast and Boom Sprayers - (Belle Glade)

For control of Early Blight in celery on muck, best overall control was obtained with the conventional boom sprayer. Disease control by air blast sprayer decreased with distance from the sprayer. Rating used was 1 to 7 (1 = disease free and 7 = highest incidence of early blight as found in check plots). Control with boom sprayer was 3.2. With air blast, control was 4.0 on the 5th row from the sprayer, 5.2 on the 11th row and 6.2 on the 17th row. Penetration into the plant was considered inadequate with air blast sprayer.

III - Viruses Affecting Vegetables - (Belle Glade)

Two pepper farms that were isolated from known sources of virus Y by at least 3/4 miles and on which excellent pre-planting weed (nightshade) control programs were carried out, had very minor levels of infection of virus Y. There was no influence on tobacco mosaic virus spread on these farms. This indicates that tobacco mosaic virus is introduced on the farm by means other than flying insects.

On farms where pre-planting weed control was good but isolation from nearby sources was impossible, results were variable. One such farm nearly
escaped damage from virus Y, the other suffered damage as severe as on a farm in which no pre-season weed control was practiced. Virus Y incidence on all these farms occurred shortly after the first increase in populations of winged green peach aphid.

It appeared that weed control on the farms during the growing season may help reduce spread of virus Y. This is probably due to the removal of host plants of the aphid rather than removal of virus-host species.

IV - Corn Stem Weevil Control - (Belle Glade)

DDT (1 gallon, 25% EC per 100 gallons of water) applied at 4-day intervals from seedling emergence for 6 or 7 applications resulted in increase stand and yields. DDT WP was almost equal to DDT EC in control.

V - Vegetable Varieties on Muck - (Belle Glade)

A. Bush Snap Beans.-- In the spring of 1960, significantly better yields and highest percentage of first picking were obtained with Extender, B-3370, and Valentine type 942, than with Wade (check). Harvester and Res. Agrow Valentine produced yields similar to Wade, but their appearance was outstanding. In observational trials B3125-X-5-2, B3409, WM 108, Slenderwhite, Harris Shipper and Agrow St. Bl. Val. produced the best yields. Florida 101-B was superior in appearance among the yellow (wax type) varieties.

B. Celery. -- The 1959 fall trials were harvested December 1. Green Light, Emerald, Improved Pascal 375 and Pascal 137-D5 were the best yields followed closely by 16-11. In the observational trials XP-15 and a new selection of Green Light appeared to be promising. In the spring trials, harvested June 1, 1959, 52-70, Green Light, 16-11 and Pascal 137-D5 yielded above 1000 crates per acre. Emerald yielded 950 crates. In the observational trials, XP 22, Green Light new selection, XP 15, Tall Utah 137H, 259-19A, MSU-162 and Tall Utah 70K yielded above 1000 crates per acre.

C. Sweet Corn.-- In fall trials grown under heavy rainfall conditions, varieties 630-35, 107, R-8, R30, R3E, Florigold, Iobelle and Sixtopak yielded as well or better than Golden Security. In the 1960 spring trials where no blight was observed, Golden Security significantly out-produced all varieties (415 boxes/A.). Variety Cr. 770-1 was the best yielder of the white sweet corn hybrids followed by Hybrid 31, Winter Belle (R-62683) and Silverliner (check 298 boxes/A.). Variety R-52474 was inferior in yields to the check, but in appearance and quality seemed superior.

D. Carrots.-- Best variety for fresh market was Gold Pak (10 tons/A. U.S. extra) followed by Waltham Nicolor and Long Imperator. For processing, Long Imperator and Red Cored Chantenay appeared to be the best.

E. Onions.-- Best yield was obtained with Granex and White Granex hybrids (500 to 700 - 50% bags/A.).

VI - Corn Earworm Control - (Belle Glade)

DDT EC spray was more effective than DDT WP spray. Spraying pressures
of 200, 100 and 50 psi were no different in effectiveness against earworm. There were no differences in nozzle arrangements, either.

In each of the above experiments, both the fall armyworm, Lephygma frugi-perda, and the corn earworm, Heliothis zea, were attacking ears and were considered as earworms.

VII - Sweet Corn Breeding - (Belle Glade)

Several station hybrids show moderate to high resistance to H. turcicidum. New commercial hybrids having high resistance and showing promise were FM 6256 and Harris D1189.

VIII - Weed Control in Vegetables - (Belle Glade)

Amiben, diuron and simazin were promising pre-emergence and solon post-emergence of weeds at lay-by of staked tomatoes on East Coast sandy soils. No crop injury was apparent.

Karsil is well adapted and effective in control of emerged weeds in celery and would be recommended upon appropriate clearance, labeling and commercial availability.

Simazin, CDEC and CDAA were effective in control of weeds in sweet corn. CDAA was judged superior in weed control and yield of sweet corn.

IX - Control of Insects on Crucifers

During the fall, with low looper populations, combinations of toxaphene + bacillus (Bacillus thuringiensis), endrin + bacillus and phosdrin and bacillus were equal to or superior to each used separately at twice the concentration. Bacillus used alone compared favorably with any of the chemicals used alone.

In the spring, with heavy looper populations, similar results were obtained when polyhedral virus was used instead of bacillus.

X - Effect of Foliar and Soil Applications of NPK in Combination with the Fungicide Dyrene on Incidence of Bacterial and Early Blights of Celery - (Belle Glade)

Plots receiving foliar urea had higher bacterial blight incidence, decreased yield, and increased N content of petiole tissue. P had no significant effect except to increase P content of petioles. K decreased early blight incidence and the amount of dead foliage. Increase in dyrene concentration increased yield and rib length, reduced early blight and decreased N and P in petiole tissue.

Soil and foliar N increased fresh weight singly and together, decreased percent dry weight and increased K and N contents of plants. Incidence of bacterial blight was higher and early blight was lower on plots receiving either soil or foliar nitrogen. The bacterial blight effect was significant in the field a month after transplanting.

XI - Control of Insects on Vegetables - (Belle Glade)

Thiodan and a combination of toxaphene and Bacillus thuringiensis gave
perfect control of bean leaf roller larvae. Toxaphene and parathion gave nearly perfect control.

SD4402 gave complete control and toxaphene nearly complete control of cowpea curculio. Phosdrin and dimethoate were fairly effective against this insect.

Budworm control on sweet corn significantly increased yield. DDT EC was better than DDT WP.

SD-3562, demeton, phosphoridion, thiodan, dibrom, phosdrin and thithion were promising for green peach aphid on celery. SD 3562 of the above was effective against sepentine leaf miner.

**XII - Vegetable Varieties - (Ft. Pierce)**

A. Tomatoes.--- In fall replicated trials Homestead 24 produced highest yields and largest fruit, but quality was poor. Indian River and Manapal produced intermediate yields of medium sized fruit of average quality.

In spring replicated trials, Indian River and Manapal produce higher yields and larger fruit than Homestead 24.

In trellis, pink-harvest trial, results ranked in order of preference were as follows:

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<thead>
<tr>
<th>Variety</th>
<th>Yield</th>
<th>Fruit size</th>
<th>Crack-resistance</th>
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<tbody>
<tr>
<td>Manapal</td>
<td>2nd</td>
<td>2nd</td>
<td>2nd</td>
</tr>
<tr>
<td>Manlucie</td>
<td>3rd</td>
<td>1st</td>
<td>3rd</td>
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<tr>
<td>Indian River</td>
<td>1st</td>
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<td>1st</td>
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**XIII - Diseases of Tomatoes - (Ft. Pierce)**

Maneb-dyrene combination was similar to dyrene or dichlone alone for botrytis control. This combination was similar to maneb alone for late blight control and to dyrene alone for gray leaf spot control.

Low pH was correlated with high incidence of botrytis. Fruit rot was also directly related to degree of foliage infection from botrytis.

**XIV - Vegetable-Pasture Rotation - (Ft. Pierce)**

Pure stands of pangolagrass eliminated root-knot nematode within 8 weeks on small experimental plots. Clean-fallow and fallow with flooding eliminated nematodes in same length of time. Blowing sand and bed erosion were worse in clean fallow plots.

**XV - Bacterial Diseases of Vegetables - (Ft. Pierce)**

Copper or streptomyacin applied separately to tomatoes did not control bacterial leaf spot. The two combined reduced incidence of this tomato disease. The most effective material was cupric omadine (not approved for use).

**XVI - Sidedressing Potatoes - (Ft. Pierce)**

Sidedressing potatoes with N and K2O at rates of 0, 40 and 80 lbs./A. six
weeks after planting did not significantly increase yield following an application at planting of 150 lbs./N, 200 lbs./P2O5 and 200 lbs./K2O per acre. Plots receiving 40 lbs./N plus 40 lbs./K2O per acre sidedress yielded best.

XVII - Vegetable Varieties - (Ft. Lauderdale)

A. Beans, Bush Snap. -- Harvester and Extender varieties produced high yields of quality beans in the 1959 Southern Cooperative Vegetable Trials.

B. Cantaloupe. -- Florida No. 8 outproduced Smith's Perfect.

C. Peppers. -- Florida Giant M.R. (Resistant Florida Giant), Keystone Resistant Giant St. No. 3, and California Wonder produced high yields of quality peppers in the spring trial of the 1959 Southern Cooperative Sweet Pepper Trial. There were no significant differences in the winter trial which was injured by low temperatures.

D. Sweet Corn. -- Hybrid 105 produced the highest fall yield of quality corn in the 1959 Southern Cooperative Sweet Corn Observational Trial. Golden Hybrid R8, 25776 and Golden Security yielded the highest number of marketable ears in the replicated trial.

XVIII - Fertilizer Studies - (Ft. Lauderdale)

A. Lime Test with Pepper. -- One tone application of agricultural limestone resulted in increased yields of peppers and a higher soil calcium level after 30 inches of rainfall.

B. Side-dressing Rates for Peppers. -- Yields were increased by raising the rate of bi-weekly 10-0-10 applications from 200 to 300 pounds per acre in a commercial field.

C. Urea-Formaldehyde Fertilizer. -- No significant differences were found in bean and pepper yields between urea-formaldehyde and inorganic sources of nitrogen.

D. Organic Fertilizer. -- Inorganic fertilizer containing copper, manganese, and boron increased yields above those from organic fertilizer derived from either garbage of humus. The yields from the organic fertilizer plots were not significantly different from the check yields.

E. Method of Fertilizer Application. -- No significant yield differences resulted between broadcast and banded surface fertilizer applications for peppers and southern peas.

XIX - Protecting Vegetables From Wind and Cold - (Ft. Lauderdale)

A. Windbreaks for Cucumbers. -- The two rows of cucumbers on both the east and west sides of sorghum windbreaks produced higher marketable yields than the fourth row east of the windbreaks. The crop was harvested from new growth produced after cold wind injured the vines the last of November.
B. Sloping of Cucumber Beds.—Sloping beds to the south gave higher winter cucumber yields on beds oriented east to west. There were no differences following periods of warm weather.

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