Mr. County Agent:

Continuing with our 'research reviews', let's look in on the Everglades Experiment Station, Belle Glade, including the Indian River Field Laboratory, Fort Pierce, and the Lake Worth Laboratory.


Remember, these are one year's results...

We know it's long...don't try to read it all...check below for location, crops and subjects by page...complain just a little...then turn to your items of interest:

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**Breeding:**
- Snap Beans
- Cantaloupes
- EES Lines, Contender, Wade
- Texas 107, Waltham #11
- Winter Hybrids
- Marketer, SC 10-3, V. Hybrid
- Fort Myers Market, Fla. Market, Fla. Beauty
- Little Marvel
- Illinois F5, Burlington
- Florida Ninety
- 51-23W, 51-27
- Fall NPK and Spring NK Responses
- Yield Response to N
- Variety Infestation Differences
- Indigo, Velvet Beans, Crowder, Clover

**Lake Worth:**
- Snap Beans: Selections for further study included various bush types, wax, green, round, oval and flat podded.
- Cantaloupes: Several open pollinated selections had excellent quality fruits in addition to downy mildew resistance and should be used in a breeding program to develop a resistant commercial type.

FROM HERE ON OUT...IT'S ALL YOUR'S!

**BREEDING**
Belle Glade:

Sweet Corn: 1455 lines, both field and sweet, collected from cooperators all over the Western Hemisphere were checked for their reaction to Helminthosporium turcicum in the spring planted nursery. A number of crosses were made using the line FP51 (Dr. Fred Hull) on both commercial and station inbreds. A number of lines were grown in the fall nursery and their reaction to *H. maydis* (most prevalent species in fall) was determined. The resistance to the two species is distinct.

Snap Beans: Checked the performance of the EES 206 and EES 207 lines against standard varieties and promising lines. In three out of four trials, yields from one or both lines outyielded Tendergreen by highly significant amounts. Commercial freezing tests, fiber analyses, and grower trials gave favorable results. Seed of both lines have been sent to the West for increase and a sufficient quantity is on hand for commercial trials during the '52-'53 season.

Celery: Populations from selections made previously at Belle Glade, Sanford and Ithaca, N. Y., the two original resistant parents, Turkish and Danish, and four commercial varieties were checked for horticultural characteristics and resistance to early blight caused by *Cercospora apii*. Individual plant selections, from promising golden and pascal populations, were sent to Cornell University for seed production.

VARIETY OR LINE TESTS

Fort Pierce:

Tomatoes: A fall trial of previously tested promising lines was subjected to water damage. Several suffered greater damage than others. No line significantly outyielded Grothen's Globe in marketable fruit.

Another fall trial included lines from the Gulf Coast Station. ASTW 131 attracted grower attention because of its unusually large, smooth, attractive fruit. STEP 89 (Homestead) was outstanding in fall and spring yield trials.

Sweet Corn: In a spring trial for resistance to *H. turcicum*, four unnamed hybrids appeared to carry high resistance as did two out of six strains of Carmelcross. Only one of these resistant unnamed hybrids showed desirable horticultural characteristics.

Belle Glade:

Cabbage: Strain 2135X, a yellows resistant Copenhagen Market type, showed commercial possibilities.

Lettuce: In plantings made at monthly intervals from September through January, Great Lakes gave the best consistent performance throughout the season.

English Peas: Long Poddled Wando (Dr. A. P. Lorz) outyielded Little Marvel but required 17 days longer to reach maturity. In some harvests downy mildew in the pods was serious enough to have prevented shipment.

Sweet Corn: In a June trial, and also in a second trial planted in October, *Golden Security (W)* showed considerable resistance to *H. maydis*. Victory Golden and Golden Security (W) were outstanding in fall trials. Ioana, Golden Security (R) and Carmelcross were outstanding in spring trials sprayed on a regular schedule with zineb for control of *H. turcicum*.

Lake Worth:

Snap Beans: EES 207 was outstanding in the spring trial followed in order by EES 205, Tendergreen, Contender and Wade.

Broccoli: Texas 107 and Waltham 1/11 produced significantly higher yields than any strain of the Decicco variety and most strains of Early Green Sprouting. Texas 107 produced a significantly higher yield of side shoots than any other variety.

Sweet Corn: Hybrids in December and January quite frequently fail to develop as well as those maturing during the spring when days are longer. Early hybrids such as Carmelcross and Boldrush did not perform well in the early winter trial. Ioana, Calumet, F-M Cross, Golden Security (red tassel) and Flagship produced a satisfactory yield of well filled ears.
F-M Cross, Ioana, Golden Security (red tassel) and Lot No. 7 (V) were outstanding in winter trial. Evergold and Kennebec gave only a fair performance. All hybrids appearing to have resistance to one leaf blight organism seemed to be highly susceptible to the other (H. turcicum vs. H. maydis).

Cucumbers: Marketer produced a satisfactory yield of fruits having excellent shape and color in spring trials. SC 10-3, moderately resistant to downy mildew, was high yielder but was rated second best after all fruit and vine characteristics were rated. V. Hybrid produced a medium yield of fair fruits but was highly susceptible to downy mildew.

Eggplant: All strains of Fort Myers Market produced a significantly smaller number of off-type fruits than any of the strains of Florida Market or Florida Beauty. One strain of Fort Myers Market produced a significantly higher yield than any strain of Florida Market or Florida Beauty. Phomopsis was not a serious problem.

English Peas: Little Marvel received the highest rating followed by two breeding lines, P856 and P17B. Paxton's Progress gave a low yield.

Peppers: Illinois F5, of the World Beater type, was not significantly outyielded. Burlington, a strain of World Beater, did not equal Illinois F5 in performance. Several strains of California Wonder performed satisfactorily.

Strawberries: Florida Ninety yielded 49% more U.S. No. 1 grade fruit than any other variety or line. Missionary yielded only 297 quarts U.S. No. 1 per acre in comparison with 4,214 quarts for Florida Ninety.

Watermelons: No. 51-23W (Garrison type) was high yielder with 749 marketable melons per acre, followed by No. 51-27 with 605 melons per acre.

SOILS AND FERTILIZERS
(water soluble P and dilute acid soluble K levels per acre)

Belle Glade:
Cabbage: Two experiments conducted on well decomposed Everglades peat, pH 5.8 - 6.1, P levels above 6.8#, and K levels above 83#. No yield responses in either experiment from applications of P2O5 or K2O separately or in combination. This confirms results of previous experiments.

A third experiment involving pH, P and K located on Okeelanta peaty muck, pH 6.25, P level of 3.6# and a K level of 115#. Applications of P and sulfur (to lower pH) induced earlier maturity. However total yields from three harvests were not increased by any combination of treatment.

Endive and Lettuce: A fall experiment with broadleaf endive and Great Lakes lettuce on well decomposed Everglades peaty muck, pH 5.8, P level of 11.0#, and a K level of 83# gave no response to applications of either P2O5 or K2O. This agrees with previous experiments.

Sweet Corn: Two experiments conducted on well decomposed Everglades peaty muck, pH 5.8 and greater than 10# and 80# respectively of P and K. No responses were obtained by soil applications of P2O5 or K2O.

Two experiments involving NPK treatments and a comparison of the broadcast and band methods of fertilizer application were conducted on a well matured Everglades peaty muck, P level of 4.0# and a K level of 58#. Highly significant responses were obtained up to and including the highest increment of P, 96# of P2O5 per acre. The response was reflected in a better stand and a larger number and weight of U.S. 1 ears and total yield of marketable ears. No significant yield responses were obtained from either the N or K applications. The band method of fertilizer application gave a significantly larger yield than the broadcast method and ear measurements indicated a highly significant increase in ear length.

Lake Worth:
Snap Beans: October planting showed highly significant increase in green color with increased N and significant increase in yellow color with P2O5 treatment. Vine growth increased with applications of N and to a smaller degree with P2O5 and K2O. Significant yield increases to per acre applications of N up to 80#, P2O5 up to 60# and K2O up to 90#. Responses similar but less pronounced than last spring.
February plantings responded similarly to those last spring. Foliage increased in yellow color with P₂O₅, increased in green color with K₂O and N. At the highest N level there was no increase in yellow color with P₂O₅. Vine height increased with K₂O and N. Tendency to decreased height with increased P₂O₅, especially at lowest N. Yield responses highly significant up to 80/# N per acre, and 60/# K₂O. There were no significant yield responses to P₂O₅ treatments; tendency was downward at lower levels of N.

Sweet Corn: Tests on Immokalee sand during winter and early spring; pH 6.2, moisture equivalent 3.25%, P and K, 13/# and 30/# per acre, respectively. Fresh stem tissue tests for P showed decreases with N treatment and increases with P₂O₅. Decrease of P in tissue with increasing N was more pronounced as the P₂O₅ levels increased. Tissue tests for K decreased with N treatment, decreased with P treatment and increased with K treatment.

Yield responses for grade 1 highly significant up to 200/# N per acre. For grade 2 the yield responses were significant only up to approximately 100/# of N. For total marketable corn the responses up to 200/# per acre of N were highly significant in terms of pounds per plot and significant to the 5% level in terms of number of ears. This indicates that a large part of the response to the highest level of N was due to increased size of individual ears. Percent culls was decreased and length of ears increased by increasing N treatments. None of the treatments had any significant effect on average length of unfilled tips.

Fort Pierce:

Tomatoes: Nutritional sprays on Immokalee sand included three formulations with NPK and minors, and a fourth with urea. All plots received 2500/# per acre of 4-8-8. A total of 12 spray treatments were made. 17" of rainfall fell during experiment. At no time were there any apparent differences between spray treatments. Darker green foliage resulted after a side dress application of 300/# per acre of a 15-0-14 after a heavy leaching rain around the second picking. Yield trends were not statistically significant. Experiment will be repeated under less favorable rainfall conditions during earlier stages of growth, usually the case for early fall.

DISEASES

Belle Glade:

Viruses: Pseudo-Curly Top (Ft. Pierce Curly Top) transmitted again by grafting. Several species of leaf hoppers tested as possible vectors without success. Mechanical inoculations have so far been a failure. This negative evidence indicates the virus is of a persistent type and as such must have an insect vector or vectors for spread in nature.

Tested new varieties of cucumbers developed for resistance (tolerance) to the eastern strain of cucumber mosaic. To date none have withstood greenhouse inoculations with the southern strain.

Sweet Corn: Climatic conditions were not favorable for a good test of fungicidal control of Helminthosporium. Readings under light infections indicated again that the zinc carbamates on both weekly and bi-weekly schedules were superior to no fungicide. Yield and ear fill data were not conclusive. Field control was obtained in commercial plantings in the Everglades using zinc carbamates as sprays and dusts.

Experiment with grower included high-level ground duster, airplane with conventional venturi system, and airplane with aero mist master delivering 8 gallons spray per acre, using zineb sprays and dusts for Helminthosporium control. Three applications of spray made with ground equipment at weekly intervals preceded the experiment. Eight applications of the experimental materials were made every 48 hours until 2 weeks before harvest.

Disease control was equal in all plots using the yield of ears as an index. There was a 20% reduction in boxes of corn in the airplane spray plots because of strict grading to eliminate ears damaged by corn earworms. On visual inspection the spray plot appeared to have more leaf blight but this was not indicated in an index of the fourth leaves down from the tassel.
Fort Pierce:
Sweet Corn: Fall and spring tests were conducted under the cooperative fungicidal trial for leaf blight control. In both tests the disease did not become well established until the last 2 or 3 weeks before harvest; fall, *H. maydis* and spring, *H. turcicum*. Insecticides used gave excellent control in both tests.

The results based on two season's tests show that all treatments were significantly better than no treatment. There was no significant difference between nabam plus zinc sulfate and zineb, both giving good commercial control. When only *H. maydis* was present, once a week applications were sufficient to give good control, but when *H. turcicum* was present it was economically sound to apply the fungicides twice a week. The treatment in which nabam plus zinc sulfate was substituted for zineb when DDT emulsion was used for earworms, to avoid incompatibility of zineb-DDT emulsion, was as good as zineb used continuously.

Differences between manzate on the spring once a week schedule, nabam plus manganese sulfate and nabam plus zinc sulfate, were not significant. Fungicides containing manganese showed a slight burning of the leaves as the number of gallons per acre approached 200.

The best fungicides tested for the control of *Helminthosporium* leaf blight were nabam plus zinc sulfate, and zineb. Manzate and nabam plus manganese sulfate were as good in yield, but both produced some injury.

Tomatoes: Tested Wilt Resistant Grothen's Globe (K) transplanted November 1. No significant differences between following: nabam plus zinc sulfate; manzate, zineb; orthocide 406; mixture of dried skimmed milk, zineb and copper oxide; a mixture of ferbam and zineb; phygon XLN; and a mixture of phygon XLN and thiram nauges in control of *Stemphylium* leaf spot.

Manzate gave equal control of late blight and produced the highest yield, but did not significantly outyield plots treated with nabam plus zinc sulfate and zineb. There were no significant differences in yields between nabam plus zinc sulfate, zineb, phygon XLN, phygon-thiram nauges mixture and the ferbam-zineb mixture.

In general, the most effective materials against late blight were the least effective against botrytis.

Manzate treated plants apparently obtained a nutritional response from the manganese. By mid-season nabam plus zinc sulfate treated plants had small, yellow, mottled leaves with an upward cupping of the margins, and a few fruit with cuticle injury. The dried milk-zineb-copper mixture failed to control late blight.

## NEMATODES

**Lake Worth:**
Pepper: Varieties showed significant differences in degree of infestation by the root-knot nematode, *Meloidogyne incognita*. Varieties in order of infestation, from least to most severe were Illinois F5, Florida Blight Resistant World Beater, Burlington, Early Calwonder, Wonder Giant (W), California Wonder, Florida Giant (C), Florida Giant (W) and Keystone Wonder Giant. There was no correlation between degree of infestation and yield of any of these varieties.

Cover Crops: Compared with okra, Blanket Indigo, velvet beans and Calhoun Crowder had very light infestations; hairy indigo and Alyce clover, moderate infestations.

**Belle Glade:**
Flooding: Continued observations of infestations of root-knot on plantings, following rice cover crops grown under upland and lowland (flooded) culture for the purpose of reducing the nematode population, showed that by the third crop after the cover crop the population in the flooded plot had returned to the high level of the unflooded plot.

## SOIL FUMIGATION - (For Damp-Off Control)

**Belle Glade:**
The stand of spinach was definitely improved using CBP 55 (chlorobromopropene) dripped into the row at the time of seeding. Bean plots were unaffected while the stands of lettuce and endive were markedly reduced.
INSECTS

Belle Glade:

Collards and Cabbage: Toxaphene 1 1/2# 40% wettable plus 1/2 15% wettable parathion, and DDT 25% emulsion 1 pint plus 1/2 15% wettable parathion gave good control of the imported cabbage worm.

Very satisfactory aphid control was obtained with the above as well as with a combination of parathion and pyrenone and with parathion alone at normal application strength. Pyrenone used alone gave good aphid control while the plants were small and complete coverage could be obtained.

Best control of cabbage loopers was obtained with DDT emulsion or toxaphene wettable powder applied alone at usually recommended strengths. Good control of this insect was also obtained with the toxaphene-parathion combination and DDT-parathion.

The toxaphene-parathion, DDT-parathion and DDT alone gave almost perfect control of the diamond back moth.

Celery: It appears that the celery tortricid, Tortrix ivana, will only be a seasonal sporadic pest.

Snap Beans: Studied the effect of post-bloom applications of dilan and toxaphene formulated as wettable powder and as emulsions, and of DDT emulsion on the yield of snap beans of the varieties Tendergreen, Contender, Plentiful, and Black Valentine, to determine whether fruit set was decreased by these applications. The results showed, under conditions of this trial, that two post-bloom applications of these materials made at weekly intervals at usually recommended rates caused no significant differences in yield when compared with untreated checks.

Cutworms: Four materials in rice and wheat bran showed no differences in effectiveness of the two brans. Parathion and toxaphene were about equally effective. Chlordane was less effective than parathion and toxaphene but superior to paris green.

Wireworms: Seven insecticides tested to determine their relative effectiveness for control of Melanotus communis, applied prior to planting as a broadcast spray and disked into the soil. Results of stand counts showed heptachlor, aldrin, a combination of parathion and aldrin, and dilan to give the best stands, although none were entirely satisfactory.

Sweet Corn: In earworm control in the spring, with DDT emulsion-mineral oil mixtures, there was no significant difference between 5 and 6 applications whether applied at 48 or 72 hour intervals. Insecticide applications must be made during a period of fourteen days beginning the day after first silks appear. This period is sharply defined. Treatments of DDT-oil mixture made before or after this date had no effect on percent worm-free ears.

Tests of DDT emulsion without oil and of 5% DDT dust show that, while these treatments are effective in controlling corn earworm larvae when infestation is light, they are both ineffective in South Florida under the degree of infestation usually experienced in sweet corn maturing in late May.

Applications of DDT dust every day for 8 days was superior to 7 applications every other day when the first application was made on the third day after silks appeared. When treatments are started too early it becomes necessary to add additional treatments at the end to extend the period of protection to cover the full 14 days.

Mineral oils for use in earworm control sprays in South Florida trial were rated in the following order: Carnation, Superla No. 13, Blandol, Sovaspray No. 1, Premier white, and Whiting mineral seal.

A preliminary trial was conducted to determine the effects of uniform seed size on uniformity of silking. One of the seed lot treatment combinations resulted in significantly more worm-free ears than did the other combinations. This was predicted at the time of insecticide application because the habit of the corn plants was such as to permit better coverage of the silks. There was no more uniform silking in the sized seed than in the seed of mixed sizes. Other cultural conditions have more effect on uniform silking than does uniformity of seed size.
Fort Pierce:

Sweet Corn: Ioana planted March 20th for ear worm control test; heavily infested.

Where mineral oil was added to the DDT spray formulas the corn was more yellow than in plots receiving DDT emulsion without oil. There were no significant yield differences between any of the treatments.

Six power sprayer applications at 2 day intervals gave better control than 4 hand sprayer treatments at 3 day intervals, using the same formulation and rate of application.

Four quarts per acre of a 12.5% DDT emulsion gave fewer worm-free ears than an equal amount of 25% DDT emulsion, both used with 2.5 gallons of mineral oil per acre and diluted with water to make 50 gallons of spray. Blandol with xylene and emulsifier "B", but without DDT, gave 4% worm-free ears, indicating little insecticidal qualities.

Six pounds of 50% wettable DDT per acre per treatment applied in 50 gallons of water was inferior to sprays with DDT-oil emulsion, DDT emulsion without oil and 10% DDT dust.

The emulsifiers, triton X-155, triton X-177, emulsifier "B", G2090 and GL087 gave fairly comparable control.

The use of mineral oil with DDT emulsion resulted in a larger percentage of worm-free ears than the DDT emulsion used alone. DDT emulsion sprays without oil gave only slightly more worm-free ears than 10% DDT dust.

Three quarts of 25% DDT emulsion with mineral oil gave control equal to 4 quarts with mineral oil.

The solvents, Veliscol AR50 and AR50G, gave 10 and 11% more worm-free ears than xylene.

VEGETABLE-PASTURE ROTATION

Fort Pierce:

At the end of the second year of investigations, rotating vegetables with improved pastures (clovers and pangola) continues to show definite promise as one solution in eliminating the need for using virgin soil for every tomato crop. The final success or failure of this plan will not be determined for several years, due to the nature of problems such as soil borne diseases. The program consists of a fall and spring vegetable crop followed by Pangola alone and Pangola plus clovers. After two years the pasture is plowed under and prepared and planted to another fall and spring vegetable crop and then put back into pasture.

BELLE GLADE:

Germination of pelleted cabbage and onion seed was as good as that of the unpelleted seed in each test. Results with endive and lettuce were inconsistent.

CHEMICAL WEED CONTROL

Belle Glade:

Volatile and drift appear to be the main sources of damage to adjacent susceptible crops when using 2,4-D for weed control. Injurious effect increases, in general, with temperature increases above the 60-80° F. range, when using isopropyl ester of 2,4-D, weeder-64 and 2,4-D amine. The dimethyl amine form of 2,4-D and weedar MCP were practically non-volatile at temperatures as high as 100° F.

Tomato plants subjected to simulated drift at a low temperature and low wind velocity showed practically no symptoms of injury from dimethyl amine form of 2,4-D. At high temperature and high wind velocity plants showed severe twisting and bending 24 hours after treatment.

Combined results of three experiments indicate that the most promising materials for weed control in beans (pre-emergence) were sinox, premerge, weedar, and oktone.

Sincerely,

[Signature]
F. E. Myers
Agent, Crop Specialist