Differential Susceptibility of Varieties of Garden Bean to Oviposition by Melon Fly, Dacus Cucurbitae Coq.[1]

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Back and Pemberton (1917) have recorded garden or "string" beans as a host of melon fly, although melon fly is not ordinarily considered to be a pest of this crop. In the present paper evidence is advanced which indicates that under certain conditions a comparatively high proportion of pods may be attacked and also that there is a marked differential susceptibility of varieties to attack.

The first observations were made at Koko Head, Oahu, June 27, 1938, where four varieties of bean—Tendergreen, Lualualei, McCaslan, and Kentucky Wonder—were growing in close proximity. The first-named variety is a bush green-podded type, while the others are pole beans of the same color class. Melon fly was the most serious pest of beans at that time and place, and pods of all varieties were being attacked. For several months prior to the observations cucumbers and tomatoes (crops susceptible to melon-fly attack) had been grown in the vicinity and had been seriously attacked. By late June few cucumbers or tomatoes remained. However, the melon fly population had reached a high level, for large numbers of adult flies took wing when plants in the plot of bush beans were disturbed. The quantitative data on oviposition are not as complete as might be desired but are placed on record because of the evidence they yield of varietal susceptibility of beans to melon fly attack.

Pods in which oviposition has occurred exude a small amount of gummy material at the point of oviposition. Records of attack were obtained by counting the number of pods exhibiting this condition. These counts were made during the first week in July on two rows, each 100 feet long, of each of the pole varieties. The two rows constituted the total planting of McCasland and Kentucky Wonder. There was a larger planting of Lualualei; the two rows used for these records were the two growing next to the Kentucky Wonder. No records were obtainable from the variety Tendergreen, since picking had ceased; according to the grower this variety had been more heavily attacked than any one of the other three varieties. The data are presented in table 1.

The percentage of pods exhibiting oviposition by melon fly was highest in the variety Lualualei, next in McCaslan, and lowest in Kentucky Wonder. Lualualei is a heavy, comparatively tardy cropper, and the period of harvesting is longer than in the other varie-

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TABLE 1. SHOWING DIFFERENCES IN SUSCEPTIBILITY OF VARIETIES OF STRING BEANS TO OVIPOSITION BY MELON FLY

Date of picking	Variety	Picking	Total number of pods produced and examined[a]	Pods showing evidence of oviposition by melon fly
1938				*Per cent*
July 1	McCaslan	3rd	600 (10 lbs.)	3.5
July 3	"	4th	720 (12 lbs.)	6.5
July 5	"	5th	270 (4½ lbs.)	9.6
	"	Total	1590 (26½ lbs.)	5.9
July 1	Kentucky Wonder	3rd	650 (13 lbs.)	0.9
July 3	" "	4th	950 (12 lbs.)	0.9
July 5	" "	5th	350 (7 lbs.)	2.0
	" "	Total	1950 (32 lbs.)	1.1
July 1	Lualualei	2nd	2368 (39¼ lbs.)	5.6
July 3	"	3rd	2407 (39¾ lbs.)	9.6
July 5	"	4th	990 (16½ lbs.)	13.5
	"	Total	5765 (95½ lbs.)	8.7

[a] The writer acknowledges the assistance of Mr. Adaniya, the grower of the crop in making the counts.

ties. The exceptionally large pickings recorded above for this variety is thus probably accounted for, to some extent, by these facts. It is of interest to note that Lualualei is known to be highly susceptible to bean rust in Hawaii, while certain strains of Kentucky Wonder have been shown, by Dr. G. K. Parris of the Hawaii Experiment Station, to be much less susceptible.

SUMMARY

Evidence is advanced that "string" beans may be comparatively heavily attacked by melon fly if the fly population is high and there is a paucity of crops more attractive to the flies. Further, varieties of string beans are shown to exhibit differential susceptibility to melon fly attack. Of three varieties on which records were obtained, Lualualei exhibited the highest percentage of attack, McCaslan the next, and Kentucky Wonder the lowest.

REFERENCES

Back, E. A., and Pemberton, C. E. 1917. The melon fly in Hawaii. U.S.D.A. Bul. No. 491, 64 pp.