OREGON VEGETABLE Digest

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Mechanical Harvest Tests of Bush Beans Reported

Horticulture Society to Meet November 20 and 21

The 73rd annual meeting of the Oregon State Horticultural Society will be held in Corvallis November 20 and 21. Orville C. Hamilton of Central Point is President.

Programs for the Vegetable Section are being planned under the leadership of Chairman A. K. Kaser, Gresham.

General sessions are scheduled in addition to sectional meetings. Sessions for the Vegetable Crops Section will be held in the Food Technology Building.

REMEMBER THE DATES
NOVEMBER 20 & 21

In This Issue

Forty bush bean varieties and breeding lines were planted at the OSC vegetable crops farm in 1958 for mechanical harvest tests. Included were 13 "true" bush commercial varieties, 9 OSC lines of "true" bush type, and 18 OSC lines derived from the Blue Lake pole bean. Data on total yields and harvester efficiency appear in the following table.

The Blue Lake-derived bush beans yielded relatively well, and were better adapted to mechanical harvest than had been anticipated. More detailed data will reveal, however, that there are decided differences among breeding lines in yielding ability and adaptation to mechanical harvest. The same is true of commercial varieties. Only 61% of the potential yield of Puregold was recovered, as compared to 84% for Processor. Some of the better appearing Blue Lake-derived bush beans gave recoveries ranging from 65 to 82%. Machine-harvested yields of these lines ranged from 2.4 to 4.9 tons per acre.

Ninety percent or more of the beans are actually removed from the vines by the machine, but approximately 16% are lost by "throwing" onto the soil. If a means were found to recover most of these beans, the machine would be highly efficient.

(Continued next page)

Bush Bean Yields . . . (Continued from page 1)

Summary of Bush Bean Harvester Tests

Varietal type averages	Total yield clean beans	Harvested by machine		Left on soil		Left on plant		Total weight harvested Beans + Trash	
	T/A	T/A	%	T/A	% of total	T/A	% of total	T/A	% of trash
13 comm. "true" bush varieties	4.2	3.1	74	.69	16	.37	10	3.2	3.1
9-OSC "true" bush lines	5.3	4.1	78	.83	16	.34	6	4.3	4.7
18-OSC bush lines from Blue Lake backcrosses	4.6	3.5	76	.78	17	.33	7	3.7	5.4

Leafiness of the OSC Blue Lake-derived beans resulted in a consistent tendency for more "trash" to appear in the harvested beans -- 5.4% as compared to 3.1% for commercial types. A "cleaner-decluster" is needed.

Stands of OSC lines were generally better than for commercial varieties, apparently as a result of smaller seed and, therefore, larger numbers sown per foot. This would be expected to result in a yield advantage, although stand of the variety Processor was relatively good and it showed no advantage in yield over most of the OSC lines in this 1958 season.

Grades, arbitrary dollar values per acre, and other detailed variety data will be available at the Oregon State Horticultural Society meetings in late November. Further reports and discussion also can be expected to appear in the Vegetable Digest.

Cooperating in this study were the Chisholm-Ryder Company, manufacturers of the harvester, several processing companies--Stayton Canning Company, California Packing Corporation, Birdseye-Snyder, and Stokelys, and the Departments of Agricultural Engineering, Horticulture, and Food and Dairy Technology at OSC.

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Preliminary Results . . .

Chemical Weed Control in Beets

Oregon growers have reported present chemicals available for weed control in beets have not been satisfactory. In the continuing search for a good selective herbicide for beets, a screening trial with 20 chemicals was conducted at the OSC vegetable crops farm this year. These results are preliminary and are not to be considered as recommendations.

Those materials that showed some selectivity as pre-emergence herbicides for beets are:

Monsanto No. 6936	- 4 and 6 lbs./acre
Randox	- 4 and 6 lbs./acre
Vegadex	- 6 and 8 lbs./acre
Karmex DW	- 6 oz./acre
TCA	- 10 lbs./acre
Endothal	- 4 lbs./acre

The numbered compound from Monsanto had looked promising in the 1957 trials. Injury to the beet planting occurred at both the 4 and 6 lb./acre rates of 6936, but may not exceed commercial acceptability. Vegadex at 6 lbs./acre was the outstanding treatment considering weed control and beet tolerance.

Karmex DW at 6 oz./acre gave excellent weed control but resulted in some thinning of the beet stand. The importance of rate of application of this compound was evident from the severe reduction in stand with 8 oz./acre of the chemical.

Ten lbs./acre of TCA did not show its potential as an herbicide in this test because of the low population of grass weeds. Endothal at 4 lbs./acre gave no injury to the beets but was slightly lacking in effectiveness of weed control.

As a result of observing a number of tests using Eptam for weed control in beets, an experiment comparing methods of application of this material was established in mid-June. Liquid or granular formulations of EPTC were applied (1) as a preplanting treatment and incorporated into the soil, (2) on a dry surface immediately after planting, then irrigated into the soil, or (3) soon after irrigating after planting.

Effectiveness in killing weeds, and injury to the beets were reduced by applying the herbicide on a moist soil surface. Weed control was about equal for the first two application methods, but mixing the herbicide into the soil resulted in more injury to the beet planting. The granular formulation gave slightly better weed control than the liquid, particularly when applied on a moist soil surface.

From the standpoint of ease of application, mixing the EPTC into the soil before planting may have advantages over watering in a postplanting application of the material. But the slight advantage of selectivity is in favor of the latter application method.

--Garvin Crabtree
Horticulture Department

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Soil Fumigants Effective Symphylid Control

Symphylids have caused considerable damage to vegetables, small fruit, and other crops again this season. Growers who have followed the recommended parathion soil treatment just before planting in most instances have obtained satisfactory crop protection. This program, however, has not measurably reduced symphylid populations. Growers should use it each season to live with the symphylid problem.

Considerable interest is now being given to the use of soil fumigants for symphylid control. This is not a new idea. Soil fumigants were used experimentally by Oregon State College in 1946 and 1947. They were very effective in controlling symphylids and some of these treated areas have not been seriously reinfested even up to the present time.

Today, with improved machinery for application and knowledge on how to use fumigants effectively, more emphasis is being placed on their use. New and more effective materials have also been developed. In general, they cost no more than the materials used 10 to 12 years ago.

In August, 1957, about 40 acres of land on the newly acquired vegetable crops farm at Oregon State College were fumigated with such materials as Telone, ethylene dibromide, Vapam, D-D Mixture, and Nemagon. Telone is a relatively new material closely related chemically to D-D Mixture. In this trial, all materials have done a good job and appear equally effective.

To use soil fumigants successfully for control of symphylids, consider such factors as timing, elimination of crop residue, adequate seedbed preparation, soil temperature and moisture, and application of the materials below the levels of symphylid concentration. (See Station Circular of Information 574.) Attempts to circumvent one or more of these factors often has resulted in failure to obtain symphylid control. There appears to be no substitute for careful planning and hard work.

-- H. E. Morrison
Entomology Department

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Vegetable Notes

M. M. Lesley and J. W. Lesley of the University of California reported in the Proceedings of the American Society for Horticultural Science (Vol. 71) that treatment of tomato seed with radioactive isotope P^{32} was as effective as any method yet found for getting a useful male sterile in a certain variety. This was found in spite of the fact that most of the male sterile material obtained from the P^{32} treatment was undesirable.

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Gibberellin promoted flowering in head lettuce grown under short (9-hour) and long (18-hour) photoperiods, and at either low (10-13°C) or high (18-21°C) temperatures. The effects of gibberellin were additive to those of long days, high temperatures, and seed vernalization. These results were reported by M. J. Bukovac and S. H. Wittwer in Vol. 71, Proceedings of the American Society for Horticultural Science.

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Black Plastic Increases Bush Bean Yields

Black polyethylene plastic mulch (1.5 mm thickness) increased yields of bush beans in a trial at OSC in 1958. These yield increases were not great, however, and the added cost of the plastic needs to be considered in an economic analysis.

Processor bush beans were grown under two different fertility conditions--nitrogen fertilizer alone and nitrogen plus phosphorus fertilizer--and were mulched and nonmulched. Data in Table 1 indicate slight yield increases because mulch was used and phosphorus and nitrogen fertilizers were applied. These yields are the result of a single harvest of plants.

Grade data in Table 2 show that use of mulch resulted in earlier maturity of beans as compared to those nonmulched. A greater percentage of larger pods was obtained from the mulch treatments as compared to nonmulched plots.

Previous work here has indicated larger percentage increases on pole beans from the use of plastic than the increases noted with bush beans in this test. Several factors may be involved including different varietal responses, as well as a warmer growing season this year. Slug damage was quite severe early, particularly in the plots which were mulched. Plastic evidently provided more protection for slug activity.

-- H. J. Mack
Horticulture Department

Table 1. Effect of Mulching and Fertilizers on Bush Bean Yields.

	Yields in tons per acre		
	Nonmulch	Mulch	Average
N	5.16	5.35	5.25
N plus P	5.40	5.74	5.57
Average	5.28	5.54	

Table 2. Effect of Mulching and Fertilizers on Bush Bean Grades.

		Percent in sieve sizes		
		1-2-3	4	5
Nonmulch	N	53	37	10
	NP	54	37	9
Mulch	N	40	47	13
	NP	41	44	15

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