Agrimycin 17, Bacticin, UNI-G454 and Ortho cop 53 gave up to 14, 26, 48, and 61 per cent control, respectively.

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Seed Treatment for the Prevention of Fusarium Root Rot of Beans

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In 1968 seed treatments were tested for the prevention of Fusarium root rot of beans. The chemicals were applied to the seed in the dry form at the rate of 4 oz. active ingredient per 100 lbs. seed. A randomized complete block design with 4 replications was used in the field.

The experimental material supplied by Merck and Co. was not included in the same layout as the other materials. However, it was replicated and showed very good activity in reducing root rot.

Samples of bean plants were taken from each plot and rated light, moderate, or severe with average numerical ratings of 10, 20, and 30 respectively.

Seed Treatment
Snap Beans

Material	Numerical Rating of Root Rot	Disease Rating	% Disease Control
Du-ter (Thompson-Hayward)	13.25	light	47
Benlate (du Pont)	10.00	light	59
Demosan 65W	8.75	light	63
Vitavax	11.00	light	55
Uniroyal	9.25	light	63
Control	25.00	severe	0
Merck	5.66	light	75

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Genetics of Color of Wax Beans

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A P.I. collection of wax beans was grown in field and greenhouse. Since most were BV_1 susceptible, infection in the field planting made color evaluation

useless. In the greenhouse, visual ratings of color differences were made and very greenish, vary pale yellow and bright yellow lines were selected for further study. These, plus four varieties, were analyzed for total carotenoids and total chlorophylls by spectro-photometric measurements of an 80% acetone extract.

The F_1s were grown in the winter and samples were taken for analysis and the F_2 was planted in the field. Again, exceptionally severe virus infection occurred making the field crop useless. Remnant seed was planted in the greenhouse and it became apparent on analysis that waxing must be due to many genes as a normal curve developed for both carotenoids and chlorophylls.

The specific day of analysis can change the chlorophyll and carotenoid readings considerably, but attempts were made to harvest pods from each plant at the same stage of maturity and the F_2 range far exceeded the parental range. There was more probability of readings being too high due to immaturity, rather than too low due to overmaturity.

Nine parents and nine families were involved. Chlorophyll readings of the parents varied from 100 to 233 (relative units). All parental samples consisted of pods bulked from several plants harvested at 2 different dates. The individual F_1s varied from 90 to 160 and F_2 means from 130 to 190. F_2 extremes ranged from 40 to 380. Each family developed a wide normal distribution curve in the F_2 and since this range far exceeded the parents, it was felt that the nine F_2 families were bulked and the results are presented in Table 1.

The lower F_2 readings in the greenhouse approached the best obtained from field-grown wax varieties, but these readings should be lower under field conditions. The F_3 extremes are being grown to verify that they are not due to harvesting at an overmature or immature stage. However, all parents and F_1 progeny were given a visual score in the greenhouse and this correlated well with the pigment determinations. The correlation between chlorophyll and carotenoid values was 0.03, indicating independent segregation.

Spectrophotometric analysis of good wax bean lines should be an asset in selecting the best wax lines. Likewise, these results indicate large populations are needed to select well-colored wax beans. Since such wide variation occurs from crosses within wax lines themselves, there is a good, or possibly better, chance of obtaining improved wax beans from wax x green bean crosses, than wax x wax crosses. Field results indicate that the best wax color occurs when chlorophyll is in the ranges from 30 to 50 and carotenoid from 190 to 210. Wax beans with carotenoid readings lower than 190 are too pale.

Table 1. F_2 segregation for chlorophylls and carotenoids in wax beans in the greenhouse.

Units Chlorophyll	No. Plants	Units Carotenoid	No. Plants
40-60	5	200-220	1
60-80	20	220-240	2
80-100	17	240-260	8
100-120	38	260-280	5
120-140	36	280-300	11
140-160	30	300-320	25

Units Chlorophyll	No. Plants	Units Carotenoid	No. Plants
160-180	34	320-340	33
180-200	17	340-360	34
200-220	14	360-380	28
220-240	7	380-400	24
240-260	10	400-420	20
260-280	6	420-440	19
280-300	2	440-460	15
300+	9	460-480	10
		480-500	7

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Release of WB6-5 and WB6-10 Wax Beans

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These two wax lines are being released to major bean seedsmen for seed increase. In quality tested in Geneva, they have had superior color based on canner evaluation and in the yield trials at Geneva, they have outyielded the varieties in 1967 and 1968.

Small samples are available to interested individuals for observation and evaluation.

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Heirloom Beans

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Dr. Edwin James, Head of the National Seed Storage Laboratory, Fort Collins, Colorado, has been collecting seeds of heirloom beans in the northeast region. We recently received some information on old, named varieties from Professor Richard J. Hopp of the Vermont Agricultural Experiment Station:

"'Soldier' is a favorite variety in Vermont for the famous New England baked beans and is on the Vermont list of recommended varieties. No doubt there are a number of 'Soldier' beans in existence. They are catalogued by at least 3 commercial seed companies."

"'Coach Dog' is another heirloom and there are many different strains. When I worked with the late Professor J. R. Hepler, University of New Hampshire, over 20 years ago, he had then an extensive collection of heirloom beans. As you can see from the enclosed copy of a clipping (New England Homestead, August 9, 1947), he considered 'Coach Dog' to be a synonym of 'Jacob's Cattle'. Other synonyms are 'Trout' and 'Speckled Beauty'."