

Pod Quality, Plant Habit, and Disease Resistance

W. A. Frazier, J. R. Baggett, H. J. Mack,
E. K. Vaughan, and G. Varseveld

Exact demands of industry, for (1) pod quality (taste, color, texture, shape, snapping ease, and loss, etc.), (2) plant habit (erect, stiff, small leaved, concentrated pod set well off soil, and surety of pod set, etc.), and (3) disease resistance (fusarium root rot, various viruses, rust, bacterial blights, and many other organisms) presents to each bean breeder an unusual challenge in over-all plant breeding. Invocation of 4 to the n^{th} power rule in segregation, along with linkages and/or various other gene-environmental associations and interactions involved in these three broad categories warrants extremely careful study of approaches.

Basically, our approach involves some backcrossing, heavy emphasis on sibbing following complex hybridization (to "concentrate" genes for the various characteristics), and on very heavy selection pressure in seedlings as well as mature plants--in greenhouse as well as field. At this stage, we have observed, and selected, from approximately four million plants in greenhouse and field. We are able, in a cool climate, to secure most of the crosses between promising lines in the field, so that the F_1 can be grown in greenhouses in winter and F_2 progeny planted in the field the following summer. We now know that pod "quality", noted above, involves many genes, that man-evolved ideal habits are apparently conditioned by several recessives, that resistance to several of the diseases is also conditioned by complex gene systems. Relentless selection pressure, sibbing, large plant progenies, and careful observation appear to be four key factors involved in the slow evolution of more desirable lines.

Release of Two Bush Beans

W. A. Frazier, J. R. Baggett, H. J. Mack, G. Varseveld
A. A. Duncan, J. Rodgers, R. M. Bullock

The Oregon State University Agricultural Experiment Station, Department of Horticulture has announced release of two bush beans developed via backcrossing, with the pole Blue Lake FM-1 bean as recurrent parent.

The variety OSU 949 was developed from the third backcross; OSU 2065 from the sixth backcross.

These varieties are especially adapted to cool climates, performing relatively well in western Oregon. Records from warm areas have shown that they are very late maturing, and extremely erratic in pod set.

Mechanical harvesters will harvest the pods satisfactorily, but racemes and leafiness are major problems, requiring good cleaning and declustering equipment.

For more detailed information, write to W. A. Frazier, Department of Horticulture, Oregon State University, Corvallis, Oregon.

Inheritance of Dark Green Savoy

W. A. Frazier and D. W. Davis

A very dark green savoy leaf mutant, secured by use of diethyl sulfate, was crossed with a bush bean of similar Blue Lake backcross lineage. The F_2 progeny indicated a very close fit to a 3:1 ratio, with "dark green savoy" being recessive.

The unusual depth of color and savoying permits easy identification in the early seedling stage; possible use for marker purposes is clearly indicated. The symbol dgs is tentatively assigned here; final assignment will await further study of gene assignments and contact with the germ plasm committee.

Bean Disease Investigations

R. W. Goth and W. J. Zaumeyer

Bean yellow mosaic virus (BYMV) - was found in a large number of bean fields in Maryland during 1965. This virus reduced the stands in some fields by as much as 50 percent, and caused noticeable yield reductions. Its symptoms were very similar to those produced on beans by the Maryland pea streak virus. This strain is being further investigated.