

Analysis of the F₃ data for the interspecific cross 22 x 201₁ indicated that two or three major recessive genes conditioned the tolerance of *P. coccineus*. Difficulties of obtaining definite genetic ratios in this cross may be due to modifying genes, as well as to lack of exact control of the environment in the various tests. The F₃ progenies of 22 x Mexican indicated the possible action of three major recessive genes, or perhaps fewer major genes and several modifiers conditioning resistance.

It is recognized that the results reported in this study represent an approximation for the inheritance of resistance to Fusarium root rot.

There was no significant relation between root vigor of *P. coccineus* and resistance to root rot. Also, there was no clear relation between pigmentation of the Mexican parent or its progenies and resistance to root rot was found.

The recessive nature of resistance, the approximate estimation of genes involved, and the apparent freedom from serious linkage problems form a basis upon which to develop a breeding program designed to incorporate tolerance to root rot with horticulturally desirable characters in present day varieties of beans.

"Inheritance of plant pigment and seed coat color in *Phaseolus vulgaris*, L."

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One cross was maintained for this study in which the inheritance of plant pigment was carried on through the F₃ generation, while seed coat color inheritance was studied only in the F₂ generation.

An Oregon State College selection (O.S.C. 22), was used as one parent. It is a high quality pole bean of Blue Lake type, free from pigmentation, with white seeds and white flowers. The other parent used was a U.S.D.A. Plant Introduction, 165, 435, which is a pole type, having black seeds, and a dark reddish (almost purple) pigment of the stem, flowers, leaf petioles and veins.

Pigmentation in this cross indicated a simple inheritance of one dominant gene for pigment over green. The F₁ was pigmented. Backcrossing the F₁ to the pigmented parent, the Mexican, gave only pigmented progenies while backcrossing to the green parent (O.S.C. 22), gave a ratio of 1 pigmented to 1 green. The F₂ segregated 3 pigmented to 1 green and the F₃ gave a ratio of 1 breeding true for pigmentation: 2 segregating (3 pigment:1 green): 1 breeding true for green.

Seed color inheritance indicated that the black color is completely dominant over white in the F₁. The F₂ gave a ratio of 9 black : 3 brown : 4 white indicating the interaction of two major genes. The color classified here as brown represented various shades of brown, indicating the presence of a modifying or intensifying gene or genes.

A very high association was observed between seed color and plant color; also between flower color and plant or seed color.