

Kowl4 and E242 resembled each other and the earlier described pea necrosis strain of BYMV in their reaction on pea, but differed from BYMV strains studied so far in inclusion bodies, and in their reaction in cucumber.

Serologically, PNV isolates E178 and E242 were closely related to each other and both showed a more distant relationship to BYMV-B25. PNV isolate Kowl4 was serologically intermediate between PNV and BYMV-B25, but was hardly infectious to Phaseolus beans.

E242 and, to a lesser extent, also Kowl4 were considered strains of the pea necrosis virus, which is closely related to BYMV, but apparently not more so than bean common mosaic virus, pea seed-borne mosaic virus, clover yellow vein virus and some other members of the potyvirus group

The lack of well-definable borderlines between the different taxonomic entities unavoidably leads to problems in diagnosing (identifying) intermediate isolates.

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SCREENING BEANS (PHASEOLUS VULGARIS L.)  
FOR RESISTANCE TO MEXICAN BEAN BEETLE  
(EPILACHNA VARIVESTIS MULSANT)

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A study was initiated in 1973 to screen bean (Phaseolus vulgaris L.) germ plasm for resistance to mexican bean beetle (Epilachna varivestis Mulsant). 5,624 cultivars of bean were acquired through the courtesy of Plant Introduction Station, U.S. Department of Agriculture, Washington State University, Pullman, Washington, and various seed companies. An eight feet observational row of each of the cultivars was planted for study under field conditions of natural insect infestations. A comprehensive record of botanical characteristics and resistance of each of the cultivars was made.

During the year 1973, out of 2,340 cultivars screened, 117 showed a foliage damage of 0-10% under field conditions of natural infestations (Table 1). Whereas 4,140 cultivars were screened in 1974, out of which 144 showed a damage rating of 1(0-10% foliage damage). 1,338 cultivars were screened during the year 1975, and 37 showed a foliage damage of 0-10%. Thus, about 5% of the total germ plasm screened have been selected for further detailed study. A no choice feeding preference test under controlled conditions is being conducted on the selected cultivars. A dual choice test on all selected cultivars will also be made. A susceptible variety will be included along with selected comparatively resistant cultivars. A heavy infestation of mexican bean beetles existed during the periods of study. Sixteen cultivars consistently showed foliage damage rating of 1(0-10% foliage damage) during three years of study.

Efforts are also being made to determine any correlations among country of origin, various botanical characteristics, and resistance to mexican bean beetle.

Table 1. Total Number of Bean Cultivars Acquired, Screened and Selected.

	1973	1974	1975	Total
Cultivars Screened	2,340	4,140	1,338	7,186*
Cultivars Selected For Detailed Study	177	144	37	358
Total Number of Cultivars Acquired	5,624			

\*Some cultivars were repeatedly screened for three years.

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#### YIELDS OF CLIMBING BEAN VARIETIES GROWN ON TRELLISES AT THREE SPACINGS

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In Minas Gerais, when grown as a monoculture, even under the best conditions, it is difficult for the dry bean yields to surpass 2200 kg/ha. A preliminary experiment (BIC Annual Report no. 18:66, 1975) with three climbing varieties grown on bamboo fences showed the potential for exceeding 3000 kg/ha. In that experiment three spacings were used: 60, 90, and 120 cm between rows. The highest yields were obtained with the lowest spacing.

The experiment was repeated with two climbing bean varieties, using the following spacings between trellises: 50, 65, and 80 cm. Table 1 shows that 50 cm was the best spacing. The yields were somewhat lowered by a drought period during the pod filling stage. When grown in monoculture without support, 'Ricapardo 896' may yield almost 2400 kg/ha

Table 1. Yields (kg/ha) of two bean varieties grown on trellises at three spacings.

Variety	Row spacing (cm)		
	50	65	80
Ricapardo 896	2214	2036	1729
37-R	2479	2375	2066
LSD 5%	380		