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Red Mexican Beans

UI-36 and UI-37



TWO NEW
EARLY MATURING
CURLEY TOP AND
MOSAIC RESISTANT
SMALL RED BEANS

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by Leslie L. Dean and Marshall J. LeBaron

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Two Early Maturing Curly Top and Mosaic Resistant Small Red Beans

Red Mexican beans have traditionally been an important economic crop in southern Idaho. The common Red Mexican variety originally grown was resistant to the curly top virus, but susceptible to seed-borne mosaic virus.¹ Red Mexican UI-3 and UI-34 were developed by the University of Idaho through hybridization and released to Idaho bean growers in 1938. These two varieties of Red Mexican were resistant to the curly top and the seed-borne mosaic virus then present in Idaho. Red Mexican UI-3 and UI-34 constituted the entire production of small red beans in the United States for several years and UI-34 still remains the most widely grown Red Mexican variety.

Despite the excellent qualities of Red Mexican UI-34 certain deficiencies are recognized. Approximately 110 to 115 frost-free days are required for maturity and in most areas of southern Idaho a crop requiring such a season is endangered both by late spring and early fall frosts. Furthermore, a strain of seed-borne mosaic which infected many previously mosaic-resistant beans was identified during the 1942 growing season. Red Mexican UI-34 is among those beans susceptible to this strain of common bean-mosaic virus (BV1A).² In 1959 Red Mexican UI-35 was released to Idaho bean growers by the University of Idaho. Red Mexican UI-35 is resistant to the curly top virus and two strains (BV1 and BV1A) of seed-borne mosaic virus and matures from 5 to 7 days earlier in some locations than Red Mexican UI-34. Red Mexican UI-35, although extensively grown, does not entirely satisfy the need for an improved Red Mexican bean variety. Additional breeding research has resulted in the development of two new varieties of Red Mexican beans adapted to production in Idaho. Red Mexican UI-36 and UI-37 are expected to fulfill the requirement for both a mid-season and an early-season Red Mexican bean for Idaho growers.

PEDIGREE

Red Mexican UI-36 and Red Mexican UI-37 were selected from among the progeny of a cross between two beans released by the

¹ For a more detailed discussion of bean diseases in Idaho, the reader is referred to Idaho Experiment Station Bulletin 293: "Diseases of Beans in Idaho."

² This strain of common bean-mosaic virus is also referred to as the New York 15 strain.

* UI distinguishes University of Idaho dry bean introductions.

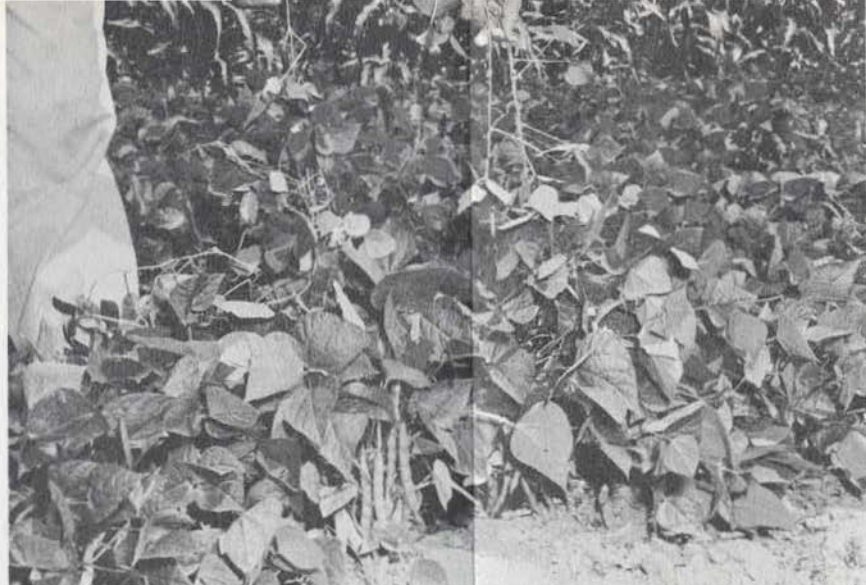


Fig. 1.—Red Mexican UI-36 matures in 90-96 days and produces a yield comparable to Red Mexican UI-34 on somewhat less vine.

University of Idaho—Great Northern UI-56 and Red Mexican UI-34.

Great Northern UI-56, an early maturing white bean, is resistant to the Type and A strain of common bean-mosaic virus but susceptible to the curly top virus. Red Mexican UI-34, a late maturing small red bean, is resistant to the Type strain of common bean-mosaic virus; susceptible to the A strain; and resistant to the curly top virus. The cross between Great Northern UI-56 and Red Mexican UI-34 was made in 1953 and the progeny carried through eight generations of selection before being increased.

DISEASE RESISTANCE

The two improved Red Mexican varieties are resistant to both the Type and the A strains of common bean-mosaic virus and the curly top virus.

DESCRIPTION

Red Mexican UI-36

The Red Mexican UI-36 plant (Fig. 1) is quite similar in appearance to Red Mexican UI-34. It is, however, more upright and matures approximately two weeks earlier than Red Mexican UI-34. It will mature a few days earlier than Great Northern UI-123 when grown under similar conditions in southcentral Idaho.

Seed of Red Mexican UI-36 is the same general size and shape as the standard, Red Mexican UI-34. Seed of Red Mexican UI-36 produced in the 1962 yield trials at Twin Falls Branch Station averaged 94 per ounce which is the same as the average for Red Mexican UI-34. The seed-coat color of the UI-36 is more uniform

from seed to seed and is a more attractive darker red than that of presently grown commercial Red Mexicans. The color is retained in the seed coat during soaking preparatory to cooking or processing.

Red Mexican UI-36, in yield trials at the University of Idaho's Twin Falls Branch Experiment Station has, over a four-year period, been superior in yield to Red Mexican UI-35 and approximately equal to Red Mexican UI-34 (Table 1). Loss of yield due to both late spring and early fall frosts will be minimized by use of Red Mexican UI-36 and, since the variety is resistant to infection with the seed-borne mosaic virus strains which are of importance in Idaho, the yield will be further stabilized.

Red Mexican UI-37

Red Mexican UI-37 plants (Fig. 2) are, in comparison to Red Mexican UI-34, short, semi-vining, and upright. The maturity of UI-37 may be expected to be a full three weeks earlier than that of UI-34, and even two to three days earlier than Pinto UI-111. This Red Mexican variety is distinguished by its extreme early maturity and upright growth.

The seed of Red Mexican UI-37 is slightly smaller than that of Red Mexican UI-34. The average number of Red Mexican UI-37 seed, when grown in yield trial on the Twin Falls Branch Experiment Station in 1962, was 100 per ounce as compared to 94 per ounce of Red Mexican UI-34, and 85 per ounce of Red Mexican UI-35. The seed-coat color of Red Mexican UI-37 is superior to presently available commercial Red Mexican varieties, but the uniformity of color from seed to seed is not improved.

Fig. 2.—Red Mexican UI-37, although yielding a few bags less per acre than Red Mexican UI-34, matures in 83-89 days, and produces a short, semi-vining upright plant.





Fig. 3—Red Mexican UI-36 and UI-37 are compared above. To the left of the corn rows, UI-37 was ready for harvest approximately one week earlier than UI-36 shown to the right.

The yield of Red Mexican UI-37, over a five-year period at the Twin Falls Branch Experiment Station, has on the average been less than that of Red Mexican UI-34 or UI-35 (Table 1). Considering the extreme difference in maturity the yield difference does not appear to be excessive.

The early maturity of Red Mexican UI-37 will permit production in some areas of Idaho where the length of the growing season restricts planting to only the earliest of bean varieties and will provide a wider choice of bean varieties in those areas. Any area where Pinto UI-111 and Great Northern 1140 will successfully mature should likewise provide sufficient season for the production of Red Mexican UI-37.

Maturity, yield, and seed characteristics of Red Mexican UI-36 and UI-37 are compared with commercial Red Mexican strains in Table 2.

Table 1. Yearly mean yield per acre of four Red Mexican varieties at the University of Idaho Twin Falls Branch Station, Kimberly, Idaho.

Red Mexican Strain	1959	1960	1961	1962	1963	Mean
	Lbs/A	Lbs/A	Lbs/A	Lbs/A	Lbs/A	
UI-36	—	2985	3180	2561	3300	3007
UI-37	2588	2395	2780	2190	2415	2474
UI-34	2799	2080	3820	2474	4000	3035
UI-35	2080	1950	3250	2528	3325	2627

Table 2. Comparison of some important characteristics of four Red Mexican varieties.

Red Mexican Strain	Mean Yld. ¹ Lbs/A	Range of Maturity Days	Seed Size No/oz.	Seed		Disease Reaction ²		
				Color	Uniformity	Curly Top BV1	Mosaic BV1A ³	
UI-36	3007	90-96	94	Superior	Exc.	R	R	R
UI-37	2474	83-89	100	Superior	Good	R	R	R
UI-34	3035	110-115	94	Good	Good	R	R	S
UI-35	2627	109-112	85	Good	Good	R	R	R

¹ Mean yield of UI-36 based on 1960 through 1963 data; mean for all other varieties 1959 through 1963.

² R—Resistant; S—Susceptible.

³ BV1A is also referred to as the "New York 15 Strain."

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