

**Monroe Bean as a Local Lesion Host for  
Bean Common Mosaic Virus**

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**ABSTRACT**

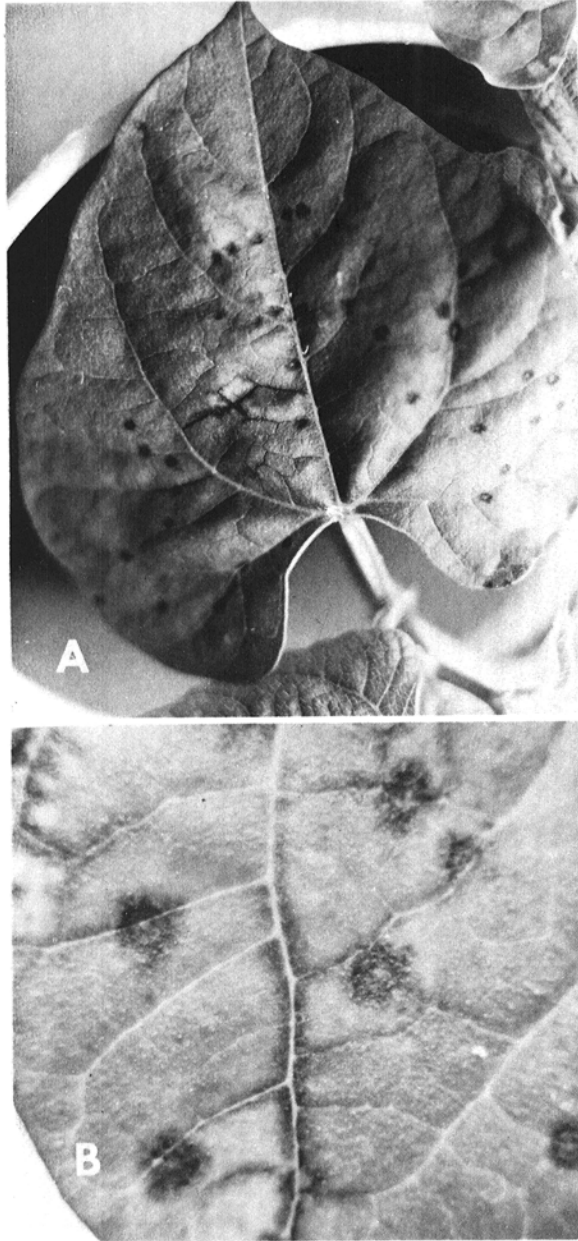
Production of local lesions by bean common mosaic virus (BCMV) on mechanically inoculated primary leaves of Monroe bean is reported for the first time. The lesions are consistently produced under normal greenhouse conditions by the type strain as well as the New York 15 and B strains of the virus, and appear to be different from lesions reported previously for BCMV.

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*Additional key words:* *Phaseolus vulgaris* L.

Mechanical inoculation of leaves of Monroe bean (*Phaseolus vulgaris* L.) with the type and New York 15 strains of bean common mosaic virus (BCMV) resulted in the formation of local necrotic lesions (2). Monroe, a Navy (pea) bean variety developed at Cornell University, Ithaca, N. Y., is no longer grown commercially in the United States (1). Because of the consistent production of these lesions and because of the paucity of reports dealing with local lesion production by BCMV (3), we examined the possible utility of Monroe as a local lesion host for this virus. Included in our study were five separate isolates of BCMV, two each of the type and New York 15 strains, and one of the B or 123 strain. In addition to Monroe, the bean variety Dade was also examined, since Dade represents a line related to the "unnamed pole bean cross" cited by Zaumeyer & Goth (3, 4) as the most promising local lesion host for BCMV. Attempts by the authors to obtain seed of this cross were unsuccessful, and according to R. A. Conover from Florida, Dade is almost certainly a sister line of the pole bean cross, and should react in the same manner to BCMV (R. A. Conover, *personal correspondence*).

BCMV strains were maintained in the bean varieties Stringless Green Refugee (type), Pinto UI-111 (New York 15), and Great Northern UI-123 (B). Seedlings of Monroe and Dade bean were grown under normal greenhouse conditions of temperature (22-27 C) and natural daylight, and were 10 days old



**Fig. 1.** Local lesion production by bean common mosaic virus (BCMV) on mechanically inoculated primary leaves of Monroe bean. **A)** Appearance of lesions 6 days after inoculation with type strain of BCMV. **B)** Appearance of BCMV-induced local lesions 8 days after inoculation.

when inoculated. Primary leaves were dusted with 500-mesh Carborundum and rub-inoculated with 0.4 ml of inoculum (1 g infected tissue triturated in 4 ml 0.01 M phosphate buffer pH 7.4) using the rough edge of a pestle. Leaves were rinsed immediately after inoculation with a gentle stream of distilled water.

BCMV-induced lesions were noted only on the Monroe bean variety, and were first observed at 4-5 days after inoculation as circular, dark-red spots of about 4 mm diam on the upper leaf surface (Fig. 1). The lesions enlarged to 0.8-1.0 mm diam during the next 4-5 days, but there was no evidence of systemic invasion of Monroe. All five isolates of BCMV induced these lesions on Monroe. No symptoms developed on the Dade plants, which were inoculated simultaneously. Of interest is the fact that lesion production by BCMV on primary leaves of Monroe is relatively uniform as well as consistent. In three separate experiments with one isolate, the number of local lesions per primary leaf (average of 6 leaves) ranged between 50 and 70.

The BCMV-induced lesions that form on primary leaves of Monroe bean are somewhat larger than those reported by Zaumeyer & Goth (4) on the unnamed pole bean cross. The lesions on Monroe appear to represent a resistant reaction, as the virus does not develop systemically; BCMV develops systemically in the pole bean cross, however. These points suggest that the lesions on Monroe are different from lesions on the unnamed pole bean cross. In view of the apparent unavailability of the latter bean cross, it would appear that Monroe may have utility as a local lesion assay host for bean common mosaic virus.

#### LITERATURE CITED

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