SEED TRANSMISSION OF BLACKEYE COWPEA MOSAIC VIRUS IN TWO COWPEA VARIETIES

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NATURAL occurrence of Blackeye Cowpea mosaic virus (BlCMV) in cowpea has been reported from India[1]. Observations on seed transmission of this isolate in two varieties of cowpea are reported here.

Seedlings of cowpea varieties, pusa dophasli and Cp 455 were inoculated with BlCMV by leaf rub method. The plants were grown till the seed-bearing stage and mature seeds were collected. On visual examination no difference in colour, size or shape was noticed between the seeds collected from healthy and infected plants. These seeds were surface-sterilized with 0.1% mercuric chloride and sowed in pots and the emerging seedlings were examined for visible symptoms of virus infection. A few seedlings showed signs of infection on the primary leaves. These leaves were crinkled and had dark and light green patches while a few other leaves had yellow patches. Reduction in size and puckering of leaves also occurred in the symptom-bearing leaves (figure 1).

Necrotic local lesions developed in *Dolichos biflorus*, a local lesion host[2] when inoculated with the inocula from symptom-bearing primary leaves. In contrast, no symptoms were elicited with inocula prepared from symptom-free primary leaves of cowpea.

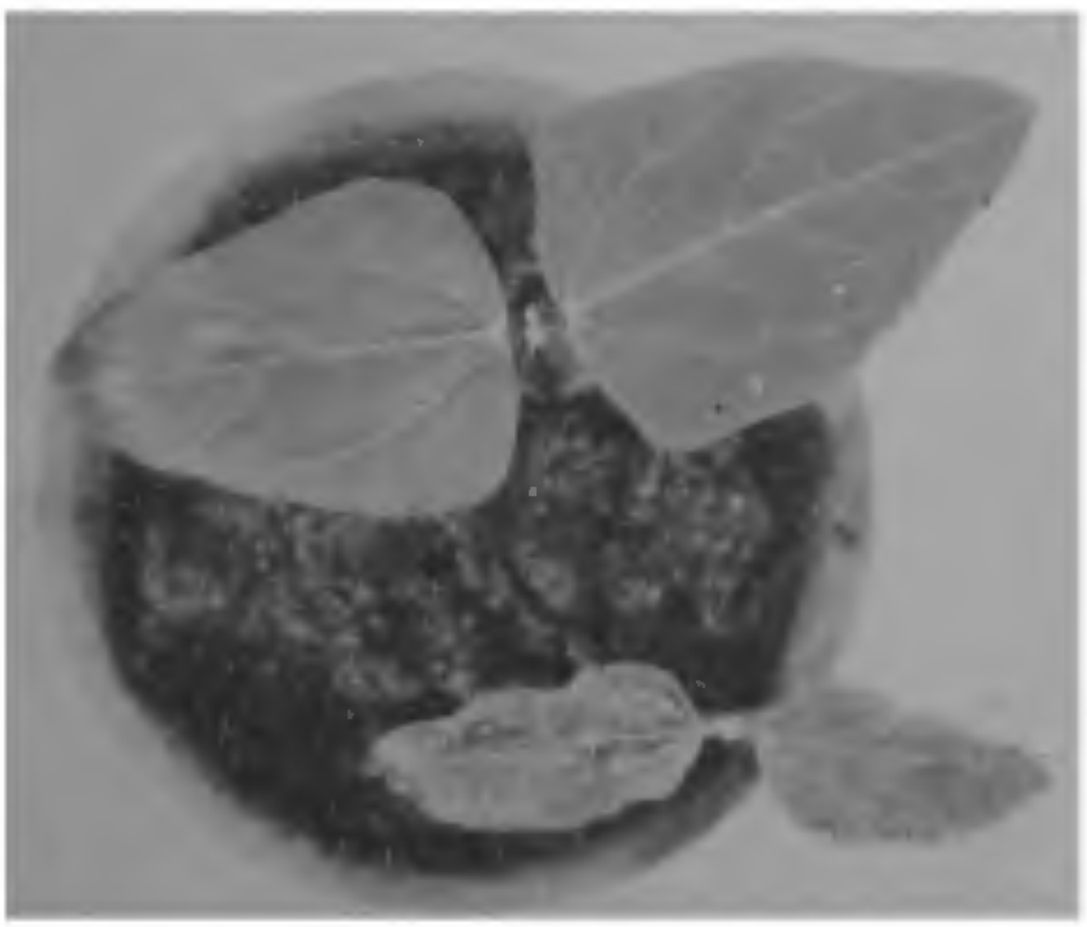

Figure 1. Cowpea seedlings raised from seeds from BlCMV infected *V. unguiculata*; infected and healthy seedlings.

The percentage of seed transmission varied in the two varieties. In pusa dophasli, two batches of seeds collected from infected cowpea plants were virus-free. In three batches, the percentage of seed transmission varied from 1.4 to 6.7. In Cp 455, the percentage of seed transmission was 18.3 (table 1). Earlier reports[3-6] on seed transmission of different isolates of BlCMV in different varieties of cowpea record a variation of 0–28%.

Infectivity test was carried out to find out the presence of the virus in different components of seeds. Immature green pods were collected and the seeds were removed and numbered starting from the terminal end of the pods. The seed coat, cotyledons and embryo were separated from each seed and were ground separately with a few drops of phosphate buffer and inoculated to primary leaves of the local lesion host *D. biflorus*. For testing seeds from mature pods, the seeds were soaked overnight in distilled water for separating the different parts of the seeds. Of the five immature green pods tested, seeds from one pod showed the presence of BlCMV. At the proximal end of the pod, one seed showed the presence of the virus in the cotyledons alone and another seed in the embryo alone. The remaining seeds showed the presence of the virus both in the embryo and in cotyledons (table 2).

Of the 8 mature pods tested, 15 seeds from 5 pods showed the presence of BlCMV in the cotyledons as well as in the embryos (table 3). BlCMV was absent in the seed coats of immature as well as mature seeds. Infection of seed embryo leads to the development of infected seedlings and shows true seed transmission.

The distribution of BlCMV infection among seeds of single pods of cowpea is uniform. These results are at variance with the results recorded for bean

Table 1 *Percentage of seed transmission of blackeye cowpea mosaic virus in two cowpea varieties*

Varieties used	Batch No.	No. of seeds germinated	No. of plants infected	Percentage of infection
Pusa	1	70	0	—
Dophasli	2	110	0	—
	3	180	12	6.7
	4	148	2	1.4
	5	64	4	6.3
Cp 455	1	93	17	18.3

Table 2 *Infectivity of components of immature seeds collected from BICMV infected cowpea*

Pod No.	Seed No.	Infectivity on *D. biflorus* primary leaves: Embryo	Cotyledons
1	1–8	—	—
2	1	+(15)*	+(11)
	2	+(2)	+(3)
	3	+(1)	+(2)
	4	+(10)	+(11)
	5	+(1)	—
	6	—	+(1)
3	1–4	—	—
4	1–7	—	—
5	1–3	—	—

*Average number of lesions/leaf; BICMV was absent in seed coats.

common mosaic virus in bean[7], bean yellow mosaic virus in yellow lupine[8], cowpea banding mosaic virus in cowpea[9] and pea early browning virus in pea[10], where the infection distribution is at random among the seeds of single pods.

Table 3 *Infectivity of components of mature seeds collected from BICMV infected cowpea*

Pod No.	Seed No.	Infectivity on *D. biflorus* primary leaves: Embryo	Cotyledons
1	1–4	—	—
2	1–5	—	—
3	1–6	—	—
4	1	+(2)*	+(1)
	2	+(3)	+(1)
5	1	+(1)	+(2)
	2	+(4)	+(3)
	3	+(4)	+(2)
	4	+(2)	+(1)
6	1	+(2)	+(3)
	2	+(1)	+(2)
	3	+(1)	+(1)
	4	+(2)	+(2)
7	1	+(2)	+(3)
	2	+(2)	+(1)
	3	+(1)	+(2)
8	1	+(2)	+(3)
	2	+(2)	+(1)

*Average number of lesions/leaf; BICMV was absent in seed coats.

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LACTARIUS HYGROPHOROIDES BERK. & CURT. AN EDIBLE WILD MILKY MUSHROOM NEW TO INDIA

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DURING fungal forays of North-Western Himalayas *Lactarius hygrophoroides* Berk. & Curt. not recorded from India[1] was found. The basidiocarps exude a white milky latex which does not change on exposure. The specimens have been deposited in the Herbarium, Department of Biosciences, Himachal Pradesh University, Shimla (HPUB) as also with Dr M. Locquin, France.

Lactarius hygrophoroides Berk. & Curt., Ann. and Mag. Nat. Hist., III, **4**, 293, 1859, figure 1 A–F.

Pileus 4–10 cm wide, convex at first, becoming plane, centrally depressed, sometimes subinfundibuliform; surface dry and usually with a velvety sheen, azonate, at times rugose, golden yellow to yellowish brown[2]; margin inrolled when young, becoming plane with age, smooth; flesh rigid but brittle, pallid; latex white, unchanging, Copious. Taste mild, odour indistinctive, lamellae arcuate-