

Table 1 Effect of *Alternaria* blight on oil content of seeds of different cultivars of rape-seed and mustard

Cultivar	Oil content (%)		
	Seeds from healthy plants	Seeds from diseased plants	Loss (%)
Rape-seed			
T-9	38.07	30.14	20.83
Bhawani	38.90	31.65	18.64
T-36	41.22	35.21	14.58
BS-2	39.27	30.31	22.82
BS-70	39.75	30.44	23.43
YST-151	42.16	29.00	31.21
T-42	43.96	28.15	35.97
K-88	42.67	28.02	34.34
Mustard			
Varuna	40.42	28.67	29.07
Vaibhawa	40.56	29.11	28.23
Vardan	39.81	30.36	23.74
Kranti	40.11	34.45	14.12
Krishna	40.70	33.27	18.26
Laha-101	40.22	32.39	19.47
T-16	40.17	30.85	23.21
T-11	40.69	32.21	20.84
KR-5610	39.55	33.25	15.93

from healthy plants, was between 14.12 and 29.07%. The loss was highest in cv. Varuna and lowest in cv. Kranti (table 1).

The disease is recognized as one of the most destructive for the production of oilseed crucifers especially rape-seed and mustard. It recurs annually during the cropping season throughout the Indo-Gangetic belt of the country and causes enormous economic loss to the growers. The study demonstrated that reduction in the oil content is an invariable effect of the disease. The produce harvested by the growers becomes poor in quality in view of reduction in oil content of seeds of rape-seed and mustard irrespective of cultivars involved. This is a significant aspect of the problem where not only quantity but the quality of the produce is reduced. Therefore in the current national perspective, adequate management measures are needed to save these important oilseed crops from *Alternaria* blight.

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1. Ansari, N. A., Ph.D. thesis, Aligarh Muslim University, Aligarh, 1987.

2. Nijhawan, H. L. and Hussain, A., *Indian Oilseed J.*, 1964, 8, 44.

3. Kartha, A. R. S. and Sethi, A. S., *Indian J. Agric. Sci.*, 1957, 27, 211.

BETELVINE MOSAIC — A NEW VIRUS DISEASE

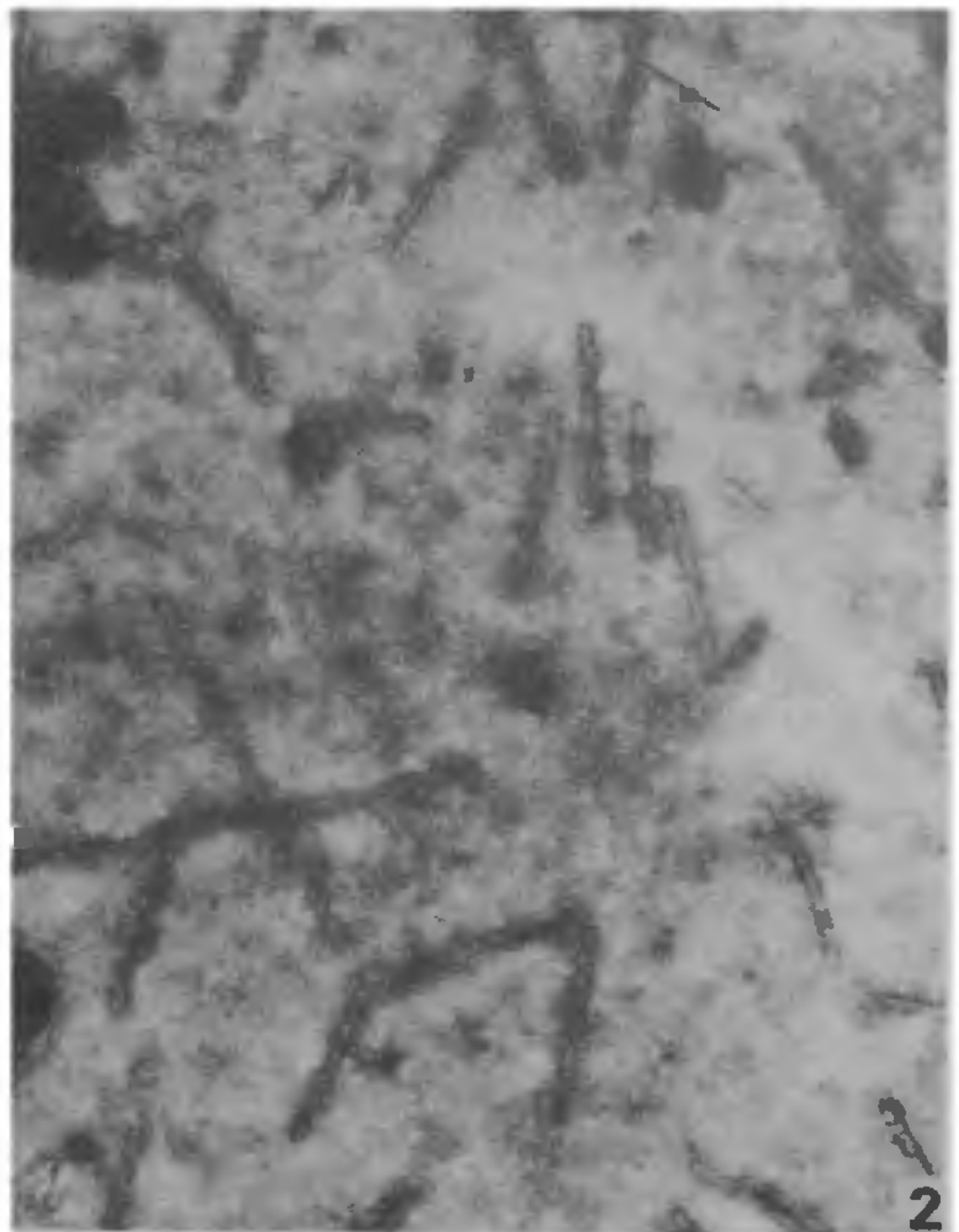
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BETELVINE (*Piper betle* L.) is an important cash crop which has attained commercial status in India. The crop is prone to many fungal and bacterial diseases but so far there is no report of the incidence of any virus disease. During periodical surveys of the crop, occurrence of a mosaic disease of virus origin was observed in cv. Tellaku in Bapatla region of Andhra Pradesh and in cv. 'Kariele' around Bangalore in Karnataka.

Initially the leaves show vein clearing symptom followed by mosaic mottling which is the characteristic symptom of the disease. Bright yellow to light green and dark green patches develop on the entire leaf lamina. Conspicuous bold blisters are also observed on the infected leaves. The leaves become puckered and distorted and very much reduced in size (figure 1). The infected plants appear weak with shortened internodes and show stunted growth. The yield is reduced considerably as only a few leaves (5–10) are produced per plant and these leaves are also unmarketable. The infected plants can be recognized from a distance by their stunted growth and pale yellow appearance. The incidence of the disease varied from 5 to 10% in different gardens.

The virus was easily transmitted by leaf patch grafting and approach grafting. Typical symptoms were noticed after 50–60 days. The virus was not transmitted by mechanical sap inoculation.

Electron microscopy of virus particles was carried out by Brande's leaf dip method¹. The infected leaves were cut by a sharp blade and the edge of cut leaves was touched with carbon-coated copper grid. After staining with 2% uranyl acetate, the grids were examined in transmission electron microscope (model JEM 100S). Rigid-rod shaped virus particles, measuring on an average 350 × 15 nm in size in high concentration were observed (figure 2). This confirms that the mosaic disease in betelvine is caused by a virus. Further studies on the characteri-



Figures 1 and 2. 1. Infected leaf showing typical mosaic symptoms, and 2. Electron micrograph of virus particles ($\times 50,000$).

zation of the virus are in progress. This is the first record of a virus disease in betelvine in India or elsewhere.

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1. Brandes, J., *Proc. 4th Conf. Potato Virus Diseases*, Braunschweig, 1960, p. 170.

EFFECT OF RAPE-SEED MEAL ON THE LONGEVITY OF *ZAPRIONUS PARAVITTIGER* (DIPTERA)

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AGEING is greatly influenced by a wide range of factors of which nutrition is of prime importance. Various components of diet affect the longevity of

different organisms^{1,2}. Rape-seed, an unconventional dietary source, contains about 40% oil and yields a supplement containing about 38% protein³. However, the presence of glucosinolates and myrosinase enzyme limits its utilization⁴. The present communication deals with the effect of rape-seed meal (RSM) on the longevity of banana fruit-fly, *Zaprionus paravittiger*.

Z. paravittiger flies were reared at $26 \pm 2^\circ\text{C}$ on standard corn meal agar (CMA) medium⁵. Seeds of *Brassica campestris* were cleaned, crushed and extracted by soxhlet using petroleum ether (b.p. $60-80^\circ\text{C}$). The meal was dried ($60-70^\circ\text{C}$; 6 h) and substituted for yeast granules and maize powder. The percentage composition of the experimental media containing RSM, brown sugar and corn starch was RSM I-0.9 (0.3% protein), 1.8, 0; RSM II-1.4 (0.5% protein), 4.1, 0; RSM III-1.4 (0.5% protein), 4.1, 2.9 respectively, the rest of the ingredients being the same as in the standard medium. The flies of the control group were fed continuously with CMA medium throughout their development as well as adulthood. Correspondingly, the flies of