Of the ten isolates only *Fusarium solani* (Mart) Sacc. and Wollen and *Fusarium moniliforme* Sheldon reproduced the characteristic rot symptoms in the laboratory when inoculated on injured fruits but not on uninjured ones. Incidently these fungi were isolated from infected fruits both from the godowns and the fields.

Field trials also confirmed the rot inducing potential of the isolates under study. In fields, however, even the control fruits were also infected due probably to the prevalence of both isolates of *Fusaria* in soil and air.

The symptoms induced by the pathogens, the extent of rotting and the enzymes involved may be summarized as follows :

Fusarium solani rot : The infection started as a brownish, soft, circular spot which gradually turned white due to luxuriant conidial production. Infected tissue collapsed to form shallow cavities containing watery secretion which emittted bad odour. About 50–60% fruit was decayed within 10 days of incubation. Affected tissues contained polygalacturonase, pectinesterase, protopectinase and cellulase as evaluated by viscometric analysis.

Fusarium moniliforme rot : The fungus spoiled 35–45% of the fruit tissue within 10 days. It induced brownish-black soft rot, which was, however, not accompanied by cavity formation and watery secretion. The whitish pink mycelia tended to cover the infected area externally. Protopectinase, polygalacturonase, pectinesterase and cellulase were found to be present in the degrading tissue.

Several fungi are known to cause rot diseases on petha fruits[2,4] but so far none of the forms under study were earlier reported in India or elsewhere.

The authors are thankful to the petha fruit cultivators and to godown owners for permitting us to make necessary observations.

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NUCLEOPOLYHEDROSIS OF *AMSACTA MOOREI*, BUTTLER (LEPIDOPTERA: ARCTIIDAE)

Amsacta moorei, Buttler, commonly known as red hairy caterpillar, is one of the serious pests of ragi, jowar and groundnut in North India. Presently this pest is controlled by chemical insecticides like endrin, folidol and toxaphene. A pox-like virus of this pest was reported by Roberts and Granados[1]. This pest was also found to be highly susceptible to *Bacillus thuringiensis* var. *kenyae*, an exotoxin negative strain (Amonkar S. V., unpublished data). The adults of Amsacta were collected from the groundnut field, and their progeny was obtained in the laboratory. The adults had a distinct red band on the head as well as on the forewings, which identified them as *Amsacta moorei*[2].

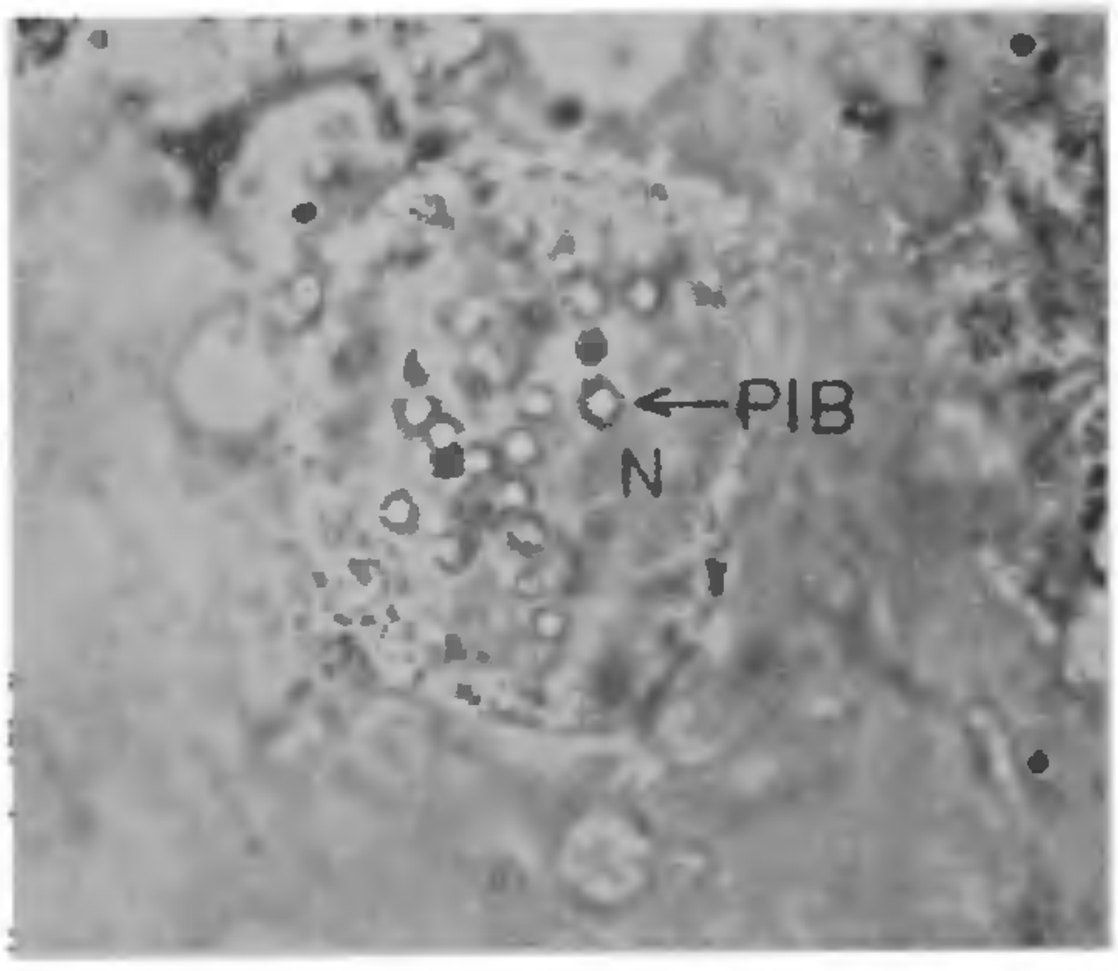

FIG. 1 *a*. Cell nucleus of *Amsacta moorei* is fully infected with polyhedral bodies (600 ×). PIB = polyhedral body, N = cell nucleus.

We now report on the occurrence of nucleopolyhedrosis in *A. moorei*, Buttler. Some of the larvae of this pest died in the lab while being maintained. Light microscopic examination of the haemolymph showed the presence of polyhedra in the nuclei of the cells (Fig. 1 *a*). The isolated and purified PIB's were subjected to Giemsa's staining method, but were not stained at all. This proved that the virus was a NPV as opposed to CPV which gets stained readily. The scanning electron micrographs obtained from the gold coated purified PIB's (Fig. 1 *b*) show that the range of their size lies between 1·625 μ to 2·75 μ and the average size of each polyhedron is 2·214 $\mu \pm 0{\cdot}0559\ \mu$ (SE). Per-os pathogenicity tests conducted with the purified polyhedra at 4×10^3

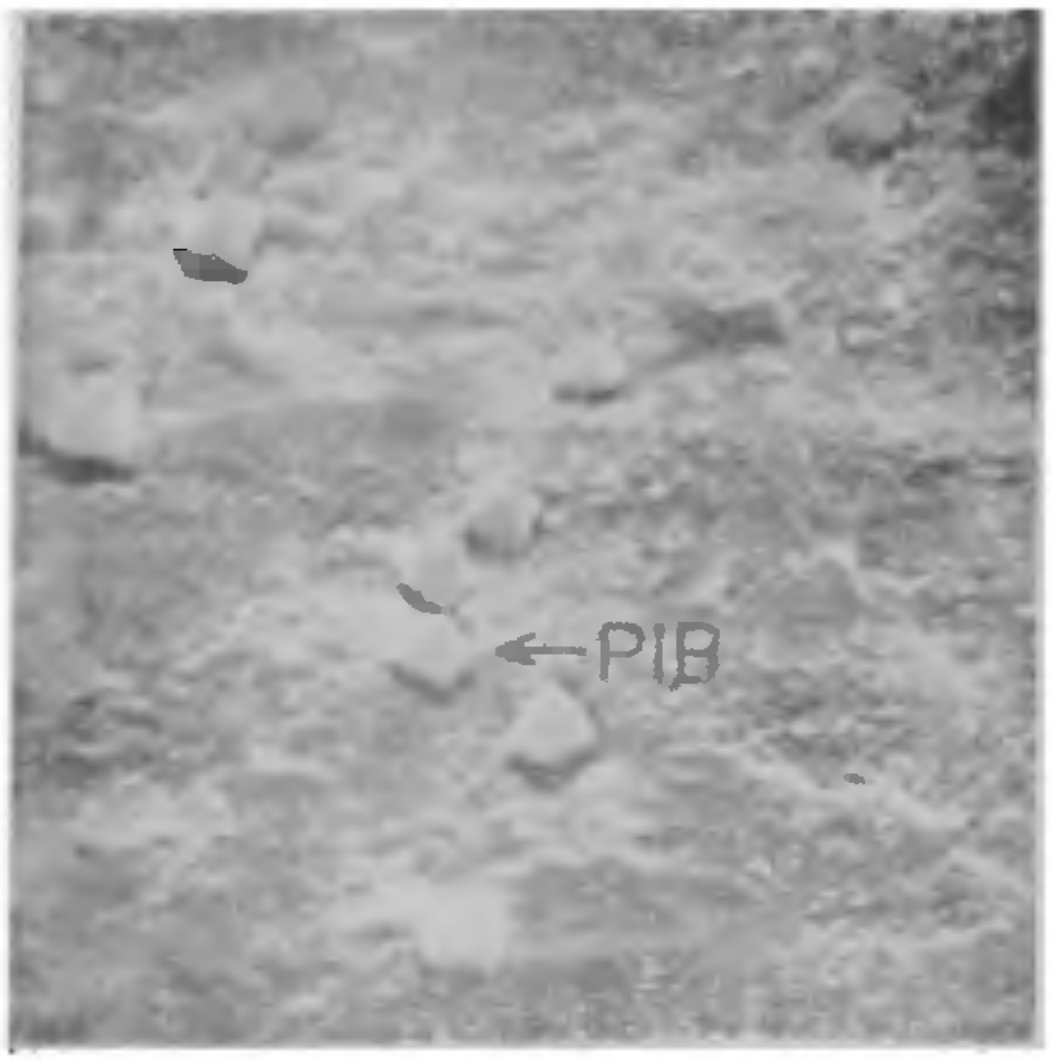

FIG. 1 *b*. Scanning Electron micrograph of the polyhedral bodies of *Amsacta moorei*. NPV (4,000 ×). PIB = polyhedral body.

PIB's/ml concentration using, neonate second and third instar larvae resulted in 100% mortality. The infected larvae did not exhibit any external symptoms till 2–3 days before death. The larvae fed well on the fresh groundnut leaves and the food consumption was found to be gradually diminished. The brownish coloured infected larvae turned black just before death and their hair became ruffled. The dead larvae did not exhibit typical flaccidity condition as seen in polyhedrosis in other lepidopterous pests. The incubation period of this disease was 3–6 days.

TABLE I

Pathogenicity of NPV to various larval instars of Amsacta moorei *Buttler*

Stage of the larvae	Treatment*	Total No. larvae tested	Corrected** % mortality
I. Neonate	Control	49	0
	Virus	74	100
II. Second instar	Control	90	0
	Virus	93	100
III. Third instar	Control	20	0
	Virus	39	100

* Dose of the virus used was 4×10^8 PIB's/ml.

** Corrected mortality = No. viral dead larvae/(Total No. larvae—larvae dead from unknown causes).

Presently there is a strong worldwide move to use entomopathogens like the bacteria, the fungi, the viruses, the protozoa and the nematodes in pest control programmes and to decrease the use of classical chemical insecticides. These biological control agents are non-toxic to beneficial insects and non-pathogenic to humans. Nuclear polyhedrosis viruses (NPVs) and Granulosis Viruses (GVs) occupy unique position today in pest management programmes all over the world. In our country Jairaj *et al.*[3] have reported the occurrence of NPV in *A. albistriga*, while Narayanan *et al.*[4] proved its safety to white mice. Presently in the USA the formulations of NPVs and GVs have been released for public use by the EPA as reported by Falcon[5]. In view of this abundant favour to use Baculoviruses in IPM programmes, our viral isolate could be considered as an ideal candidate to be used in the control of *A. moorei*, Buttler. Our viral isolate represents the first documented evidence of NPV in *A. moorei*. Further studies are underway to determine its specificity, stability and safety aspects.

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POLLEN MORPHOLOGY OF TWO CULTIVARS OF *PAPAVER SOMNIFERUM* L.

THE study of pollen morphology of cultivated plants gained special attention during the last two decades and it has been demonstrated that pollen morphology finds successful use in cultivar taxonomy and plant population studies[2]. The present investigation relates to two varieties of *Papaver somniferum*, an important narcotic plant, grown in the Gangetic belt, including Lucknow.

The cultivars investigated are 'Kentia' and 'Aphudi', the pollen of which were procured from plants raised