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Short Communication

POTENTIAL OF FARM-LEVEL PRODUCTION AND UTILIZATION OF *Spodoptera litura* NUCLEAR POLYHEDROSIS VIRUS

Mario V. Navasero[1] and Marcela M. Navasero[2]

University Researchers [1]National Crop Protection Center and [2]Department of Plant Pathology, College of Agriculture, UP Los Baños, College, Laguna 4031

An unusually high population of the common cutworm, *Spodoptera litura* (Fabr.), occurred during the dry season (November 2002 to March 2003) planting of eggplant in the experimental site in Asingan, Pangasinan where a study on population dynamics of arthropods associated with the crop was being conducted. The first peak in the population of *S. litura* came during the late vegetative stage, four to five weeks after transplanting (WAT) (Fig. 1). It became very damaging on leaves, shoots and stems (Fig. 2 a and b). The farmer-cooperator was advised to hand pick the worms when several spray applications of insecticides did not work. Another peak in its population occurred during the reproductive stage (Fig. 1), starting at 10WAT resulting in reduction in number of flowers and fruit-set. The farmer-cooperator, however, could no longer hand-pick the worms because the plants were already big and the canopies were overlapping making it hard to search for the larvae. However, a mild epizootic of *S. litura* nuclear polyhedrosis virus (SINPV) (Fig. 3) was observed in the field at 13WAT, prompting the authors to discuss with the farmer-cooperator the potential of SINPV as a biological control agent and the possibility of producing it at the farm level.

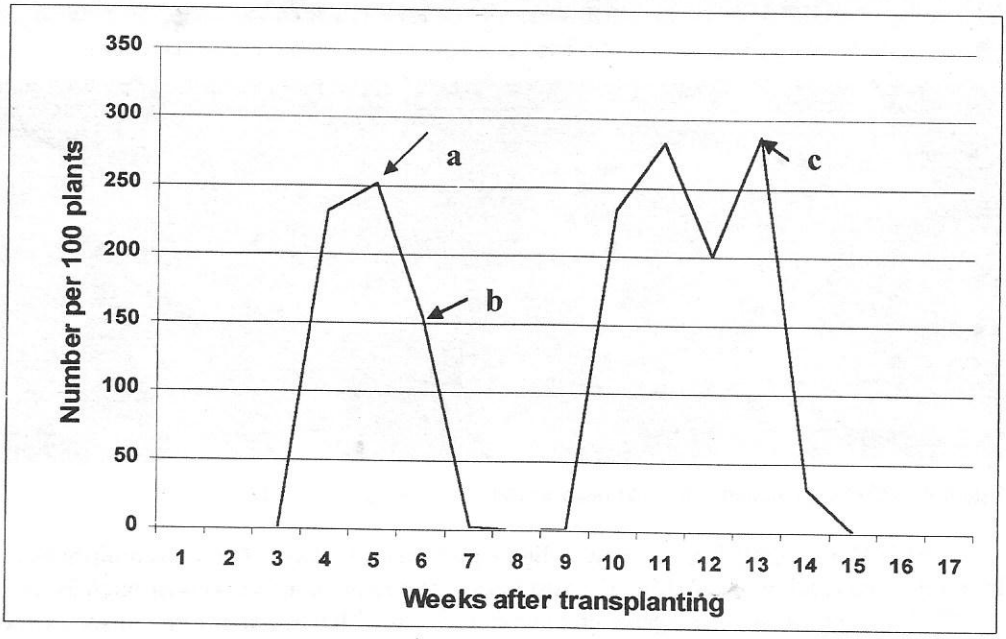

Figure 1. Population of *S. litura* on eggplant in a farmer's field in Asingan, Pangasinan (December 2002 March 2003). Note: larvae were hand-picked twice at 5 and 6WAT (a & b); SINPV was sprayed once at 13WAT (c).

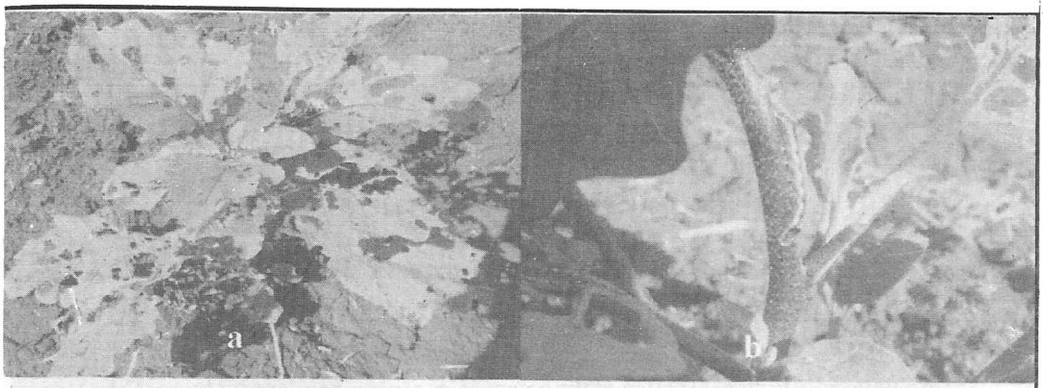

Figure 2. Leaves (a) (0.2X) and stem (b) (1.2X) of eggplant heavily damaged by *Spodoptera litura* larvae.

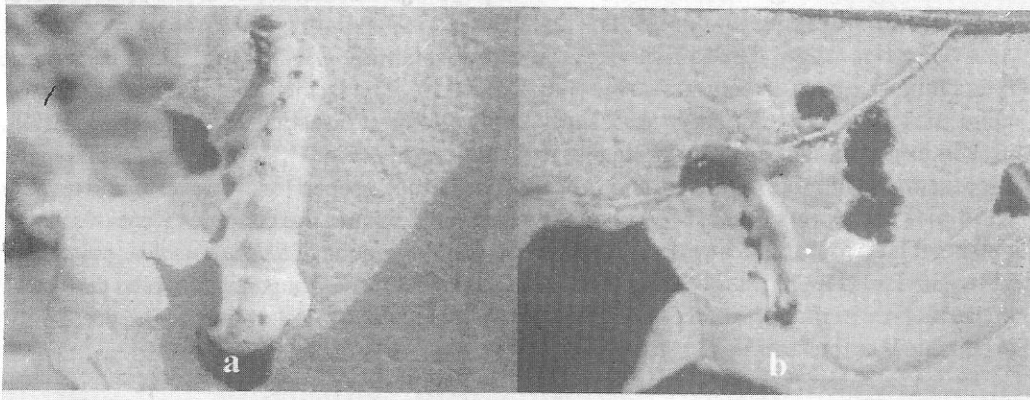

Figure 3. SINPV infected cutworm: a) about to burst (2X) and b) content oozing out (1.5X).

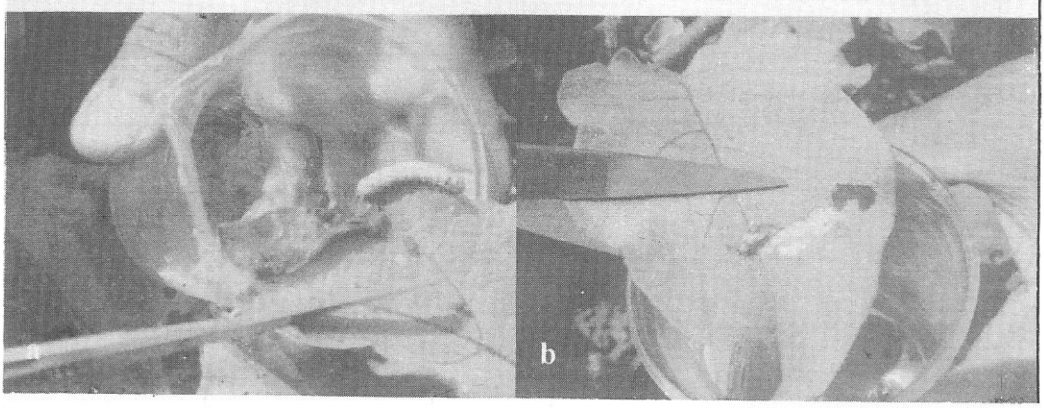

Figure 4. Collecting moribund (a) and dead larvae with ruptured body (b).

SINPV is a highly host-specific obligate parasite of *S. litura*. The virus multiplies in all internal organs and tissues, killing the host insect. The route of infection is through ingestion. SINPV, however, causes no diseases on mammals, birds, fishes and non-target insects (Ebora, R.V. 1987. MS Thesis. UPLB-GS. 101pp). SINPV has long been known locally as a biological control agent but studies have been limited to laboratory and small-scale field evaluations.

This communication presents a case where the use of SLNPV was successfully demonstrated at the farm level using the procedure outlined below.

In cooperation with the farmer-cooperator moribund and dead larvae that were still firm and would not rupture when touched were collected using a wooden stick. Ruptured and dead larvae that were too soft were collected by clipping-off the portion of the leaf containing them into a receptacle (Fig. 4). Collected materials were macerated using a stick to squeeze out the liquefied contents. Small amount of water (30-50ml) was added after maceration and the mixture was stirred for a few minutes. SINPV suspension was transferred into screw-capped bottles that could be stored in the freezer of an ordinary refrigerator for a short period to prevent spoilage and prolong the viability of the virus.

The virus stock solution could be used in the preparation of the spray solution at the rate of 10-15 larval bodies per 16L capacity knapsack-sprayer. Spraying was done late in the afternoon to avoid ultraviolet radiation to which the pathogen is quite sensitive. Care was also observed to uniformly wet the surfaces of leaves of the host plant.

One week after the viral suspension was sprayed in the field, the farmer-cooperator observed significant increase in the number of dead cutworm larvae on the foliage of eggplant and the concomitant drop in cutworm population. This convinced the farmer cooperator about the potential of SINPV in controlling this pest. Encouraged by the success, he made preparations of SINPV for his next crop (Fig. 5 a and b). He was also successful in producing SINPV from healthy cutworm larvae from gabi (*Colocasia esculenta*) and which he fed with eggplant leaves dipped in SINPV suspension. He found the procedure simple and consider it a "doable" technology for his fellow farmers.

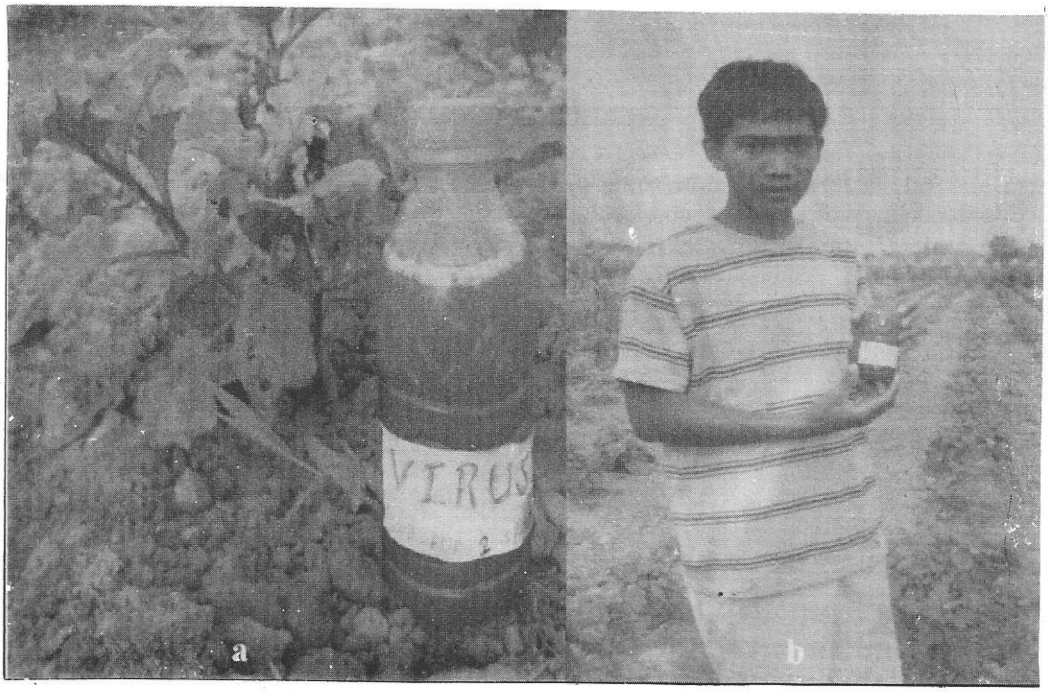

Figure 5. The product (a) and the farmer cooperator (b) with the product he used on his new crop.

Figure 6. Farmers collecting SINPV infected cutworm larvae for their own use during a field day conducted in the project site.

In a recent field day conducted in the area, other farmers showed interest in SINPV and collected infected cutworms for their own use (Fig. 6). The farmers through their association, the Bantug Samahang Nayon Multi-purpose Cooperative with about 150 members, have requested for a formal training on the mass-production of cutworm and SINPV. They plan to mass produce SINPV for sale to other farmers.

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