TARC Note

Singular Occurrence of Soybean Insect Pests and the Control of Them under the Severe Drought Condition in Paraguay*

In the southern part of Paraguay, the rainy season usually begins from the end of October to the middle of November. In 1985, however, it delayed until the end of January 1986, causing extremely severe drought. Soybean was planted only in about 50% of the total acreage prepared for growing soybean. Such an unusual drought was never experienced in the past 40 years. The authors carried out field studies on soybean insect pests during the period from the middle of January to the middle of March, 1986, in Itapua district.

1) Severe damage caused by Elasmopalpus lignosellus

The percentage of soybean plants killed by the corn stalk borer (*E. lignosellus*), a lesser insect pest, was extremely high (about 30%) for the plants sown in December and January, whereas the soybean sown in October and November showed no or very few damage. It seems that the corn stalk borer rapidly multiplied repeating more than two generations under the severe drought condition.

2) Severe damage caused by Blapstinus sp.

The soybean planted in December and January showed the peculiar damage, i.e., young plants toppled and died due to the damage of the basal part of stems. By the feeding experiment in a glasshouse, it was found out that adults and larvae of a kind of Tenebrionid beetle inhabiting soybean fields bite the basal part of young stems of soybean only under the severe dry condition. This insect was identified as *Blapstinus* sp. of the tribe Pedinini of the family Tenebrionidae by Mr. M. Miyatake, assistant professor of the Faculty of Agriculture, the Ehime University.

This observation, shown in Table 1, offers a new record of *Blapstinus* sp. as a soybean insect pest.

3) Unusual occurrences of soybean stink bugs

In this area, soybean seeds are attacked by such stink bugs as *Nezara viridula, Piezodorus guildinii, Euschistus heros, Acrosternum impicticorne, Edessa meditabunda, Megalotomus pallescens*, etc. The damage is used to be slight in early-maturing varieties which ripen before the end of February, while it is severe in late-maturing varieties, which ripen after February. However, this tendency was reversed by the severe drought.

Seeds taken from more than 200 plants (in 10 fields) at the ripening stage in the period

Table 1. Percentage of soybean plants killed by *Elasmopalpus lignosellus*, *Blapstinus* sp. and fungi

Sowing time	*Elasmopalpus lignosellus*	*Blapstinus* sp.	Fungi
October	0	0	5.4±5.4
November	0.5±0.5	0	3.6±3.6
December	27.2±9.6	22.1±13.1	0
Beginning of January	32.2±9.0	14.8± 8.1	0

* This study was performed as a part of "The Agriculture and Forestry Development Project in Southern Paraguay" of JICA. The result of this study was orally presented at the meeting and seminar held at CRIA on February 14 and March 18, 1986, respectively.

from February 18 to 27 were examined.

The damage of the seeds caused by stink bugs was estimated at about 35% which was extremely higher than 5% or so in ordinary years. The reason why the damage was so severe in the early-maturing varieties sown on September or October is attributed to the fact that the plenty of adults of stink bugs imigrated densely into a few soybean fields, where soybean podded on December and January.

On the contrary, the population density of stink bugs was extremely low in most of varieties sown late which matured after the end of March.

The seeds taken from more than 300 plants (in 15 fields) at the middle of March showed the damage estimated at less than 5%. The low population of soybean stink bugs was caused by the fact that most of the adults of stink bugs died without producing their offsprings, because of extreme delay of the flowering time of soybean and other wild hostplants in most fields and areas.

4) Chemical control of E. lignosellus and Blapstinus sp.

Farmers' experience indicates that insecticide application just before and after the rain is effective in reducing the damage by *E.*

Plate 1. A soybean plant killed by a larva of *Elasmopalpus lignosellus*
Left: a killed plant,
Right: a healthy plant.
Soybean plants killed by *E. lignosellus* usually don't lodge.

Table 2. Effect of insecticide application to control *Elasmopalpus lignosellus* and *Blapstinus* sp. (a field experiment)

Treatment		Percentage of soybean plants killed by *Elasmopalpus*		Percentage of soybean plants toppled due to *Blapstinus*
Insecticide + diluting water (*l*/ha)		6 days after spray (Jan. 31)	10 days after spray (Feb. 4)	10 days after spray (Feb. 4)
Nuvacron	1.0+200	7.7**	9.7**	8.4*
	1.0+400	4.8**	9.1**	10.5*
	1.0+600	6.3**	9.5**	10.8*
Folidol (M)	1.0+200	3.1**	7.4**	14.5
	1.0+400	3.8**	4.1**	7.4*
	1.0+600	4.9**	7.0**	7.4*
Control	—	22.3	28.6	29.4
LSD : $\mathrm{Sin}^{-1}\sqrt{\mathrm{P}}$ (%)		16.9 (8.4)	15.8 (7.4)	12.8 (4.4)

Note : Insecticides were sprayed by a manual sprayer at the growth stage of 2 leaves of soybean on January 25.
* Difference between the treated plots and the control plot was significant at 5 % level.
** Ditto at 1 % level.

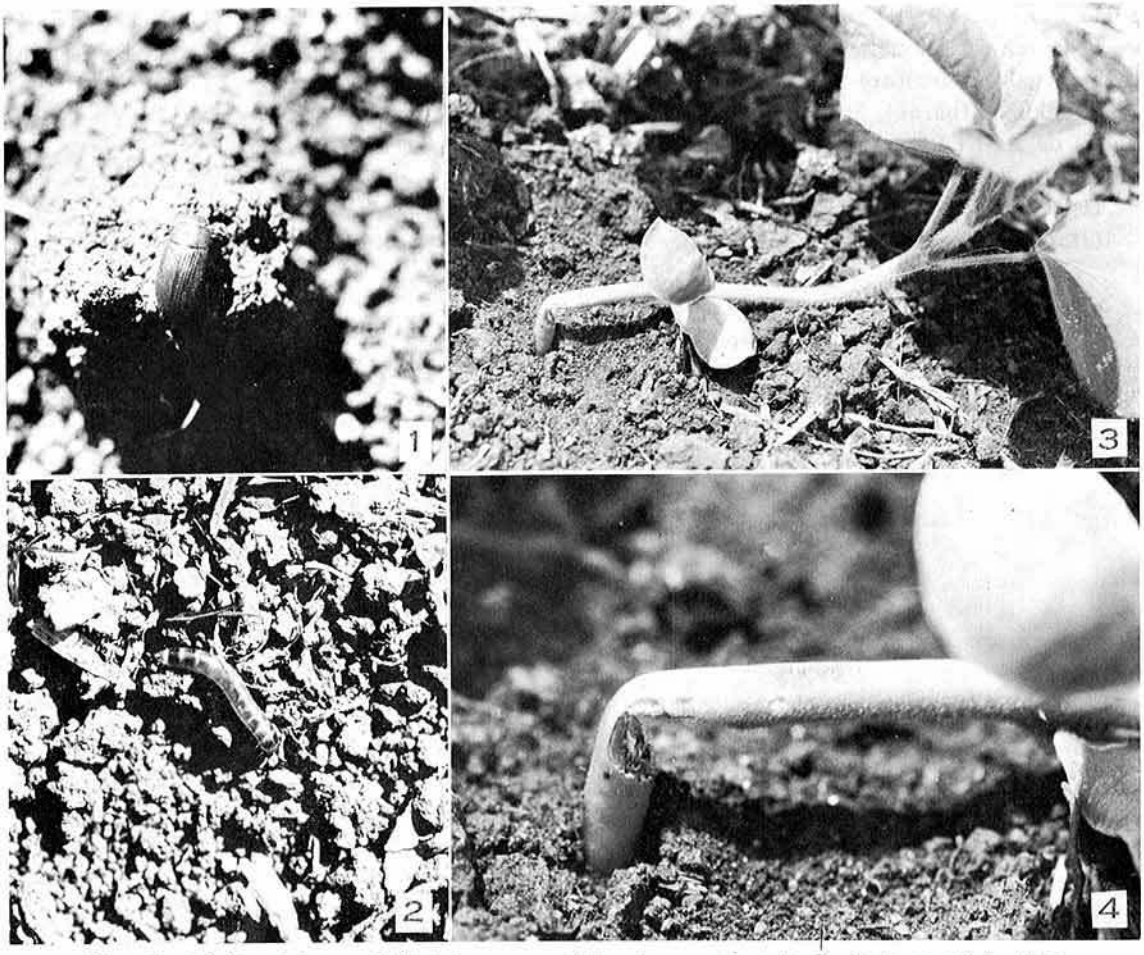

Plate 2. Adult and larva of *Blapstinus* sp. and the damage of soybean plants caused by them
1 : the adult, 2 : the larva, 3 : a soybean plant lodged by bite of the adult,
4 : feeding trace by the adult.
(Soybean plants lodge by bite of the insect)

lignosellus and *Blapstinus* sp. Therefore, a field experiment was conducted, using two insecticides, which were most effective in controlling *E. lignosellus* in the past experiment[1].

The effectiveness of both insecticides is shown in Table 2. The rate of dilution with water showed no significant differences in the effectiveness. It happened due to a heavy rain immediately after the insecticide application on January 25.

The effectiveness of Nuvacron and Folidol (methyl) to control larvae of *E. lignosellus*, and adults and larvae of *Blapstinus* sp. at the growing stage of soybean was recognized for the first time by this experiment.

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1) Cooperativa Agricola de COTIA: Soja. Manual de controle de doencas e pragas. Cooperativa Agricola de COTIA Cooperativa Central. São Paulo, 201–212 (1982).

Takashi KOBAYASHI*
Research Division I,
Tropical Agriculture Research Center
(Tsukuba, Ibaraki, 305 Japan)
Gloria de AGUERO
Centro Regional de Investigacion Agricola
(CRIA)
(Itapua, Paraguay)

Present address:
* Department of Overseas Activity, Japan Agricultural Land Development Agency
(Shibakoen, Minato-ku, Tokyo, 105 Japan)
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