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Use of corn plants as traps to prevent colonization of soybean by phytophagous pentatomids in Argentina

SALUSO, Adriana¹; SILVA, Flávia A.C.²; PANIZZI, Antônio R.²

¹Laboratorio de Entomologia, INTA, Paraná, Entre Ríos, Argentina Zip Code 3101 ²Laboratório de Bioecologia de Percevejos, Embrapa Soja, Londrina, PR, Brazil C.P. 251 Zip Code 86001-970.

INTRODUCTION

Phytophagous pentatomids (Heteroptera: Pentatomidae) are the most important pests on soybean in Argentina. Several alternatives to control this pests has been evaluated around the world.

"Life barriers" are defined as plant lines with size and smell very different to the main crop, are a sustainable alternative to reduce the impact of phytophagous stink bugs on soybeans. In Argentina there is no information on the use of vegetative barriers, for this reason, we conducted a trial to get information about this cultural alternative.





MATERIAL AND METHODS

Corn plants were tested as trap crop to mitigate the invasion of soybean areas by phytophagous pentatomids in Paraná, Entre Ríos, Argentina (31° 51' 9.6" S, 60° 32' 11.2" O). Eight plots (30 x 30 m) of transgenic soybean LAE 9972402, maturation group 5.5 were used. Four plots were surrounded by five rows of corn cv. NK940 plants, used as trap or "life barrier", and four plots were not (Fig. 1). Samples of stink bugs were taken at random using the beat cloth (five beats/plot) on all eight plots to detect the presence of bugs from the period of pre-blooming to soybean plant maturation. At harvest, seed yield was measured, and seed samples examined to determine weight of 100 seeds.

Figure 1. Soybean plots surrounded by a row of corn (red arrow).

RESULTS AND DISCUSSION

Piezodorus guildinii (Westwood) (51%) and *Nezara viridula* (L.) (43%) were the main pentatomids intercepted. The occurence of *Edessa meditabunda* and *Dichelops furcatus* was similar (3%) (Fig. 2). Stink bugs were present in smaller numbers in the soybean plots surrounded by corn compared to soybean plots alone.

At maturation (R8), population peaked with 1.4 bugs/m in the plots with the trap plants, and 1.9 bugs/m in the check plots (Fig. 3).

Seed yield and weight of 100 seeds were significantly (LSD Fisher P= 0.05) greater for the plots containing the trap crop as compared to those without the corn plants (Figs. 4 and 5, respectively).

Therefore, we can conclude that "life barriers" is a sustainable alternative to reduce damage to soybean by phytophagous stink bugs.





Figure 2. Percentage of phytophagous pentatomids recorded in soybean surrounded by corn plants.



Figure 4. Yield (kg/ha) in soybean cultivation with (white column) and without (black column) "life barrier". Means followed by different letters were significantly different (LSD Fisher P= 0.05).



Figure 3. Population dynamic of phytophagous pentatomids on soybean surrounded by corn plants. C/B: With "life barrier" S/B: Without "life barrier"



Figure 5. Weight of 100 seeds (g) from soybean plants cultivated with (white column) and without (black column) "life barrier". Means followed by different letters were significantly different (LSD Fisher P=0.05).