

Success Story

Management of *Spodoptera litura* in soybean crop - IPM practices

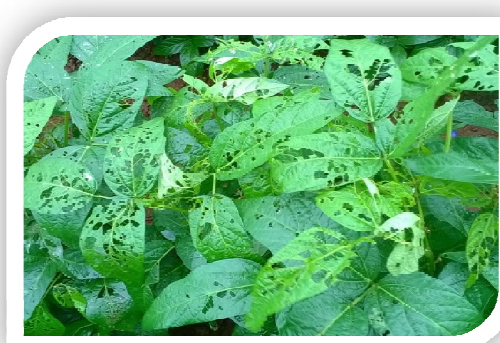
Situation Analysis:

Maharashtra is one of major soybeans growing states in the India. The soybean crop is cultivated on larger area in Kolhapur district during Kharif season. It is predominant oilseed crop in the Kolhapur district. In last 8-10 years it is severely infested by the notorious pest, Tobacco caterpillar, *Spodoptera litura* causing huge economic losses. The epidemics of the pest has been noticed in the district since 2008.

The larvae of *Spodoptera litura* damage the crop usually in the month of August and September severely. The crop stages mostly attacked by the pest are late vegetative and early reproductive stages. The newly hatched larvae scrap the chlorophyll and feed voraciously on the leaves. This gives appearance of yellowish white web on the leaves. As caterpillar matures, they completely defoliate the leaves leaving only mid ribs and stalks. Larvae feeds vigorously as it advances in age. The soft pods are bored and grains are devoured. The habit of larvae is to hide under the plants, cracks and crevices of soil debris during the day time and feeds during night hours. The incidence could be noticed by the fecal pellets left on the leaves. The losses in yield were noticed from 20-40 % depending upon severity of pest.



Larva feeding on soybean leaf



Damage caused to soybean leaves

Technology, Implementation and Support:



Installation of pheromone trap demonstrated



Yield achievement

Taking into consideration the situation of soybean crop infected *spodoptera lutera*. In year 2012-13 Krishi Vigyan Kendra, Talsande carried FLD on 09.05 ha. area. The farmers involved in FLD previously had yield of soybean around 22.60 qtl/ha. which increased up to 27.15 qtl/ha. with increase in net returns from Rs. 15010 in check plot against Rs. 28160 in demo plot. Which shows clearly increase in yield and net returns of the crop in the year 2012-13, after Krishi Vigyan Kendra, Talsande decided to carry FLD in about 10.25 ha. area in year 2014-15.

Method Demonstration regarding use of pheromone trap (*Spodolure*) in different villages were carried out to make farmers understand how to use traps. Field visit training programmes regarding control of *spodoptera litura* were carried out regularly. Method demonstration on spraying of Neem ark (10000 PPM) 10 ml in 10 lit of water before flowering.

The use of pheromone trap @ 5 traps/ha. has certainly increased in farmers from 2012-13. In 2015-16 the same FLD was converted in to OFT with introduction of new molecule Emamectin benzoate. Area of about 04.10 ha was under OFT and yield of soybean was 21.17 qtl/ha, which increased up to 26.83 qtl/ha, with increase in net returns from Rs. 26827 in check plot against Rs. 39250 in demo plot. Which clearly shows increase in yield and net returns of the crop in the year 2016-17.

Results of effect of critical inputs on the control of *Spodoptera litura* in soybean crop

Year	Bio pesticides applied and quantity/ha	Area in ha	Yield Qtl/ha		%	Economics of demonstration Rs/ha			
			Demo	Check		Gross Cost	Gross Return	Net Return	BCR
2016-17	Pheromone trap Spodolure, Neem ark, Emamectinbenzoate	04.10	26.83	21.17	21.09	34460	73710	39250	2.14
2013-14	Pheromone trap Neem ark, Inoxocarb	10.25	26.70	21.45	19.66	32450	58740	26290	1.82
2012-13	Pheromone trap Neem ark Cypermethrin	09.05	27.15	22.60	16.76	31750	59910	28160	1.89

The management strategy recommended by research institution was comprehensive. However to be more ecofriendly KVK, Kolhapur has combined blend of environment friendly pheromone trap (Spodolure), botanical pesticide, neem ark are less hazardous chemical is Emamectin benzoate. These three critical inputs are tried on the farmer fields in the villages for more analysis.

Uptake, Spread and benefit:

From the data it has been appeared that use of spodolure and pheromone trap @ 5 traps/ha., spraying neem ark (10000 ppm) 10 ml in 10 lit of water before flowering and spraying chemical pesticide, Emamectin benzoate (5SG) 3.5 gm in 10 lit of water after pod formation is found effective in controlling pest.

Gradually horizontal spread of the technology started taking place and within next five years 200 ha. area could be brought under control of *spodoptera litura* in soybean crop by use of pheromone trap, Spodolure, Neem ark, Emamectin benzoate.

Estimated Environmental Impact:

Reduced pesticidal burden by using botanical, chemical pesticides and eco-friendly pheromone trap. Conservation of natural enemies made possible.

Estimated Social Impact:

Formation and facilitation of soybean farmer groups and finally availability of best quality oil and protein food vegetarian.

