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Madras Agric. J., 94 (1-6) : 133-135 January-June 2007

<https://doi.org/10.29321/MAJ.10.100650>

Research Notes

## Survey and monitoring the incidence of pests of castor

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Castor, *Ricinus communis* Linn, is an important non-edible oilseed crop, widely grown under rainfed conditions. In Tamil Nadu, the castor hybrid, TMVCH 1 and TMV 6 are widely grown as pure crop during *kharif* in districts *viz.*, Salem, Erode, Namakkal and Dharmapuri due to their high seed and oil yield and heavy demand for castor oil in many

industries. Castor crop cultivation has attained a momentum to become as a cash crop and intensive cultivation with hybrid castor TMVCH 1 has picked up under irrigated and rainfed conditions in Tamil Nadu. Castor cultivation is constrained by more than 60 insect pests through out the crop period (Rai, 1976) resulted in heavy yield loss. Among them the castor

capsule borer, *Dichocrocis punctiferalis* and the leaf eating caterpillars, especially, the semilooper, *Achaea janata*, tobacco caterpillar, *Spodoptera litura*, the occasional pest slug caterpillar, *Parasa lepida* and jassids are causing a considerable damage and reducing the yield (Lakshminarayana and Raoof, 2005). Extensive survey and monitoring of pest incidence on castor throughout the crop period over several years is essential to know the seasonal occurrence of castor pests, their peak incidence, nature of damage, and occurrence of natural enemies. These informations are useful to find the vulnerable stage of the pest for taking control measures and to formulate the effective management practices. Hence, the present study was conducted to make survey and to monitor the incidence of major pests of castor.

Survey was conducted both in the research station and in the farmer's fields in Salem district at fortnightly intervals starting from beginning of the *kharif* season. Observations on population levels of different pests, their natural enemies on castor were recorded on ten plants in a locality and expressed on per plant basis. Sucking pest population was expressed as number per three leaves per plant. Survey on defoliators was conducted on 45 to 120 days old crop. Observations on larval population and per cent damage caused by the defoliators were recorded on ten plants per plot and the mean was worked out. Survey on the incidence of capsule borer was conducted on 90 to 135 days old crop. Observation on capsule borer incidence was made by recording total number of capsules and damaged capsules per spike and per cent damage was worked out. Observations were also made on the presence of natural enemies *viz.*, predators and parasitoids on castor pests.

The results of the survey conducted during 2003-2004 revealed that among the sucking pests, leafhopper incidence was observed in all the locations surveyed. Leafhopper population on 90 to 100 days old crop ranged from 37.9 to 180.4 numbers per 3 leaves per plant with the damage grade of 0.1 to 2.0 in 0-4 scale in all the fields surveyed. Among the natural enemies, the coccinellid predators *viz.*, grubs and adults of *Menochilus* sp and the chrysopid predator, *Chrysoperla carnea* were found preying on the sucking pests. Among the defoliators, the incidence of serpentine leaf miner, *Liriomyza trifolii* was found on 30 to 60 days old castor crop in all the fields surveyed. The peak incidence was during September to October, 2003. The population of *Spodoptera litura*, semilooper was high at Tapioca and Castor Research Station, Yethapur during October and November, 2003. The incidence of semilooper ranged from 5.4 to 20.3 larvae per plant with the maximum population at Thennampillaiyur village. The larval parasitoids *viz.*, *Micropplitis ophiusae* and *Cotesia* sp were observed in all the places where the incidence of semilooper and *S. litura* were noticed. The maximum of 10.4 per cent parasitism by *M. ophiusae* on semilooper and 28.7 per cent parasitism by *Cotesia* sp on *Spodoptera litura* were observed in majority of the castor fields surveyed. Regarding capsule borer, the incidence was nil till November, 2003 at Tapioca and Castor Research Station, Yethapur. The incidence started slowly during the second week of December, 2003 and reached the maximum of 29.2 per cent during the third week of December, 2003.

The results of the survey conducted during 2004-2005 revealed that among the sucking pests, incidence of leafhoppers was observed to be very less with the range of 0.1 to 1.6 per 3 leaves per plant with grade of 0 to

0.1. The incidence of flower thrips, *Scirtothrips dorsalis* was found to be the maximum with the mean population of 12.5 / spike. The incidence of leaf thrips was noticed in all the places surveyed with the range of 0.9 to 8.3 / top leaf/plant. During the survey on defoliators, the maximum of 5.7 defoliators /plant was recorded at Namakkal district during the month of October. The maximum defoliators were observed during October and November. During the year 2005 also, capsule borer incidence was 'nil' till November. The incidence started slowly during the second fortnight of December, 2005 and it reached the maximum of 9.3 per cent during the first week of January, 2006 at Tapioca and Castor Research Station, Yethapur. The occurrence of larval parasitism by the *Microplitis ophiusae* was maximum (48 per cent) at Tapioca and Castor Research Station, Yethapur.

The results are in accordance with the findings of Lakshminarayana *et al.* (1992) who have reported that serpentine leaf miner, *Liriomyza trifolii* occurs during August to September when the crop is 30 to 45 days old. It occurs in all the castor growing areas of the country and causes characteristic mines initially in the cotyledonary leaves and spreading later to the true leaves. The major defoliators viz., semilooper, *Achaea Janata* Linn, and castor caterpillar, *Spodoptera litura* F. are of regular

occurrence during August to October on 30 to 75 days old crop and cause more defoliation. Survey reports of Rai (1976) revealed that natural incidence of egg parasitoid, *Trichogramma chilonis* and *Microplitis maculipennis* was 40 and 80 per cent, respectively. Parasharya *et al.* (1988) also reported 92 per cent of natural inheritance of *T.chilonis* and *Telenomus* sp. at Anand, Gujarat.

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