Biology Population Dynamics, Varietal Screening and Management of Groundnut Bruchid, *Caryedon serratus* (Olivier)

Submitted to Gujarat Agricultural University

Name of Student — **M. N. Motka**

Major Guide — **P. G. Butani**

Department of Entomology,
College of Agriculture, GAU, Junagadh

Investigation on biology, population dynamics, varietal screening and management of groundnut bruchid, *Caryedon serratus* (Olivier) were carried out under laboratory conditions at the College of Agriculture, Junagadh during 1994 to 1996.

During field survey, *Parkingsonia aguanata* L. has been recorded as a new host of *C. serratus* for the first time under Junagadh conditions. The infestation was in the range of 1.0 to 3.0 per cent on forest trees under field conditions.

The groundnut bruchid multiplied by 76 folds as compared to initial infestation during 180 days of storage period. The infestation resulted into 96.26 per cent kernel damage, 95.41 per cent germination loss, 67.26 per cent weight loss and 1.23 per cent oil loss. On the other hand, the protein content and free fatty acids groundnut kernels was increased due to bruchid infestation.

The female laid eggs singly on groundnut kernels. The incubation, larval and pupal period ranged from 5.0 to 9.0 (Av. 6.37), 24.0 to 37.0 (Av. 30.57) and 12.0 to 22.0 (Av. 18.03) days, respectively, at an average temperature of 29.22 ± 3.50°C and 61.62 ± 9.87 per cent relative humidity.

The duration of adult stage of male and female varied from 10.00 to 23.00(Av. 18.40 ± 4.03) and 17.00 to 33.00 (Av. 25.80 ± 4.57) days, respectively.

Pre-oviposition, oviposition and post oviposition period varied from 1 to 3 (Av. 1.70 ± 0.67) 8 to 17 (Av. 14.10 ± 2.73) and 3 to 14 (Av. 9.20 ± 3.22) days, respectively. The average egg laying capacity of the female bruchid range between 47 to 76 (Av. 63.70 ± 9.79) eggs female under laboratory conditions. The sex ratio was of 1.0 : 1.5 : male : female, when reared in groundnut cultivar GG 2.

Population dynamics of groundnut bruchid revealed that the infestation started during 4th week of June and reaching a peak level during second week of October. Correlation studies showed positive influence of temperature on population build up of groundnut bruchid.

Among different groundnut cultivars, GG-13 and GG-11 proved to be the resistant against *C. serratus*, whereas, GG-2 was found to be susceptible. *Arachis hypogae* linn. was proved to be the most preferred host among different hosts of *C. serratus* for oviposition.

Among the different receptacles tested, metal bin and plastic container proved to be the best for safer storage of groundnut kernels against the infestation of *C. serratus*, whereas out of different inert materials tested, clay @ 20 g/kg and neem seed kernel powder (NSKP) at 5.0 per cent (W/W) were proved better to protect the groundnut kernels upto 60 days against *C. serratus*.

Among different vegetable oils tested only neem oil @1 ml/kg gave better protection up to 120 days without causing any loss in germination.

None of the inert or tested plant materials, hampered the germination of groundnut kernels even at the highest dose.

Out of the different insecticides tested, decamethrin and cypermethrin @ 1.0 mg a.i./kg gave the highest relative protection to groundnut kernels upto three months against *C. serratus* without hampering the germination.

Effective control of *C. serratus* was achieved with methyl bromide fumigation @ 3 ml/quintal and aluminimum phosphide fumigation @ 3 tablets/ton for 2 days (72 hr) exposure. Both the fumigates did not impair the vitality of groundnut kernels.

(Received on 21st Dec., 1998)