GAU Res. J. 2000. 25 (2) : 91-93

Effect of Irrigation Levels and Mulch on Cotton Hybrid - 6

R. R. Kaswala, G. L. Maliwal, B. R. Parmar, C. H. Rana and S. Raman

Narmada Irrigation Research Project, Gujarat Agricultural University, Khandha (Handod 391 240)

Cotton is a major *kharif* crop grown on clayey soils of Region I of Narmada Command. Irrigation to cotton crop after cessation of monsoon definitely increases the yield and use of mulch may minimize the water requirement of crop (Ghildyal and Tripathi, 1987; Das and Maliwal, 1996). With these views, an experiment was planned to workout scheduling of irrigation with and without the use of mulch in cotton crop.

A field study was conducted in 1990-91 to 1992-93 at Narmada Irrigation Research Farm at Khandha, Gujarat Agricultural University with cotton variety Hybrid-6. During cropping season of 1990-91, 1991-92 and 1992-93, the rainfall received was 1104, 1022 and 735 mm, respectiveiy and most rain (90%) being received during the period June to September. The soil is clayey in texture having pH 7.5; EC_2. 5 1.04 dsm^{-1}, total N 0.032 per cent, Olsen's P_2O_5 28.4 kg/ha and available K_2O 1219 kg/ha. The crop was sown in third week of June with intra and inter row spacing of 90 and 30 cm, respectively. The crop was harvested in first week of December every year. Three levels of IW/ CPE ratio i.e. 0.3, 0.5 and 0.7 and four levels of mulch i.e. no mulch, soil mulch (stirring surface soil with Wheel Hoe once a week), black plastic of 200 micron with 80 per cent coverage and wheat straw @ 10 t/ha in factorial randomized block design with four replications. The nitrogen @ 320 kg/ha in the form of urea was applied in three equal splits i.e. before sowing, one month after sowing and one month after 2nd application. No phosphorus and potash was applied. The water expense efficiency was computed as yield divided by total water (mm) applied and rainfall received during the crop season. Irrigation each of 80 mm depth was imposed in respective IW/CPE ratio after the cessation of monsoon.

The effects of irrigation and mulching on yield of cotton are presented in Table - 1. Among various irrigation treatments, irrigation at 0.7 IW: CPE ratio (with require 5 irrigations of 80 mm depth after the cessation of monsoon) gave significantly higher seed cotton yield (1744 kg/ha) over other treatments (Table - 1). The effect of irrigation levels was non significant in 1990-91 while significant effect was observed during 1991-92 and 1992-93. The significantly higher yield was observed with 0.7 IW : CPE ratio during both the years. The effect of mulching was non significant during 1990-91 while significant effect was observed during other two years as well as in pooled. The application of wheat straw @ 10 t/ha after ceassation of monsoon gave significantly higher yield over no mulch and soil mulch but at par with plastic mulch covering 80 per cent area (Table - !). The interaction of irrigation and mulch was non significant.

GAU Res. J. 2000. 25 (2) : 94-95

Host Preference of Epilachna Beetle, *Henosepilachna vigintioctopunctata* (Fabr.)*

K. N. Patel and M. S. Purohit **

Department of Entomology, N. M. College of Agriculture, Navsari - 396 450

The general survey made for the determining the host range of epilachna beetle during 1996-97 at College Farm, Navsari indicated that the pest damaged mainly brinjal (*Solanum melongena* L.) and tomato (*Lycopersicum esculentum* L.). However, information about the preference among these two hosts viz., brinjal and tomato by this pest is lacking. In order to compare these two hosts for the preference of the epilachna beetle the study was undertaken in the laboratory of Department of Entomology, N. M. College of Agriculture, Navsari during 1996-97. The neonate larvae, collected from Laboratory reared culture, were reared singly on the fresh leaves of respective food materials (for each host 40 larvae) until pupation. The emerged adults were also fed on their respective food leaves. The effect of host plants were compared on the basis of larval period, pupal period, weight of full grown larva and pupa and adult longevity. The result revealed that larval and pupal period was not significantly influenced by the food plants (Table-1). However, the average number of days required to complete entire larval stage was slightly longer (15.95 ± 0.86 days) on tomato leaves as compared to brinjal leaves (15.60 ± 0.73). The adult longevity, significantly influenced by food plants, was higher on tomato as compared to brinjal. The larva grow faster and obtained heavier weight when fed with brinjal leaves (27.55 ± 0.51 mg.) than on tomato leaves (23.40 ± 0.65 mg.) The corresponding data for pupal weight was

TABLE 1

Effect of food plant on different growth parameter of *H. Vigintioctopunctata.*

Host. plant	Duration (days)		Longivity (days)		Mean weight (mg.)		
	Larval	Pupal	Male	Female	Larva	Pupa	Adult
Brinjal	15.60±0.73	4.10±0.30	34.00±1.51	46.15±0.46	27.55±0.511	28.65±0.52	27.72±0.52
Tomato	15.95±0.86	4.30±0.46	37.00±1.15	48.00±0.65	23.40±0.65	25.19±0.66	26.31±0.74
't' value	1.35	1.54	2.20	2.06*	23.00*	18.21*	16.24*
	N.S.	N.S.	Sig.	Sig.	Sig.	Sig.	Sig.

*'t' value significant at 5% level significance.
N.S. = Non significant.

* Part of M. Sc. (Agri.) thesis submitted to GAU by Sr. author.
** Present address : Training Associate (P.P.), GAU, Navsari.

28.65 ± 0.52 mg. and 25.19 ± 0.66 mg. Brinjal leaves also enhanced the development and body weight of adults. These results clearly indicated that the brinjal leaves was preferred by larva and adult which in turn supported the development in shorter period and also helped in gaining heavier weight of both damaging stages. Such preference of brinjal over tomato by H. *vigintioctiopunctata* was reported by Rao and Azam (1973).

(Received on 9th Aug. 2000)

REFERENCES

Rao, U. M., Azam K. M. 1973. Effects of feeding different host plants on the larval and post larval development of epilachna beetle,. *Andhra Agri. J.* **20** (1 & 2) : 37-40.