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EFFECT OF EARHEAD BUG FEEDING ON NUTRITIONAL CONTENTS OF SORGHUM SEEDS

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Feeding by sorghum earhead bug, *Calocoris angustatus* Lethierry resulted in changes in the nutrional content of sorghum seeds. The depletion in starch (6.67 to 28.39%) and protien (27.3 to 52.6%) contents in infested grain was noted. Free amino acid contents increased appreciably in the infested grain seeds to the tune of 88.89 to 396.00 per cent over healthy seeds.

Sorghum earhead bug, *C. angustatus* (Miridae : Hemiptera) is one of the key pests in Tamil Nadu, Karnataka and Andhra Pradesh, which sucks the milky juice from developing grains resulting in yield reduction. With a view to find out the quantitative changes in starch, protein and free amino acids contents, the present study was carried out in comm n sorghum cultivars.

MATERIALS AND METHODS

The panicles of Co 22, Co 24, Co 25, K-Tall hybrid and F1 generations of K-Tall and CSH 5 exposed for natural infestation of adult earhead bugs were covered with muslin cloth bags for further development of the insect. For each cultivar, 10 panicles were used and equal number of checks were maintained without any insect infestation. Insects other than earhead bug if any present were removed mechanically. Heathy and infested panicles were threshed after maturity starch, protein and free aminoacid contents were estimated.

Starch content was analysed by anthrone method of Hedge and Hofreiter, (1962).

Protein content was estimated by Lowry's method (Lowry *et al*, 1951).

Free amino acids present in the sample were analysed as per Joseph (1957).

RESULTS AND DISCUSSION

Contents of starch, protein and free amino acids of both healthy and infested grains are presented in the Table 1. In infested grains the starch content was reduced compared to healthy grains and it was maximum in K-Tall F1 (33.33%) and lowest in variety Co 24 (6.67%). In others it ranged from 10.48 to 27.59 per cent. The difference in infested grains with respect to protein depletion ranged from 27.27 in K-Tall to 52.38 per

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cent in Co 24. Co 22 and Co 24 which had more protein depletion, had less loss of starch content. Hiremath *et al* (1983) elucidated the reduction of protein and starch molecules in the infested seeds by earhead bug through histochemical studies. The possible reason for the reduced contents of starch and protein may be due to the fact that saliva of mirid bugs contain enzymes which act on these nutrients. The presence of amylases in the saliva of mirid bug, *Lygus reagulipennis* Popp. was reported by Rautappa (1969). The salivary gland of mirids, *L. disponsii* Linnavuori, *L. Saundersii* Reut., *Adelphocoris ticinensis* var. *suturalis* (Jakolev) and *Orthocephalus funestus* Jakolev and *Rhagmus importunitas* have also been reported to have amylase by Hori (1975. a) and Gopalan (1976) Walstrom (1983) observed that mirids *L. lineolaris* (P. de B.) and *L. elisus* Van D. reduced the digestible nutrients and protein in lucerne.

Table 1. Effect of earhead bug infestation on starch, protein and free amino acid content of sorghum grains.

Particulars	Co 22	Co 24	Co 25	K-Tall	K-Tall F_2	CSH 5 F_2
Starch (%)						
Healthy	55.80	74.25	64.10	59.40	67.50	78.30
Infested	49.95	69.30	45.90	50.40	45.00	56.70
Reduction	5.85	4.95	18.20	9.00	22.50	21.60
% reduction over healthy	10.48	6.67	28.39	15.15	33.33	27.59
Protein (%)						
Healthy	10.80	10.50	11.50	11.00	12.60	12.80
Infested	5 50	5.00	6.60	7.00	6.90	6.70
Reduction	5.30	5.50	4.90	3.00	5.70	6.10
% reduction over healthy	49.07	52.38	42.61	27.27	45.23	47.66
Free amino acids (µg/g of seed)						
Healthy	160.00	105.00	150.00	180.00	125.00	200 00
Infested	370.00	240.00	520.00	340.00	620.00	760.00
Difference	210.00	135.00	370.00	160.00	495.00	560.00
% Increase over healthy	131.25	128.57	246.67	88.89	396.00	280.00

The free aminoacid contents were found to have increased due to infestation which was to the tune of 88 89 per cent in K-Tall to 396.00 per cent in K-Tall F_1 compared with that of healthy grains. In others it ranged from 128.51 (Co 24) to 280 00 (CSH 5 F_1) per cent. The increased content of free amino acids in infested grains is being reported for the first time in sorghum. Hori (1973) found that sugar beet injured by mirid, *L. disponsi* had more amino acids. Hori (1975 b) reported the presence of amino acids in the salivary gland of *L disponsi*. The increase in free aminoacid content in the infested grains may be due to two factors *viz.*, breakdown of the protein by the salivary protease enzymes and the presence of free amino acids themselves in the salivary gland of mirids as reported above.

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