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# Screening of sweet potato germplasm for weevil (*Cylas formicarius)* under rainfed condition of Bastar

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## ABSTRACT

Fifty six germplasm/entries accession of sweet potato (*Ipomoea batatas* Lam.) were screened for resistance against *Cylas formicarius* Feb. (Coleoptera : Curculionidae) under field conditions. The criteria used in field evaluation were weevil incidence percentage of tuber damage (plot basis) at harvesting time. Result revealed that none of the entries were found to be highly resistant. However, the lowest weevil incidence was recorded in germplasm/entries *viz.* IB-94-3/94 (11.99), OP-SV (13.74), CO-3 (16.81) and OP-11-2 (18.31) and considered resistant to sweet potato weevil. Entries Badgaon local red (81.30), IGSP-6 (83.33), OPM-white (83.99), IB-94-2 (84.17), IGSP-11-2 (QR) (84.70), OPH-85/179 (84.71), OP-31-1 (85.44), POL-21-1 (85.95), IGSP-12 (97.60), IB-90-15-9 (93.26) and OP-15 (97.65) were severely infested by weevil and considered to be highly susceptible. The remaining entries were moderately resistant to susceptible in reaction.

**Key words :** Sweet potato, *Cylas formicarius*, Weevil, Screening.

Sweet potato (*Ipomoea batatas* Lam.) is the most important tropical tuber crop cultivated almost all over India. The annual production of sweet potato in India is 12.2 million tons with an average productivity of 7.9 t/ha$^{-1}$. This is lower than the average world productivity of 13.9 t/ha$^{-1}$ and considerable lower than the productivity in China. (17.0 t/ha$^{-1}$), (FAO, 1992). The main reason for such low productivity is weevil infestation.

Sweet potato weevil *Cylas formicarius* is the most series pest of sweet potato causing considerable damage to the crop. The grubs and adults feed on both tubers and vines. Even slightly damaged tubers are unsuitable for consumption because of bitterness developed by terpenoids. Yield of more than 50 per cent due to infestation is reported from many parts of the world (Subramaniam *et al.*, 1997; Mullen, 1984; Janson *et.al.*, 1987; Palaniswami *et al.*, 1992). During the past 50 years, several attempts were made to isolate resistant lines and to find sources of resistance to *Cylas* spp. Differences were found in the degree of infestation among cultivars (Waddil and Conover, 1978; Mullen *et al.*, 1980).

## MATERIALS AND METHODS

A total 56 sweet potato germplasm accessions were screened under field conditions during *kharif* 2001-02 at Research Farm of S.G. College of Agriculture and Research Station, Jagdalpur. The experiment was laid out in augmented randomized block with three replicates. The planting was done in uplands field condition in a plot of 3 x 2m and planting was done on ridges with spacing of 60 x 20 cm apart. A recommended package of practices of CTCRI, except plant protection measures was followed to raise good crop. The corp was harvested at 120 days maturity and the weevil incidence percentage was computed as percentage of damaged tuber over total yield /plot.

The weevil incidence per cent was assessed, based on grade point 0-5 scale as detailed below.

| Grade | Per cent incidence | Reaction |
|---|---|---|
| 0 | 0 | Highly resistant |
| 1 | 1-20 | Resistant |
| 2 | 20-40 | Moderately resistant |
| 3 | 40-60 | Moderately resistant |
| 4 | 60-80 | Susceptible |
| 5 | 80 above | Highly susceptible |

Ref:- CTCRI training report, 2000-2001.

## RESULTS AND DISCUSSION

The data presented in Table 1, revealed that none of the germplasm / entries were found highly resistant against sweet potato weevil. However, the lowest weevil incidence of 11.99 % was recorded in IB-94-3/94, followed by OP-SV, CO-3 and OP-11-2 (13.74, 16.81 and 18.31 %) incidence, respectively. Entries Badgaon local (Red), IGSP-6, OP-31-1, POL-21-1, IGSP-12, IB-90-15-9, OP-15 recorded significantly higher weevil incidence of 81.30 to 97.65 per cent and found to be highly susceptible.

Depending upon the weevil incidence score, the germplasm/entries were grouped as follows.