

SHORT NOTE

EVALUATION OF DIFFERENT POISON BAITS FOR THE MANAGEMENT OF GIANT AFRICAN SNAIL, *Achatina fulica* Bowdich

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Achatina fulica Bowdich is the most economically important species among major species of Giant African snail in China, Taiwan, Japan, Philippines and Hawaii. It has been introduced in India (West Bengal) during 1847 (Mead, 1961) and has steadily spread to different states in Indian Union from West Bengal to Tamil Nadu (Venette and Larson, 2004). In Maharashtra, it was first reported in Aurangabad district during 1973 and spread to the adjoining districts. In Nashik district, its severe occurrence has been noticed since 2000 in Songaon area of Niphad tehsil and adjoining area of Nashik city.

The snail, *A. fulica* is a highly polyphagous pest damaging more than 500 plant species including fruit crops, vegetables, ornamental plants and field crops. Its conspicuous occurrence is generally noticed during rainy season and the climatic conditions like high humidity (> 80%) and moderate temperature (9°C to 29°C) are more congenial for the population build-up of the pest (Thakur, 1998 and 2003). Considering the economic importance of the pest, the present experiment was conducted to find a suitable management strategy for this snail.

The study was conducted at K.K. Wagh College of Agriculture, Nashik (Maharashtra, India) when there was a sufficient occurrence of the pest in soybean crop during October, 2008. Experiment with twelve treatments comprising of

different food ingredients including one untreated food bait as check (Table 1) replicated thrice was laid out in a randomized block design. The plot size was 100 sqm/treatment. The required quantity of molluscides, insecticides and other components of bait were applied in respective treatment plots as spot applications, distributed one metre apart from each other at the centre of each plot. Small heaps of dried grasses were kept at the sides of poison baits as precautionary measure for the shelter of snails during day time and to prevent their migration to adjacent plots. The observations were recorded on 3rd and 7th day after application of treatments at early morning hours (before 6 am). Total number of snails attracted towards the poison bait and number of dead snails were recorded. These snails secrete mucus profusely and unable to withdraw their body completely inside the shell and later turn black were considered as dead snails. Their per cent mortality was worked out.

Preparation of poison baits

The required quantity as per stipulated dose of insecticide/molluscicide was mixed in wheat bran (@ 50 kg/ha.) and jaggery solution (5 kg) before application. For treatment No. 4, the methomyl was added after keeping the food bait (wheat bran + jaggery + yeast 30 g/kg) for 12 hrs for fermentation before application. Metaldehyde (2.5%) was applied alone @ 25 kg/ha as well as

Table 1. Relative performance of various poison baits against Giant African Snail (GAS).

Treatments	Per cent mortality of GAS on		
	3 rd day	7 th day	Mean
Metaldehyde 2.5% @ 25 kg/ha.	77.7 (66.3)	69.3 (56.5)	73.5
Metaldehyde 2.5% @ 5 kg + food bait 50 kg/ha.	68.7 (56.2)	40.7 (41.3)	54.7
Methomyl 40SP @ 10 g of food bait (50 kg/ha).	64.4 (53.4)	37.2 (37.6)	50.8
Methomyl 40SP @ 10 g/ kg of fermented food bait For 12 hrs.	83.0 (67.4)	68.1 (55.7)	75.6
Methomyl 40SP @ 10 g & bear 100 ml/kg of food bait.	67.8 (55.7)	34.6 (34.9)	51.2
Methomyl 40SP @ 10 g & wine @ 100 ml/kg of food bait.	63.4 (52.8)	26.9 (30.9)	45.2
Methomyl 40SP @ 10 g and crushed GAS @ 100 g/kg of food bait.	53.9 (50.6)	13.2 (21.0)	33.5
Chlorpyrifos 20 EC @ 10 ml/kg of food bait.	12.9 (20.7)	11.6 (19.8)	12.3
Copper sulphate @ 100 g/kg of food bait	64.6 (54.1)	34.0 (35.6)	49.3
Ferrous sulphate @ 100 g/kg of food bait.	57.3 (49.5)	19.5 (21.7)	38.4
Lime powder @ 100 kg/ha (30 cm band) around the treatment plot	15.3 (21.9)	6.0 (11.4)	10.7
Untreated food bait	0.00 (0.00)	0.00 (0.00)	0.00
S.Em.±	5.66	5.25	
C.D. (P=0.05)	13.69	12.69	

* Figures in parentheses are arc sin transformed values.

in combination with food bait @ 5 kg/ha. The lime powder was applied as 30 cm band around the respective treatment plots with heaps of grasses at the centre for shelter of the snails during day-time. All the treatments were applied at evening hours.

The data regarding per cent mortality of *A. fulica* on 3rd and 7th day after application of treatments along with arcsin transformed values are presented in Table 1. The treatment methomyl 40 SP @ 10 g/kg of fermented food bait (wheat bran + jaggery) effected the maximum snail mortality (83.0%) and was closely followed by metaldehyde @ 25 kg/ha (77.7%) at 3rd day after application of the treatments. However, the treatments viz., metaldehyde 2.5% @ 5kg/ha along with food bait (wheat bran + jaggery) (68.7% mortality), methomyl 40 SP @ 10 g/kg of food bait + beer @ 100 ml/kg of food bait (67.8%), copper sulphate @ 100 g/kg of food bait (64.6%) were at par with methomyl 40 SP @ 10 g/kg of food bait. All the chemical treatments were found to be significantly superior to untreated control.

As regards the performance of the treatments on 7th day after their application, metaldehyde 2.5% @ 25 kg/ha was found to be most effective (69.3% mortality) and was closely followed by poison bait consisting of methomyl 40 SP @ 10 g/kg of fermented food bait (wheat bran + jaggery) (68.1% mortality). Both the treatments were significantly superior to rest of the treatments. Metaldehyde 2.5% with its reduced dose of 5kg/ha along with food bait (wheat bran + jaggery) also showed good efficacy with 40.7 per cent snail mortality and ranked third in order of efficacy. Application of lime powder @ 100 kg/ha was not found effective in controlling the pest as it was found to be at par with untreated control.

Javaregowda (2006) and Ravikumar *et al.*, (2007) also reported the superior efficacy of metaldehyde and the least effectiveness of lime

powder against *A. fulica*, which is in conformity with the present findings.

It can be concluded from these results that the application of methomyl 40 SP @ 10 g/kg of fermented food bait (50 kg/ha wheat bran + 5 kg jaggery + yeast 30 g/kg) and metaldehyde 2.5% pellets (25 kg/ha) were the potential promising treatments which gave above 70 per cent control of giant African snail.

REFERENCES

- Javaregowda. 2006. Incidence of snail, *Achatina fulica* (Bowdich) in betel vine and its management. *Pest Management in Horticultural Ecosystems*, **12**(1) : 41-43.
- Mead, A.R. 1961. The giant African snail. *Animal and Plant Health Service*, DPJ, Queensland, pp.1-9
- Ravikumar, M., Naik, M. Manjunatha and Pradeep, S. 2007. Evaluation of attractant waste material and bait for management of giant African snail, *Achatina fulica* Bowdich. *Karnataka Journal of Agricultural Science*, **20** (2): 288-290.
- Thakur, S. 1998. Studies on food preference and biology of giant African snail, *Achatina fulica* in Bihar. *Journal of Ecobiology*, **10** : 103-109.
- Thakur, S. 2003. Population dynamics of giant African snail *Achatina fulica* Bowdich (Stylommaphora : Achatinidae) in North Bihar. *Journal of Applied Zoological Research*, **14** : 151-154.
- Venette, R.C. and Larson, M. 2004. Giant African snail *Achatina fulica* Bowdich (Gastropoda : Achatinidae) in : *Mini Risk Assessment*. Department of Entomology, University of Minnesota, USA.