

STUDIES ON THE UTILIZATION OF GIANT AFRICAN SNAIL *Achatina fulica* BOWDICH AS MANURE

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Giant African Snail, a serious pest of agri-horticultural crops in Andaman and Nicobar group of Islands contains fairly high quantity of major plant nutrients and can be utilized as manure in kitchen garden. Incorporating 40kg of crushed snail in 8 sq m. plots 15 days before transplanting brinjal or chillies resulted in the optimum increase in the yield over control. This treatment was equal to 60kg snail flesh and superior to 20kg snail flesh incorporation in soil. This practice if adopted will increase the yield of vegetables and also control the pest.

Giant African Snail *Achatina fulica* Bowdich was introduced by Japanese in Andaman and Nicobar Group of Islands (India) during their occupation in the second world war. Now it has established itself to almost all the inhabited islands of the archipelago (Srivastava and Abbas 1973) and is causing damage to a variety of agri-horticultural crops, particularly in their seedling stage. The pest causes severe damage to crops often necessitating resowing. Application of 5% metaldehyde pellets on cleaned pathways of snail has been reported to be very effective against this pest (Peterson, 1957 and Mead, 1961) and being advocated by different agencies engaged in plant protection work in these Islands. The chemical being fairly costly, people also use to pick the snails in the evening and kill either by sprinkling table salt or throw them on the road to be crushed under the wheels of passing vehicles. This practice is followed largely by the small farmers and people who grow vegetables in their kitchen garden. This snail has been reported to contain fairly high percentage of major plant nutrients

viz. Nitrogen 9.20%, phosphate (P_2O_5) 13.50%, phosphorous 5.36% and potassium 2.18% (Mead, 1961). Thus by throwing these collected snails a good amount of plant nutrients is being wasted which could have been utilised for increasing the fertility of the soil. After noting some casual observations on the efficacy of snail flesh as manure, detailed studies were planned and experiments conducted. A part of the work has already been reported by Gupta *et al.* (1980) where in the manurial effect of snail flesh on yield of chillies *vis-a-vis* the method of incorporation of snail manure were studied. They compared two methods of incorporation of snail flesh in soil viz. (a) Putrifying the snail flesh in container and later applying the putrified mass in instalments and (b) crushing the snails and immediately incorporating into soil and to wait for 15 days for decomposition. It was observed that the later method not only give higher yield but was also more convenient as it does not require containers for putrification and free from offensive smell and breeding ground for flies, as encountered in the

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former method. The experiments employing the second method of snail flesh incorporation were undertaken on two important vegetable crops and results were confirmed by a second trial.

MATERIAL AND METHODS

Experiments were undertaken during the summer months of 1976-77 and 1977-78 at Bloomsdale farm of Central Agricultural Research Institute about 20 Kms away from Port Blair. The soil of the experimental plot was sandy loam with pH 6.5. The soil analysis before incorporation of snail flesh indicated its fertility level below average (Organic manure- 1.43%; P_2O_5 - 116.5 kg/ha; K_2O — 14.0kg/ha; N- 0.0715%). The soil was low in salt content (conductivity at 0.05 m, mohs/cm²). Four treatments including a control were tested in randomized block design and were replicated thrice. Brinjal and chillies, the two most common vegetables grown in these islands and at the same time damaged by snails were selected to study the effect of crushed snail as manure. Snails were collected during the evening hours and next morning, desired quantity of snails were crushed in the plots and mixed thoroughly with the soil and left for about 15 days for decomposition. The control plots were left as such. After 15 days the soil was raked and seedlings transplanted. During the 1st year of experimentation (1976-77) the plot size was kept at 2 X 2 m (4 sq.m) and three doses of snail manure per plot were tried viz. 10kg (T_1), 20kg (T_2) and 30kg (T_3), the control (T_4) being provided with no snail manure.

When the experiment was repeated to confirm the results (i.e. during 1977-78) the plot size was doubled i.e. 8 sq.m (4 X 2 m) in order to have more number of plants facilitating better observation. Accordingly the quantity of snail manure applied was also doubled and thus the treatments were 20kg, 40kg, 60kg and no snail manure in a plot and designated as T_1 , T_2 , T_3 and T_4 , respectively. Normal agronomic practices were followed and adequate plant protection measures, including snail control, were adopted. Picking of fruits were done periodically and data were analysed statistically. In order to facilitate the comparison of the yield the data of first year (1976-77) had been doubled and brought *at par* with that of 8 sq.m plot size.

RESULTS AND DISCUSSION

The yield of chillies and brinjal recorded under various treatments are summarised in the Table.

It was noted that during the first year of experimentation (1976-77), in the case of chillies, treatment T_3 was *at par* with T_2 and these two treatments were superior to others. This finding is in agreement with that of Gupta *et al.* (1980). More or less similar results were obtained in the case of brinjal. There was no significant difference in the yield due to treatment T_2 & T_3 but at the same time it was not equal. This showed that 40 kg of crushed snail applied as manure was an optimum dose for brinjal and chillies.

The data of second year experiment (1977-78) conducted in bigger plot size (8 sq.m) confirmed the results of the previous year findings. The yield of both the crops were more or less equal when grown in plots supplied with either 40 kg snail manure (T_2) or 60kg snail manure (T_3) but had out yielded the other plots i. e. 20 kg (T_1) or control (T_0). These experiments showed that application of 40kg snail manure in 8 sq.m plots, or 20kgs in 4 sq.m plots will be optimum for increasing the yield of vegetables and can be recommended. The total expenditure involved in the operation is quite low and benefits are manifold. Housewife and children who use to collect the snails during evening/early morning hours from their kitchen garden and throw them on road to be crushed under the wheels of passing vehicle can very well be utilized as manure. Three to four persons will be able to collect 40-50 kgs of snail during a period of half hour and can be crushed with stone or brick within 15 minutes. The crushed snail will then be spread evenly in the plot and

incorporated while preparing the field as a routine operation.

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Table Yield of chillies and brinjal (kg/plot of 8 sq.m) under different levels of snail flesh as manure during 1976-77 and 1977-78.

Treatments	1976-77		1977-78	
	Chillies	Brinjal	Chillies	Brinjal
T_0 (Control)	5.63	1.03	4.82	5.23
T_1 (20 kg)	7.54	4.75	6.72	9.05
T_2 (40 kg)	9.60	7.96	9.85	12.75
T_3 (60 kg)	11.19	9.38	11.48	15.41
C. D. 5%	1.99	3.13	1.74	3.01