

INVESTIGATIONS ON UTILIZATION PROSPECTS OF SILKWORM (*BOMBYX MORI* L.) PUPAL RESIDUE BIO SOFT DESCENT (SPRBD) AS NUTRIENT SOURCE FOR TOMATO CROP

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ABSTRACT : The investigations on the effect of silkworm pupal residue biosoft descent (SPRBD) as nutrient source on growth and yield parameters of tomato crop witnessed the higher growth and yield parameters in T₄ (SPRBD @ 4% + T₈ - Recommended dose of fertilizer + FYM/ha/year) at all the stages of plant growth compared to control. The highest growth parameters like plant height (58.60, 86.13 and 96.20 cm), number of branches per plant (15.33, 26.00 and 28.67), number of flowers per plant (32.67, 69 and 87.67), stem girth (1.67, 1.83 and 2.17cm) recorded on 30, 60 and 90 days after planting, respectively in T₄ (SPRBD @ 4% + T₈ - Recommended dose of fertilizer + FYM/ha/year). Whereas, highest shoot length (78 cm) and root length (46.17 cm) was noticed at 45 days after planting. Significantly highest Shoot weight (173.10 g), root weight (10.17 g) and total biomass per plant (37.23 g) was yielded at harvest stage. The yield parameters like total number of fruits (50.17), fruit weight (50.50 g) and fruit yield per plant (4.27 kg) exhibited highest in T₄ (SPRBD @ 4% + T₈) as well compared to control.

Key words : Silkworm, pupa, SPRBD, nutrient, tomato.

INTRODUCTION

The silkworm, *Bombyx mori* L., is an economically important insect, which produces huge quantity of silk. Pupa is the third developmental stage of the life cycle of Silkworm. In silk reeling process, large quantity of waste accumulates in the form of pupae. Silkworm pupae contain numerous biological constituents which are of great value as feed for animals, human beings, medicine and manure for crops (Manohar Reddy, 2008). These constituents of pupae are being used in diverse sectors for various purposes. The by-products presently felt as wastes, can put to better use in generating the value based products and thereby catapult the industry to a more "Profitable and Economically viable spot" (Dandin and Kumar, 2007).

Annually India produces about 40,000 MT of silkworm pupae on dry weight. Lots of desilked pupae have not been fully utilized. Recently, chemical compositions of desilked pupae have attracted considerable attentions in the world and desilked silkworm pupae are considered to be a good source of a large number of bioactive substances (Dandin and Rajan, 2005).

The silkworm spins a silk cocoon as protection for pupa. Duration of pupal stage is 12-15 days. In 2014, world production of reelable silkworm cocoons was about 4,85,000 MT. By subtracting the amount of raw silk

(1,61,000 MT), it can be assumed that 3,24,000 MT of fresh pupae (65,000 MT dry) were produced (FAO, 2014).

The pupal of silkworm has vast applications in a variety of field (Velayadhan *et al*, 2008). Effective use of by-products not only increases the rearer's income but also helps in fuller utilization of natural resources. This vital aspect so far seems to have not been taken proper care in sericulture industry. Pupae can be utilized in a better way by producing value added products with the adoption of improved technology (Majumder, 1997). The optimal by-product utility concept can be highly useful to sericulture industry, which can help in elevating the socio economic status of the rural poor rearer's. Profitable conversion of wastes/ by-products to high value utilities through phyto and post-harvest technologies (Majumdar, 1997), the collaboration of seri scientists with related industries, to locate functional activities for potential applications can reduce the production cost, pollution, recycles resources to cater the ever growing population and their demanding wants.

At present the multi-purpose use of silkworm pupae on a grand scale is yet to become a reality. As silkworm pupae contain enormous nutrients and proteins which are of great need to plants as well as humans for their