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VERMICOMPOSTING OF *PRUNUS AMYGDALUS* BY USING *PERIONYX EXCAVATUS*

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Abstract:-Major nutrient status of vermicompost of *Prunus amygdalus* leaf litters processed by using indigenous earthworm species of *Perionyx excavatus*. Vermibeds were prepared in two different concentrations. The result of the present study 50:50 is the suitable proportion for worm growth, cocoons, young ones and value added vermicompost production. This research paper is concentrated on handling this problem in simplest, scientific, economical and environmental friendly way to transform waste materials into compost through vermicomposting by using an earthworm *Perionyx excavatus*.

Keywords:*Prunus amygdalus*, *Perionyx excavatus*, Vermicompost, Physico chemical parameters

INTRODUCTION

Earthworms play a major role in the recycling of dead and decayed plant materials by feeding on them. "vermicompost". Vermicompost agro industries Kurian *et al.*, (2010). *Prunus amygdalus* is a widely cultivated seed. *Prunus amygdalus* is a deciduous, semi ever green tree. The tree grows up to 4-10meters in a height, with a trunk of up to 30 centimeters 2.5cm in petiole. Highly nutritional and economic value presents this tree. The indigenous earthworm species of *Perionyx excavatus* was used for this experiment. In the present investigation, the study is carried out on the proper utilization of *Prunus amygdalus* dry leaves through vermicomposting and obtaining the nutrient rich organic manure.

MATERIALS AND METHODS

The garden waste of *Prunus amygdalus* leaf litters were collected in the college campus of Seethalakshmi Ramaswami College, Tiruchirappalli. The leaves were cut into small pieces. After the leaves were sundried for 10 days. Because to remove the odour. Next shade dried for 10 days because to reduce the heat. This is the predigestion process. This pre-digestion process also maintained the cowdung. This cowdung was called cured cowdung. *P.amygdalus* leaves mixed with cured cowdung. Vermibeds were prepared in 50:50 and 60:40 concentration and also maintained the control.

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Sprinkled water twice a day in order to maintain the moisture. After 10 days inoculation of 40 healthy adult earthworms *P. excavatus*. After 28 composting days the vermicompost were collected, sieved, air-dried and weighed separately. Physico chemical parameters were analyzed in the vermicompost by the following standard procedure Murugesha boopathi *et al.*,(2005).

TABLE-I Composition of predigested *Prunus amygdalus* leaf litter and its conversion into vermicompost by *P. excavatus*

PARTICULARS	50:50 [#]	60:40 [#]
Weight of <i>Pa</i> (g)	500	600
Weight of CD (g)	500	400
Weight of Predigested mixture (g)	1000	1000
No. of worms introduced	40	40
Mean no. of days taken for bioconversion	44	49
Harvesting vermicompost(g)	836	778
Cocoons	97	88
Youngworms	48	37

#Experiments were conducted in the ratio of triplicate in each concentration.

TABLE-II Quantity of Nutrient status of Control and Vermicompost produced by *P. excavatus* in 50:50 and 60:40 concentrations

PARTICULARS	50:50 VC	CONTROL	60:40 VC	CONTROL
pH	7.0	6.98	7.2	6.99
OC (%)	19.96	21.96	20.54	22.64
TN(g)	1.99	1.69	1.82	1.44
TP(g)	4.35	1.92	2.67	1.08
TK(g)	1.96	0.71	0.83	0.68
C:N Ratio	10:1	12:1	11:1	15:1

OC-Organic Carbon, TN-Total Nitrogen, TP-Total Phosphorous, TK-Total Potassium, VC-Vermicompost, C-Control

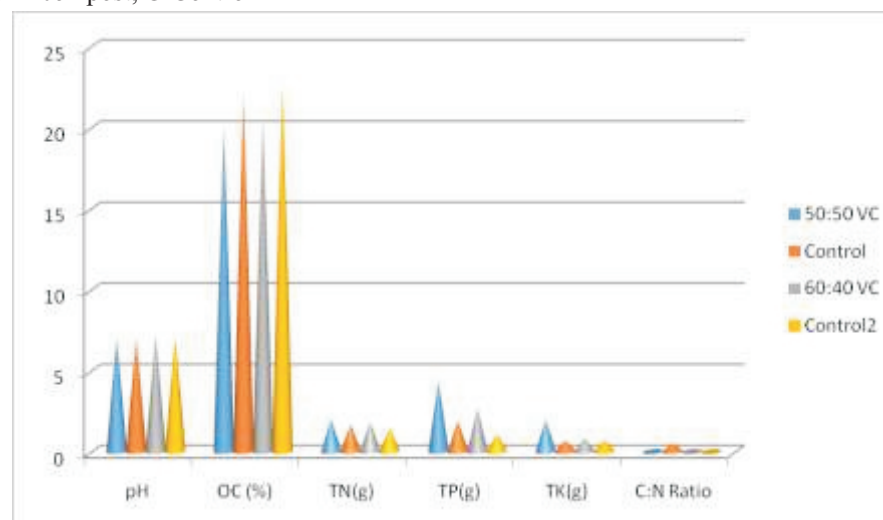


Figure 1. Graphical representation of Quantity of Nutrient status of Control and Vermicompost produced by *P. excavatus* in 50:50 and 60:40 concentrations

RESULTS AND DISCUSSION

Vermicompost produced using earthworms (*P.excavatus*) to breakdown and stabilize garden wastes. During feeding, earthworms fragment the waste, increase microbial activity and result in a composting or humification effect on waste material.

Table 1 shows the composition of predigested mixture in the vermicompost. The maximum vermicompost were collected in 50:50 proportions. The observation of the vermicompost level 836g in 50:50 and 778g in 60:40. The number of cocoons and youngworms were 97 & 48 in 50:50 concentration and 88 & 37 in 60:40 concentrations. The highest rate of cocoons and youngworms were counted in 50:50 proportion compared than another concentration.

Table II shows that the physic chemical characteristics of vermicompost. The specific physical and chemical characteristics of VC are dependent on the material consumed by the earthworms (Tomati et al., 1990). VC increase moisture holding capacity and provides nutrients (Atiyeh et al., 2001; Galli et al., 1990). The pH was 7.0 and 7.2 in 50:50 and 60:40. The observed pH range promotes the availability of plant nutrients like NPK, so vermicompost should be applied in soil. The total organic carbon level was 19.96% and 20.54% in 50:50 and 60:40 respectively. Comparatively the higher level of OC in non worm-worked compost may be due to the increase in their microbial load, which is expected to be less in worm worked compost Parveresh et al., (2004). Moreover significant reduction in the OC in higher treatment of worm worked *P.amygdalus* plant compost may be related to its assimilation in the process of composting leading to their growth related weight gain. Similar findings have been reported by Mba (1983). The total Nitrogen content was 1.99g (50:50) and 1.82g (60:40). The total phosphorous level is 4.35g (50:50) and 2.67g (60:40). The total potassium range was 1.96g (50:50) and 0.83g (60:40). The observed increase in the NPK in worm worked compost showed that the activity of earthworm *P.excavatus* along with microorganisms promoted mineralization process and brought the nutrients to ready to use for plant growth. The C:N ratio was 10:1 and 11:1 in 50:50 and 60:40 respectively. The C:N ratio was higher in control compared than vermicompost and this shows that *P.excavatus* is a very good decomposer of *Prunus amygdalus* leaves. *Perionyx excavates* is high frequency of reproduction and faster rate of growth to adulthood than most other species and have proved to be efficient converters of organic feed, especially manure into vermicompost. Equal proportion of cowdung may help its eradication for better utilization. As a result of this study, it may be concluded that vermicomposting using *Perionyx excavatus* is a beneficial way of treating garden waste of *Prunus amygdalus*.

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