Resource use efficiency of Vermicompost production under Gothan and Godhan Nyay scheme in Chhattisgarh

Comment [H1]: Very important but need to be reworked.

Abstract:

Comment [H2]: Does not make sense due to lack of proper information in the methodology

The present study undertaken in Chhattisgarh state, has estimated the resource use efficiency in vermicompost production under Gothan and Godhan Nyay Scheme. Samples of 12 vermicompost units were selected from the state. Efficiency in any system is an expression of obtainable output with the addition of unit amount of input. The result of the study define that between two variables cow dung and Vermi, two, cow dung was positive but non-significant it indicates that it have positive impact on output. Regression coefficient of Vermi was found to be positive and significant at percent and 1 percent increase in the use of this variable would increase the yield. The resource use efficiency for cow dung and vermicompost were negative, non-significant and less than unity indicates efficiently utilized of both inputs.

Key words: Resource use efficiency, vermicompost, economic function, regression.

Introduction

Vermicomposting is one of the generating additional sources of income, economic empowerment, and assuring sustainable livelihood approach along with the already known environmental benefits and has been newly found to be one of the most appropriate and successful models for the rural or not socio-economically resourceful communities. In Vermicomposting, cattle dung plays an important role in mineralization, nutrient recovery, earthworm, and microbial activity leading to vermi-fertilizer production. Among the aerobic methods, vermicomposting technology for organic solid waste management is having manifold advantages and has been well addressed in recent years (Bhat et al., 2018). Environmental pollution problems associated with biowastes and the central role of vermicomposting technology are depicted. Cattle dung or cow dung is an important sole or amendment material for vermicomposting several kinds of biowastes (Singh *et al.*, 2020). ~~Vermicomposting is one of the generating additional sources of income, economic empowerment, and assuring sustainable livelihood approach along with the already known environmental benefits, has been newly found to be one of the most appropriate and successful models for the rural or not socio-economically resourceful communities.~~ The Generation of a large amount of solid waste around the world is a major ecological problem. Vermicomposting may be the viable option to handle solid waste in an environmentally friendly way~~.~~ (Ali et al. 2015). Due to the increased cost of farming couples

Comment [H3]: It is in suspense and does not make anay sense

with environmental and health issues, farmers in India are gradually shifting back to organic farming. Consumers are now willing to pay higher premiums for healthy organic food.

Gothan' and **'Godhan Nyay Yojna'** Sscheme of Chhattisgarh was launched by the state Government **'~~Gothan' and 'Godhan Nyay Yojna'~~** under the ambitious Suraji village scheme Narwa, Garwa, Ghurwa, and Badi on 20th ~~of~~ July 2020., T~~t~~he Godhan scheme was ~~been~~ started on the occasion of the important festival of Chhattisgarh 'Hareli' bearing in mind that~~.~~ Gothan is home to cattle. T~~t~~he state government purchases cow dung in Godhan Nyay Yojna from the farmers and cattle rearers at 2 Rs. per kilogram leading to generation of income as well as employment ~~generation initially in the rural pocket later~~ across the state. ~~The purchasing of cow dung is done at the Gothan.~~ The purchased cow dung is turned into vermicompost and supercompost by the self-help groups ~~and later the organic manure like vermicompost~~ who later sale ~~to the farmers~~ at Rs. 10 and Rs. 6 per kilogram respectively. Besides prepared~~ing~~ as organic manure, the dung is also used to make various other useful products~~items~~ such as Diya, flower vase and many more.

Resource Use Efficiency (RUE)

Vermicompost production yield is often affected~~limited~~ by environment such as light, temperature, water and humidity. Excessive inputs of resources can increase production but the utilization efficiency of those resources could either increase or decrease outcome. This approach of applying excessive amount of inputs not only reduces the economic benefits received by farmers, but also causes environmental pollution. Therefore, it is necessary to consider RUE. The current study is considering resource use efficiency of vermicompost production with focus on vermin and cow dung meterials. This study therefore aimed~~s~~ to examine the resource use efficiency of vermicompost production under Gothan and Godhan Nyay scheme of Chhattisgarh.

Methodology

The present study was ~~been~~ carried out in Chhattisgarh in the year 20??. A multistage random sampling technique was ~~been~~ used for the selection of sample units. In the first stage sampling, Bilaspur, Raigarh and Janjgir-Champa districts were selected purposively due to high rate of production of vermicompost. In the second stage from each district 4 Gothans were selected

Comment [H4]: The research is easy to follow when the methodology is properly written. This methodology is incomplete.

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which has been categorized as Model Gothan, Non-model Gothan, City Gothan and Village Gothan making a total of 12 Gothan (Vermicompost production units) ~~were selected~~ for the study. Cobb-Douglas production function was used for estimate~~ing~~ resource use efficiency in vermicompost production on the basis of goodness or fit (R^2) which indicates the proportion of total variation of the dependent variable jointly explained by the independent variables. The analysis of resource use efficiency used Cobb-Douglas production function as expressed in the following formula:

Y=a.X1b1, X2b2, ɐμ

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Where Y= output from vermicompost production (Qt/ha)

X1= per/ha cow dung (kg)

X2= per/ha Vermi (kg)

b1 and b2= are parameter/elasticity of coefficient of respective input or regression coefficient of factor inputs

A= constant term

ɐμ=Error

The calculation of Marginal Value Product (MVP) as a factor cost used the underling formula

$$MP=b1\ Y\ X\ i$$

Where B1= production elasticity

Y and Xi are the geometric mean of the variable

I=1,2,3……..

$$MVP= Mp.Py$$

Where Py = price of y

MVPx1 = b1 Y/Xi*Py

B1= regression coefficient of Xi

Xi= geometric mean of Xi inputs

Y= geometric mean of output

Py= per unit price of output

~~t test~~

~~t= b/S.E. (b)~~

~~b= partial regression coefficient~~

~~S.E. (b)= standard error of 'b'~~

How did you analyze the data

Results and Discussion

Resource use efficiency in vermicompost production

The result for resource use efficiency for vermicompost is presented in table 1. The results found to be that two variables i.e. cow dung (X1) and vermicompost (X2). In Table 1 it was revealed that ~~the above out of two variables,~~ cow dung (X1) variable was positive but non-significant ~~it~~ indicating~~es~~ that it has positive impact on the output. Regression coefficient of Vermi (X2) was found to be positive and significant at percent and 1 percent increase in the use of this variable would increase the yield. The findings in the study are ~~work~~ supported by Zekeri and Tijjani (2013).

Comment [H5]: What percent?

Table 1: Result of Cobb-Douglas production function for vermicompost (Per/ha)

S.No.	Particular		Coefficient of variation	Standard Error
1	Intercept	A	-1.434***	1.850
2	Cow dung	X1	0.420	0.255
3	Vermi	X2	0.668***	0.201
4	R2		0.859	
5	Number of observation		12	

(Figures in parenthesis are standard errors of respective regression coefficient)

Note:***= 1% level of significance, *= 10% level of significance

Resource use efficiency in Vermicompost production

The resource use efficiency for cow dung and vermicompost were negative, non-significant and less than unity indicatinges efficientlyly utilizationed of both inputs (Table 2). The results are supported by the findings the work of S.C. Dhakal et al., (2015) and Srivastava et al., (2015).

Table 2: Resource use efficiency foe vermicompost production (Per/ha)

S. N.	Resources	Units	Bi	MVP	Pi	t-calculated value	Comparison	Significant /Non-significant	Remarks
1	Cow dung	Kg	0.420	0.141	1	-6.272	t cal< t tab	Non-significant	Efficiently utilized
2	Vermi	Kg	0.668	0.631	1	-6.029	t cal< t tab	Non-significant	Efficiently utilized

Comment [H6]: The table is confusing

Show the statistics please

Conclusion

In The researchers results can be conclusionded that in the production of vermicompost using, from variables, cow dung and vermi both showsing positive relationship with efficiency; cow dung indicate non-significant and positive impact on output. In the case of Vermin, uses of Vermin 1 percent increase the output by 1 percent indicates positive and significant variable.

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Cobb-Douglas (????) Indicate the year and must be properly cited and listed

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