AN EVALUATION OF MANAGEMENT OF RESOURCES IN GRAPE PRODUCTION.

M. D. JAGTAP
Assistant Professors, Dr. D. Y. Patil College of Agriculture Business Management, Akurdi, Pune, Maharashtra.

M. B. NICHIT
Assistant Professors, Dr. D. Y. Patil College of Agriculture Business Management, Akurdi, Pune, Maharashtra.

ABSTRACT
The focus of the present study was on resource use efficiency of grape production in Pune District of Maharashtra. A sample size of 90 farmers and 30 market intermediaries was selected using proportionate random sampling method. Field level data were elicited for the agriculture year 2016-17 through personal interview method. The percent gap observed in utilization of nitrogen and potassium between recommended and actual observed to be 55.42 per cent and 49.82 per cent at overall level, respectively. The seven resource variables included in the production analysis have explained jointly 61.86 per cent variation in the total output of grape. The total human labour (X_1), nitrogen (X_4) and plant protection expenditure (X_7) were turned out to be positive and highly significant at 1 per cent level indicating that these are the important variables for which the output is highly responsive as all the inputs are given in split doses and have short day effects. The regression coefficients of bullock labour (X_2) and Manure ($X_{.3}$), were positive and significant at 5 per cent level indicating that, there is a scope to increase the use of their input for maximizing the output. The regression coefficients of Phosphorus (X_5) and Potassium (X_6) were found to be non significant as once they applied have long lasting effect.

KEY WORDS –Management, Productivity, Production function, Resource use efficiency

INTRODUCTION
The grape cultivation is considered as highly remunerative as compared to other fruit crops. However, it requires special skills and managerial abilities besides its high capital requirement. Grape as it is highly sensitive to macro and micro environment, the success of grape farming depends on selection of site, variety and resource management practices.

The grape growers in Western Maharashtra are harvesting good yield, however the net return is affected due to fluctuating prices. The literature cited revealed that producers are not able to maintain the productivity, cost and return structure. The cultivation of grape can be become profitable provided that, the production of grape is done effectively and efficiently for which adequate management of resources as well as to increase per unit resource use efficiency are necessary. This will help to reduce the cost of production. Keeping this view and its importance, the study was carried out to know the resource use efficiency in grape production.

METHODOLOGY
Multistage purposive sampling procedure was adopted for selection of district,taluka and villages were selected randomly. Pune district was purposively selected for the study in the first stage. Junnartahasil is leading in grape area and production which occupy 72.35 per cent area and 81.21 production of the district and hence it was selected purposively at second stage. Ten villages having highest area under grapeswere selected purposively from the tahsil in the third stage.In final stage, A list of grape growers was prepared by grouping the grape growers on the basis of area under grape vine orchard into three size groups viz., small (below 2 ha) medium (2-4 ha) and large (above 4 ha).

From the list 9, grape growers, three from each size group will randomly selected from each village. Thus, the total 90 grape growers, i.e. 30 each from size groups.

RESOURCE USE MANAGEMENT
The Cob-Douglas type of production function will used for estimating the resources use productivities.

$$Y = a\ X_1^{b1}\ X_2^{b2}\ X_3^{b3}\ X_4^{b4}\ X_5^{b5}\ X_6^{b6}\ X_7^{b7}\ X_8^{b8}e^u$$

Where,
Y= Output in quintals per hectare
a = Intercept
X_1 = Per hectare use of human labour in man days
X_2 = Per hectare use of bullock labour in pair days
X_3 = Per hectare use of manures in quintals.
X_4 = Per hectare use of nitrogen in kg
X_5 = Per hectare use of phosphorus in kg
X_6 = Per hectare use of potassium in kg
X_7 = per hectare plant protection expenditure (Rs.)
X_8 = Per hectare plant growth regulator expenditure (Rs.)
$b_1$to b_8 = Elasticities of production.

RESOURCE USE STRUCTURE
It was revealed from the table that the per hectare use of human labour was 432.36 man days at the overall level. The per hectare use of human labour was maximum in large size group grape growers. i.e 455.87 man days. The per hectare use of bullock labour was relatively high in the case of large size group sample grape grower (19.10 pair days). The per hectare use of manure was 41.39 tones, 45.76 tones, 48.05 tones and 47.07 tones for small, medium, large size group and at overall level, respectively. The percent gap observed in utilization of manure between recommended and actual observed to be 17.22 per cent, 8.48 per cent, 3.90 per cent and 9.86 per cent for small, medium, large size groups and at overall level, respectively. The per hectare use of nitrogen was 358.43 kg, 400.00 kg, 445.00 kg and 401.14

kg thus exhibited a gap of 60.17, 55.55, 50.55 and 55.42 per cent in case of small, medium, large size groups and at overall level, respectively.

The per hectare use of phosphorus was observed to be maximum (490 kg.) in large size group. Howler, the per cent gap of phosphorus use was not at considerable extent. The per hectare use of potassium was observed to be maximum (355 kg) in large size group and per cent gap observed maximum (50.18%) in small size group grape growers. The per hectare expenditure on plant protection was relatively higher (Rs. 49500) in large size group. From the foregoing discussion it is noted that, the sample grape growers do not used the recommended doses of inputs viz,.manures fertilizers and thus it can be stated that the sample grape growers have not managed these important inputs to have maximum output.

PRODUCTION FUNCTION ANALYSIS:
The Cobb-Douglas type of production functions was used to establish relationship between the input use and output which are presented in to Table 2.Table 2 reveals that the 'F' ratios obtained from the analysis of variance in respect of the production function for grapes have turned out to be highly significant, indicating there by overall significance of the estimated production function.

Table 2 Results of Cobb-Douglas production function:

Sr. No.	Variables	Regression Coefficient
1	Constant (a)	2.18
2	Total human labour days (X_1)	0.0207* (0.0078)
3	Bullock labour days(X_2)	0.3693** (0.1431)
4	Manure (Qtls.) ($X_{.3}$)	0.1712** (0.0559)
5	Nitrogen (kg) (X_4)	0.0188* (0.0067)
6	Phosphorus (kg) (X_5)	0.0053ᴺˢ (0.0065)
7	Potassium (kg) (X_6)	0.0094ᴺˢ (0.0093)
8	Plant protection (Rs.) (X_7)	0.0002* (5.8300)
	R^2 Value	0.6186
	'F' value	19.00

(Figures in the parenthesis indicates the errors of respective regression coefficient)
* and ** indicates level of significance at 1 and 5 per cent level of significance.

The seven resource variables included in the production analysis have explained jointly 61.86 per cent variation in the total output of grape.

The total human labour (X_1), nitrogen (X_4) and plant protection expenditure (X_7) were turned out to be positive and highly significant at 1 per cent level indicating that these are the important variables for which the output is highly responsive as all the inputs are given in split doses and have short day effects.

The regression coefficients of bullock labour (X_2) and Manure ($X_{.3}$), were positive and significant at 5 per cent level indicating that, there is a scope to increase the use of their input for maximizing the output.

The regression coefficients of Phosphorus (X_5) and Potassium (X_6) were found to be non significant as once they applied have long lasting effect.

CONCLUSION
Above analytical study indicates that the resources are being utilized efficiently in grape production.

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Table. 1 Resource use structure of sample grape growers.

Sl. No.	Item of Cost	Small Farmers			Medium Farmers			Large Farmers			Overall		
		Actual	Reco.	% Gap	Actual	Reco.	% Gap	Actual	Reco.	% Gap	Actual	Reco.	% Gap
1	Total human labour (Man days)	400.83	---	---	440.39	---	---	455.87	---	---	432.36	---	---
2	Bullock labour (pair days)	13.81	---	---	15.66	---	---	19.10	---	---	16.19	---	---
3	Manure (Tons)	41.39	50.00	17.22	45.76	50.00	8.48	48.05	50.00	3.90	45.07	50.00	9.86
4	Nitrogen (N) Kg	358.43	900.00	60.17	400.00	900.00	55.55	445.00	900.00	50.55	401.14	900.00	55.42
5	Phospherous (P) kg	473.21	500.00	5.36	475.00	500.0	5.00	490.00	500.00	2.00	479.40	500.00	4.12
6	Pottasium (K) kg	348.73	700.00	50.18	350.00	700.00	50.00	355.00	700.00	49.29	351.24	700.00	49.82
7	Plant Prote. Chemicals.kg/lts	41353.4	---	---	45000.00	---	---	49500.00	---	---	45284.4	---	---

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DECLARATION

We solemnly declare that the article entitled, **"An Evaluation of Management of Resources in Grape Production"**has neither been published nor under consideration for publication elsewhere.

1. M. D. Jagtap   Assistant Professor,
Agriltural Economics Section,
                Dr. D. Y.Patil College of A. B. M.,
                Akurdi, Pune.**Mob**
No.9890839850
                    Email ID:
jmd1971@rediffmail.com
2. M. B. Nichit   Assistant Professor,
Agricultural Sciences Section,
                Dr. D. Y.PatilCollege of A. B. M.,
                Akurdi, Pune   **Mob. No.**
9890460340
Email ID: nichitmb@yahoo.co.in