Int.J.Curr.Microbiol.App.Sci (2018) *7*(7): 2283-2287

International Journal of Current Microbiology and Applied Sciences
***ISSN: 2319-7706* Volume 7 Number 07 (2018)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2018.707.266

Comparative Study of Resource use Productivity and Resource use Efficiency of Kharif Vis-a-Vis Rabi Onion in Ahmednagar District of Maharashtra, India

M.B. More*, R.D. Shelke and K.L. Pathade

Department of Agricultural Economics, College of Agriculture, Latur, India

**Corresponding author*

Keywords

MVP, MVP to price ratio

Article Info

Accepted:
17 June 2018
Available Online:
10 July 2018

A B S T R A C T

The study examined resource use efficiency of *kharif* vis-a-vis *rabi* onion in Ahmednagar district of Maharashtra state. It was observed that, the major resources viz., organic manure, potash, plant protection, machine labour and hired labour used in onion cultivation showed a positive relationship in case of *rabi* onion and in *kharif* season organic manure and potash showed a negative relationship, It was partly due to influence of climatic condition in *kharif* season.

Introduction

Onion is extremely important commercial vegetable crop not only for internal consumption, but also for highest foreign exchange. It is grown in different parts of the country mainly by small and marginal farmers. Onion is valued for its bulbs having characteristic odour, flavor and pungency. Value addition in onion is done by marketing dehydrated onions and onion flakes. Onion is grown in three seasons *kharif*/ rainy i.e. June to September, late *kharif* (*rangda*) from September to December and *rabi*/winter (*pol/unhali*) from December to March. India is world's second largest producer of onions, likely to have 13.06 lakh hectare under crop in 2016-17 producing 122.427 lakh million tonnes of onion with the productivity 17.32 tonnes per hectare, after China. Maharashtra contributes nearly 31.19 per cent of the total production and 39.56 per cent area of onion in India with area under onion cultivation around 481.05 thousand hectare giving the production of 6734.74 thousand MT, therefore the productivity is 14 tonnes per hectare. Total area under onion in Ahmednagar district was 69.98 thousand hectare in 2015-2016.

Objective

To study resource use productivity and resource use efficiency of *kharif* and *rabi* onion

Materials and Methods

Multistage sampling design was adopted in selection of district, tehsils and villages. In all, 60 onion growers both *kharif* and *rabi* season growing onion crop were selected for the study. Out of which 60 were *kharif* onion growers and 60 were *rabi* Onion Growers, total sample size of *kharif* and *rabi* onion grower was 120. The resource productivity and resource use efficiency for *kharif* and *rabi* onion production have been analysed with Cobb-Douglas type production function frame work. Cobb-Douglas type of production was fitted to the sample data separately for *kharif* and *rabi* onion cultivation.

Results and Discussion

Resource productivity and resource use efficiency

Partial regression coefficient with respect to various independent variables were calculated and are presented in Table 1&2. It was observed from the table that partial regression coefficient of area under *kharif* onion was -0.752 and *rabi* onion was 1.251 which was positive and highly significant at 1 per cent level. It inferred that when one per cent increase in use of area under onion over its geometric mean, it would lead to increase production of onion by 0.467 per cent. Similarly partial regression coefficient of *kharif* and *rabi* onion of seed and irrigation were -0.450, -0.004 and -0.065, -0.006 respectively which were negative and non-significant. Partial regression coefficient *kharif* and *rabi* onion of machine labour was 0.090 and 0.043 respectively which was positive and significant at 5 per cent level, and plant protection was 0.437 and 0.470 respectively which was positive and highly significant at 1 per cent level. Partial regression coefficient on *kharif* onion of phosphorus was 0.863 whereas, potash was 0.158 in *rabi* onion which were positive and highly significant at 1 per cent level. Partial regression coefficient on *kharif* and *rabi* onion of hired human labour was 2.216 and 0.139 respectively which was positive and significant at 5 per cent level in *kharif* and positive and highly significant at 1 per cent level in *rabi*. In *kharif* season bullock labour and nitrogen were 0.009 and 0.0583 respectively which was positive and non significant whereas, in *rabi* bullock labour and nitrogen were -0.001 and -0.062 respectively which was negative and non significant. Partial regression coefficient of manure in *kharif* season was -0.265 which was negative whereas, positive in *rabi* season 0.072 and both were statistically non-significant. Coefficient of multiple determination *kharif* and *rabi* onion (R^2) was 0.611 and 0.99 respectively, which indicates that 61.11 and 99.00 per cent effect of all independent variables together on onion production return to scale was found to be 1.77 and 1.99 respectively which indicated that production of onion found decrease in return to scale.

Resource productivity with respect to marginal produce of area under *kharif* onion was 168.92 quintals it means that when increase in onion area by one hectare over its geometric mean, that could be possibility to increase in onion production by 168.92 quintals followed by that of Hired human labour (5.199), Plant protection (4.371), Phosphorus (0.0863), Machine labour (0.084), Nitrogen (0.0583) and Bullock labour (0.009). In *rabi* season, resource productivity with respect to marginal produce of area under *kharif* onion was 532.88 quintals it means that when increase in onion area by one hectare over its geometric mean, that could be possibility to increase in onion production by 532.88 quintals followed by that of Plant protection (6.167), Manure (1.223), Machine labour (1.010), Potash (0.579) and Hired human labour (0.509).

Table.1 Estimates of Cobb-Douglas production function in *Kharif* onion production

Sr. No.	Independent variable	Regression Coefficient (bi)	Standard error bi (SE)	T Value	Geometric Mean of input (xi)	Marginal Product (q)	Marginal Value Product (Rs.)	Price of input (Rs.)	MVP to Price Ratio
1.	Area of onion	-0.752	1.276	-0.589	0.673	168.92	144643	32324.39	4.34
2.	Hired human labour	2.216	0.878	2.523*	64.429	5.199	4452.28	200	22.26
3.	Family human labour	-0.229	0.242	-0.946	58.483	-0.229	-506.874	200	-2.53
4.	Bullock labour	0.009	0.018	0.510	1.080	0.009	1078.73	1000	1.07
5.	Machine labour	0.090	0.42	2.142*	11.800	0.084	921.493	600	1.53
6.	Seed	-0.450	1.005	-0.447	6.062	-0.450	-9609.29	1500	-6.40
7.	Manure	-0.265	0.304	-0.779	17.111	-0.265	-2004.77	160	-12.52
8.	Nitrogen	0.0583	0.816	0.071	89.408	0.0583	84.408	13.04	6.47
9.	Phosphorus	0.863	0.144	5.993**	158.365	0.0863	705.417	38.43	18.35
10.	Potash	-0.140	0.233	-0.598	69.4155	-0.140	-261.077	28.0	-9.32
11.	Plant protection	0.437	0.148	2.952**	2.179	4.371	2596.08	1077	2.41
12.	Irrigation	-0.065	0.125	-0.523	3704.943	-0.065	-2.271	2.00	-1.135

Intercept (log a) ---------- 3.352

F value ---------- 6.16

R^2 ---------- 0.611

Return to scale (∑bi) ------- 1.77

* Significant at 5 per cent level

** Significant at 1 per cent level

Note: Geometric mean of (Y) onion production was 151.18 q per farm and price was Rs. 856.25/q

Table.2 Estimates of Cobb-Douglas production function in *Rabi* onion production

Sr. No.	Independent variable	Regression Coefficient (bi)	Standard error bi (SE)	T Value	Geometric Mean of input (xi)	Marginal Product (q)	Marginal Value Product (Rs.)	Price of input (Rs.)	MVP to price ratio
1.	Area of onion	1.251	0.280	4.467**	0.930	532.88	670317.10	88892	7.540
2.	Hired human labour	0.139	0.039	3.531**	108.024	0.509	641.210	200	3.20
3.	Family human labour	-0.008	0.026	-3.301	69.282	-0.045	-57.522	200	-0.28
4.	Bullock labour	-0.001	0.001	-8.905	1.0717	-0.369	-465.30	1000	-0.46
5.	Machine labour	0.043	0.021	2.047*	16.859	1.010	1270.991	600	2.11
6.	Seed	-0.004	0.076	-6.284	8.377	-0.189	-237.945	1500	-0.16
7.	Manure	0.072	0.555	0.130	23.311	1.223	1539.13	160	9.61
8.	Nitrogen	-0.062	0.247	-2.505	123.172	-0.076	-49.642	13.04	-3.80
9.	Phosphorus	-0.053	0.048	-1.093	217.751	-0.096	-121.575	38.43	-3.163
10.	Potash	0.158	0.076	2.078**	106.778	0.519	653.397	28.00	28.33
11.	Plant protection	0.470	0.152	3.092**	3.019	6.167	7757.91	1077	7.20
12.	Irrigation	-0.006	0.200	-0.032	5104.491	-0.0064	0.584	2.00	0.29

Intercept (log a) ----------2.724

F value ---------- 0.051

R^2 ---------- 0.99

Return to scale (∑bi) ------- 1.99

* Significant at 5 per cent level

** Significant at 1 per cent level

Note: Geometric mean of (Y) onion production was 396.14 q per farm and price was Rs. 1257.91/q

It inferred that if area under onion production was increased by one hectare at its geometric mean level, it would lead to increase production of onion with 168.92 and 532.88 quintals.

In regard to resource efficiency in *kharif* season, MVP to price ratio with respect to hired human labour was highest as 22.26 followed by area under onion potash (18.35), nitrogen (6.47), plant protection (2.39), machine labour (1.53) and bullock labour (1.07) which are positive also in regard to resource efficiency in *rabi* season, MVP to price ratio with respect to potash was highest as 28.33 followed by area under onion manure (9.61), plant protection (7.20), hired human labour (3.20), machine labour (2.11) and irrigation (0.29) which are positive in *rabi* season. It implied that there was scope to increase these resources in onion production. On the contrary, in kharif, in regard to seed, manure, family human labour, potash, irrigation and in rabi season family human labour, bullock labour, seed, nitrogen and phosphorous MVP to price ratio was negative.

It can be concluded that *kharif* onion farming has MVP to price ratio of seed, manure, family labour, potash and irrigation were negative. It was clear that higher the MVP to price ratio, there was greater chance to increase these resources. When MVP to price ratio tends to unity at that point, there would be efficient to utilization of resource. MVP to price ratio of area under *rabi* production family human labour, bullock labour , seed, nitrogen and phosphorus were negative. It was clear that higher the MVP to price ratio, there was greater chance to increase these resource. When MVP to price ratio tends to unity at that point, there will be efficient utilization of resource.

References

Grema I. J. and A. G. Gashua (2014) Economic analysis of onion production along river Komaduga area of Yobe State, Nigeria, *IOSR Journal of Agriculture and Veterinary Science(IOSR-JAVS)*. 7(10):05-11.

Ghulghule J.N., S.S. More and Thombre A.P (2003) Resource use efficiency of *kharif* and *rabi* onion in Ahmednagar district of Maharashtra state. *Agriculture Update*.3(3&4) : 362-365.

Shelke R.D., Aher V.K., Bhosale M.Y. and Gharge S.H. (2011) Resource productivity and resource use efficiency in *Rabi* onion production. *Internat. J. Com.& Bus. Manage*. 4(2): 342-344.

Verma, A.R., A.M. Rajput, and Patidar, R.S. (2004) Economic Analysis of production, resource use efficiency and constraints of onion in Indore District of Madhya Pradesh, *Agricultural Marketing*, 56 (4): 22-31

How to cite this article:

More, M.B., R.D. Shelke and Pathade, K.L. 2018. Comparative Study of Resource use Productivity and Resource use Efficiency of Kharif Vis-a-Vis Rabi Onion in Ahmednagar District of Maharashtra, India. *Int.J.Curr.Microbiol.App.Sci.* 7(07): 2283-2287.
doi: https://doi.org/10.20546/ijcmas.2018.707.266