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A PRODUCTIVITY OF AGRICULTURE IN VANGAON REGION OF PALGHAR DISTRICT IN COMPARISON WITH LATGHAR (DAPOLI) REGION OF RATNAGIRI DISTRICT WITH SPECIAL REFERENCE TO RICE CULTIVATION

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ABSTRACT
In this review paper we have mentioned about the situation of productivity of agriculture in Vangaon Region of Palghar District in comparison with Latghar (Dapoli) region of Ratnagiri District with special reference to productivity of rice cultivation of these region. Since last 15 years Vangaon was standing on one of the top position in Palghar District in case of rice cultivation. Although, Vangaon was standing on top position once upon a time in total area under rice, the productivity of rice is not so satisfying currently, comparing with other places of Palghar district as well as Konkan region such as Dapoli, Latghar, Harnai, Anjarle of Ratnagiri district etc. Here it has been tried to explain the concept of agricultural productivity and reasons for decreasing productivity of Vangaon region and need to improve the Productivity. Also, the strategies are mentioned to overcome the problem of low productivity.

Keywords: Agricultural Productivity, Rice, Agriculture, Vangaon, Farmers, Crops.

MATERIALS AND METHODS:

The present study is based on primary data to fulfil the objectives. Multistage sampling technique was used for selection of rice cultivators, tahsil as primary unit, village as secondary were taken for the study. Rice is cultivated as a food grain crop on large scale basically in Ratnagiri and Palghar District hence, Ratnagiri and Palghar districts were selected purposively and highest area was reported under Dapoli, Latghar, Anjarle and Harnai villeges of Dapoli tahsils of Ratnagiri district. Hence, these villages were selected purposively for the comparative study. From these villages, list of commercial rice cultivators was prepared with the help of talathi and Sarpanch of that particular village. From each selected village, 15 commercial rice cultivators were selected randomly. Thus, the final sample was consisted of 8 villages and about 20 rice cultivators from Vangaon, Shivale, Ambadi, Mokhade, Bandhan villeges of Palghar District as well as Dapoli, Harnai, Latghar and Anjarle of Dapoli Tahsils of Ratnagiri. The data were obtained from 20 rice cultivators by personal interview method for the year 2022-2023 in the month of January, 2024. The data were analyzed by adopting simple statistical tools such as arithmetic mean, percentage and ratios. To study the effect of farm size on productivity, the selected sample cultivators were classified according to their size of land under rice crop. The grouping was done by calculating mean and standard deviation of the area under rice production. The stratification was carried out as small, medium and large size farms and results were presented accordingly.

1. INTRODUCTION

Agriculture has been the backbone of the Indian economy and it will continue to remain so far, a long time. It has to support 17 per cent of world population from 2.3 % of world geographical area and 4.2 % of world's water resources. In India between 1965-66 and 2010-11, total food grain production was increased by over 230%. During this period, rice production increased from 30.59 MT to 95.32 MT – a straight line growth of over 211%. In Maharashtra, the rice is the main crop of Kharif season. This crop is cultivated particularly in high temperature and in the high rainfall zone. In Maharashtra, Thane, Palghar, Raigad, Ratnagiri and Sindhudurga districts of Konkan are the main producers of rice. In Palghar distrct of Maharashtra the rice is being cultivated predominantly in Wada, Jawhar, Mokhada, Dahanu, Vangaon, Vasai, Ambadi, Shivale etc. In Palghar, Vangaon was standing on top position in total area under rice. But the productivity of rice is not so satisfying currently, comparing with other places of Palghar district as well as Konkan region such as Ratnagiri. So many factors are responsible for this reason such as socio economic background of farmers, land holdings and fragmentation, farm operations and implements, land degradation, uncertain Monsoons and inadequate irrigation facilities, inability to use HYV Seeds etc. but by implementing certain measures the problem of low productivity of this region can be solved.

1.1 Understanding Agricultural Productivity

Agricultural Productivity is one of the components of regional development. It may be pointed out that, the agricultural development should be assessed by the agricultural production and productivity, and also by various physical inputs, extent of cultivated area, irrigation, fertilizers, improved seeds and labour availability. It is assessed in this manner, agricultural development may constitute as one of the significant components of

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regional development. It helps to increase food surplus to growing population, helps to expand the secondary and tertiary sectors, increases rural incomes and improves the welfare of the population of the region.

Formula:

Agricultural productivity = Total agriculture crop production/Total land area (hectares)

Agricultural productivity is measured as the ratio of agricultural outputs to agricultural inputs. While individual products are usually measured by weight; their varying densities make measuring overall agricultural output difficult.

2. PROFILE OF VANGAON VILLEGE: -

Vangaon is a small village (524.46 ha.) located in the north east part of Palghar district, about 81 km from Thane city. Low crop diversification well represented here. This village is connected to Palghar, Dahanu and Thane by road and railway. Other services available at Vangaon include a primary school, a secondary school, Junior college, a dispensary, a health center, electric power supply, well water for drinking, pucca road, railway station, bus stand, post office etc. Vangaon has experienced a steady growth of population during the last decade (total increase 32.66 per cent).

2.1 General Landuse of Vangaon Villege:

Vangaon situated on the western coastal plain of Palghar district, is surrounded by plain areas. Small stream rises from the eastern tip and flows westwards, finally to the seawards. The moderate slope in the western side and nature of soil cover have contributed to the present land utilization for cultivation. Forest occupies 85.21 ha. area in the year 2016, it shows decline since 1991. Net sown area in the village shows decline and increase in fallow in the year 2016. Forest covers a large area in the eastern half of the village. It is observed that areas not suitable for cultivation are given to grass. Rest of the area comes under the category of area occupied by houses, huts, road, railway and current fallow and other fallows.

Proportion of Total Area Under Different Categories of Land use in Vangaon (2023). (Area in hectare) :

Sr. No.	Landuse	1991	2001	2023
1.	Forest	113.62	104.55	85.21
2.	Net Sown Area	318.23	368.38	284.59
3.	Cultivable Waste	58.5	28.29	11.04
4.	Not Available for Cultivation	34.54	22.65	31.55
5.	Fallow	-	-	112.60

Source: Village Records, Panchayat Office, Vangaon

2.2 Agricultural Landuse of Vangaon

Nearly half of the area (285 ha.) of Vangaon village is available for cultivation. Most of it is located in the western part of the village. Some patches under cultivation are also observed along the eastern margins. In the coastal plain area, soil is thicker. Moderate black soil is common in the cultivable areas, while coarse shallow varieties occupy the eastern part. The table given below indicates the share of each crop in the total cropped area. It is obvious that in an area receiving rainfall about 2000 mm. rice should dominate the cropping pattern. Rice alone accounts for about 36.61 per cent of the cultivated area followed by grass, fruits and vegetables. Generally better agricultural lands are under rice, whereas inferior lands are given to grass. Fruits and vegetables cover a comparatively smaller area. Among the fruits, Chiku occupies 7.96 per cent of the gross cropped area. Vegetables are grown on 9.76 per cent of cropped area.

Proportion of G.C.A.(Gross Cropped Area) Under Different Crops in Vangaon (2023) :

Sr. No.	Crop	Gross Cropped Area	Percent of G.C.A.
1.	Rice	104.20	36.61
2.	Grass	121.39	42.65
3.	Vegetables	27.80	9.76
4.	Fruits	31.21	10.96

Source: Village Records, Panchayat Office, Vangaon

Proportion of G.C.A.(Gross Cropped Area) Under Rice Cultivation in Vangaon as Compare to other Places of Palghar District (2023) :

Sr. No.	Villages	Gross Cropped Area	Percent of G.C.A.
1.	Vangaon	104.20	36.61
2.	Shivale	151.00	36.61
3.	Mokhade	297.70	21.60
4.	Ambadi	92.49	52.25
5.	Bandhan	197.83	59.39

The above table shows that, the percentage of G.C.A. under rice cultivation in Vangaon as compare to other places in Palghar. The percent of GCA under rice cultivation of Shivale and Vangaon is 36.61% where as Bandhan has highest, i.e. 59.39% followed by Ambadi which is 52.25%. Mokhade has the lowest percentage of G.C.A. i.e. 21.60%.

Proportion of G.C.A.(Gross Cropped Area) Under Rice Cultivation in Latghar as Compare to other Places of Dapoli Tehsil of Ratnagiri District (2023) :

Sr. No.	Villages	Gross Cropped Area	Percent of G.C.A.
1.	Dapoli	154.20	42.36
2.	Anjarle	97.80	58.61
3.	Latghar	298.56	69.60
4.	Harnai	82.49	53.28

The above table shows that, the percentage of G.C.A. under rice cultivation in Lathgar as compare to other places in Ratnagiri. The above table clearly indicates that, the percentage of G.C.A. under rice cultivation is highest at Latghar followed by Anjarle, Harnai and Dapoli. Percentage of G.C.A. is always higher in Ratnagiri than that of Palghar District.

3. REASONS FOR INCREASE IN HIGH PRODUCTIVITY OF RICE IN LATGHAR (DAPOLI): -

Konkan is a coastal region of Maharashtra state. It contributes maximum to the rice production in the state of Maharashtra. Konkan being a high rainfall zone, most of the area is under rice crop during kharif season. However, rice being main crop of Konkan region mainly because of the modernization of rice crop cultivation technology and due to availability of improved high yielding varieties of rice increased per hectare yield of rice in Konkan during recent years. After the establishment of Konkan Krishi Vidyapeeth Dapoli on 18th May, 1972, breeding programs were guided by modern rice technologies and resulted in the development of several rice varieties with high yield potential and other desirable traits. University has developed approximately 25 high yielding varieties with improved architecture and 5 excellent rice hybrids of various durations. In addition to development of varieties, University has recommended several modern technologies for the benefit of farmers. Rice is the most staple food crop of North Konkan region. Considerable research efforts have gone into rice crop in the state. In all 53 varieties of rice are being cultivated in the North Konkan region of Maharashtra during last 12 years. Among the 53 varieties cultivated, 29 varieties have been developed by and released by Dr. Balasaheb Sawant Konkan Krushi Vidyapeeth, Dapoli. Out of these 29 varieties released, 22 varieties are still being cultivated. Other factors such as agricultural subsidies, adequate credit facilities, implementation of Land Reform Programs, improved seeds and fertilizers, proper irrigation facilities and expansion of technical knowledge etc. factors are also responsible for increase in high productivity of Rice in this region.

4. REASONS OF LOW PRODUCTIVITY OF RICE IN VANGAON:-

4.1 Socio-Economic Background of Farmers:

A major proportion of total farm workers in Vangaon comprises of small holders. Among the small holders many farmers own less than three acres of land which is divided into fragments. Through the information collected from personal interviews with farmers relates to the size of holding, attitudes towards application of new methods, techniques, the type of implements used, investment in the farm, nature of agricultural operation, credit facilities, marketing of that villages, we can say that, small farmers cannot afford to use improved seeds, fertilizers and pesticides. Those who own lands above 10 acres with irrigation facilities are more enthusiastic about new techniques. They own at least two bullocks, tractor and all implements essential for farming like plough, harrow, seed drills, oil engines or electric pumps. Some farmers have successfully implemented new techniques in the farm; this indicates the progressive attitude of the farmers. But they are very few in numbers and unfortunately, percentage of the small farmer is more in Vangaon than landlords who cannot afford to adopt modern techniques.

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4.2 Land Holdings and Fragmentation:
In order to understand the structure of land holdings resulting from interaction between physio - socio-economic elements and its impact on agricultural patterns, data for the total land holders, size of landholdings, location of the holdings, and number of fragments were collected from the village records available at the Village level Revenue and Panchayat Office. It is generally understood that, a small farmer is a farmer, holding less than five acres of land (Govt. of Maharashtra, 1976). A medium farmer holds between five and ten acres of land and a big farmer is one who owns more than ten acres of land. In Vangaon, 20 % of the total area is cultivated by 60 % of the holders. In contrast, only 21 % holders own 65 % cultivable area. In Vangaon, like the rest of the coastal villages, high proportions of area are under grass.

The problem of fragmentation has been recognised long back. As the farmer's total holdings are in many instances divided into several pieces far apart from one another, efficient cultivation of all these pieces is always a problem. Fragmentation has occurred in Vangaon where the size of fragments increases with the increase in the size of holding. The number of fragments, is also observed, increases with the larger sizes of holdings. The size of fragments and the number of fragments indifferent classes of holdings reflect the influence of the nature of the terrain, productivity of the land and the choice of crops to be grown. As rice is generally grown in small fields, the size of the individual fragment tends to be relatively small in Vangaon.

4.3 Farm Operation and Implements:
A plough, a blade, harrow, and planker are the common implements used by farmers. Small holders are economically too weak to own all these implements. It is a usual practice to share these implements among three to four farmers. Rice being the major crop grown, the farm size is very small i.e. the total cultivated area is divided and subdivided into numerous small paddy fields of the size of 00.00.10 ha. This small size alone explains the emphasis on human and animal labour. Not only 'Vangaon', but the farmers in the whole area along the eastern transition zone of coastal plain do not possess any mechanized tillers like tractor.

The farmers appeared to be conservative in their attitudes towards the adoption of new techniques, use of chemical fertilizers and improved seeds. Experiments in the recent past being unsuccessful, most of the farmers do not use improved varieties of rice. Urea and superphosphate are the chemical fertilizers generally used while farm manure accounts for a major proportion of the total fertilizer application. Pesticides are not used and oil engines or electric pumps are rare.

Farmers require capital for purchases of farm inputs like fertilizers, seeds and other implements. Two co-operative banks located at Dahanu, Central Co-operative Bank Ltd. and Land Development Bank Ltd., provide the farmers with credit facilities. Vangaon has banks and agricultural service centres and small provision store. Agricultural produce in this area is transported to Thane and Navi Mumbai market centre.

4.4 Land Degradation:
For an agricultural country like India, soil is a precious resource, and degradation- of soil is a serious problem, which leads to depletion of soil fertility. The Vangaon is also not an exception to this. Soil erosion is the main form of degradation which occurs because of deforestation and unscientific agricultural practices like shifting cultivation. Increasing salinity, alkalinity and aridity because of mismanagement and repeated use are other reasons for loss of soil fertility. Also the excess unscientific method of irrigation causes to further harm to the fertility levels of the soil.

4.5 Uncertain Monsoons and Inadequate Irrigation Facilities:
The major cause of low productivity of rice cultivation of this region is that, the Government has failed to provide irrigation support to its farmers. In 2000-01 about 43.4% of the cultivated land had irrigation facilities. Almost a whole decade later, in 2008-09, only 48.3% of the cultivated area came under irrigation. Not surprisingly, the farmers located here are still exposed to the vagaries of the monsoons. The agriculture is thus rightly remarked as a gamble against monsoon. With more than half of the gross cropped area being rainfed, failure or inadequacy of rains causes fluctuation in yields. Even if the maximum irrigation potential is realized, around 86.5 mha of gross cropped area will remain under rainfed conditions. This underlines the need to develop rainfed agriculture on scientific lines.

4.6 Inability to use HYV Seeds:
High yielding variety of seeds heralded the green revolution in India. Yet even in terms of wheat and rice only 86% and 74% of the total produce comes from HYV seeds. This is mainly because these HYV requires plenty of water in addition to pesticides and chemical fertilizer support. All these call for a fair investment, which becomes all the more risky due to the absence of assured irrigation facility and blind reliance on monsoons. The efficacy of other agricultural inputs such as fertilizers, pesticides and irrigation is largely determined by the

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quality of the seed used. It is estimated that i.e., most of the produce is directly consumed by the producers and surplus, if any, is generally low. This is because most of the farmers located here, being poor, use outdated implements and technology, and are not able to afford costly inputs. This results in low levels of returns and meager incomes, which in turn means low savings and low levels of reinvestments. Thus, coupled with disguised unemployment is a vicious circle operates and stagnation in agriculture prevails.

5. STRATEGIES TO OVERCOME THE LOW PRODUCTIVITY:-

Several measures have been adopted from the view of socioeconomic angles to raise the productivity of agricultural system especially in case of Rice cultivation of this region. They are as follows:

5.1 Consolidation of Holdings:

Consolidation of holding is a first step towards the modernization of agriculture practicing in this region and this should be done immediately by enacting proper legislation required in this regard. Uneconomic small farms should be properly consolidated and small fragmented holdings should also be consolidated by forming' co-operatives and co-operative farming societies.

5.2 Overcoming Natural Factors:

Proper steps should be undertaken to overcome various problems of agriculture resulted from natural factors. All these steps include extensive flood control measures, creation of adequate irrigation facilities and supplying adequate quantity of pesticides and insecticides.

5.3 Application of Modern Techniques:

The farmers located here must apply modern techniques of cultivation by utilizing modern implements, applying adequate quantity of fertilizers, using high yielding variety of seeds, by adopting scientific rotation of crops and careful crop planning. Agricultural research should be carefully intensified and fruits of research should be made available to the local farmers.

5.4 Economic Measures:

Economic measures must be adopted in order to make the agriculture more remunerative. Proper steps must be undertaken for the improvement of farm organization and land management. Besides this, steps must be taken for the establishment of different types of agro- based industries in rural areas like Vangaon, Dahanu, Boisar etc. Provision also be made for adequate credit and marketing facilities. Moreover, the Government must introduce minimum price support policy, guarantee minimum prices of the agricultural produce and implement crop-insurance scheme to cover the various risks in agriculture.

5.5 Human Development:

For the improvement of agricultural productivity of this region, the quality of farmers should be improved and they should be imparted with adequate general and technical education. In the rural areas like Vangaon, Farmers should shed off their fatalism and adopt themselves with changing ideas. Thus, the agricultural productivity of this region can be improved with the adoption of aforesaid measures in the agricultural sector of the Palghar District.

5.6 Proper Education:

Positive efforts have been taken by the government to educate the illiterate poor farmers about the new methods of technical farming. All the marginal farmers and tillers must know how to introduce latest scientific technology in the cultivable lands. This will definitely increase the productivity.

5.7 Implementation of the Package Programmes:

Proper implementation of 'Package Programme (i.e. irrigation, high yielding variety seeds chemical fertilizers, modern machineries etc.) is necessary to increase the productivity of the soil. All these will not only increase the fertility of land, but change the single time crop producing land into multi production. In Palghar district, there is no permanent water flowing system. Thus per hectare production is very poor. Therefore, the government has to take positive initiatives. The government should implement 'Package Programme' as stated above which will help to increase the fertility of the soil.

5.8 Crop Protection:

It is estimated that, nearly 5% of the total crop production is destroyed by different insects, pests and diseases. Maximum farmers are ignorant about the use of insecticides and pesticides. Hence to increase productivity, the government must take initiatives to start several programmes regarding the crop protection.

5.9 Adequate Credit and Marketing Facilities:

To apply 'Package Programme' the farmers need adequate amount of low rate of interest credit facilities. Farmers should get easy loans at the beginning of the cultivation so that they can use all the modern

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technologies in the land and improve both crop production and productivity. Not only that, the government must pay proper attention to expand the agricultural market from remote corner villages to urban areas so that sufficient amount of marketable surpluses can be generated.

5.10 Producers should be Encouraged: -
Government must encourage the producers by giving various incentives like:

(a) By giving agricultural subsidies;

(b) Provide adequate credit facility;

(c) Rendering price support;

(d) Providing crop-insurance to the poor farmers;

(e) By implementing land reform programmes;

(f) Use of improved seeds, fertilizers, etc.

(g) Implementing irrigation facilities; and

(h) Expansion of technical knowledge etc.

4.11 Research and Development:
Government of India made Indian Council of Agricultural Research and several Agricultural Universities to organize several research and development programme for the improvement of cultivation. Like Dapoli Krishi Vidyapith of Ratnagiri District, in West Bengal, Kalyani Krishi (Agriculture) Vishwavidyalaya (University) has been introduced to initiate agricultural research and development. The farmers located here also should be given a proper knowledge about the research and development taking place in the agricultural field.

6. CONCLUSION:

Thus from the above discussion, we can conclude that, from the last few years, the agricultural productivity of the Vangaon under rice cultivation is slightly decreased because the present approach of the farmers is inadequate for familiarizing the entire family with modern agricultural technology. Vangaon village lies in Palghar District and hence it is near to Mumbai and sub-urban. It is a big challenge to agrarian community of this village to produce and to fulfill the increasing demand of the city population. Multiple cropping, increasing production and productivity and demand driven production are the biggest challenges in this region. With increasing civilization, agriculture land is reducing day by day. Changing traditional mind set of farmers and general reluctance of new generation towards farming is also a challenge. However, by adopting the above mentioned measures, the agricultural productivity especially in case of rice cultivation can be increased but for this purpose, a co-ordinated approach with necessary support from Government and the local community is very essential.

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