

Role of Agro-Service Centers in Agricultural Development – A Geographical Study of Meerut District

Abstract

Service centers are the key of agricultural development and create a base for quantitative and qualitative development. Agricultural production and productivity depends on the agricultural facilities centers. Service centers are known as the indicators of development and play an important role in the development of rural area. Agricultural production and productivity create a platform to the development of agro-based industries in rural areas. Although agriculture is the main occupation of the villagers but agricultural service centers are situated in urban areas. It is the main problem of agricultural development in rural areas because the largest distance created a boundary between the farmers and service centers. Pattern of service centers is not helpful in the development of agriculture in rural areas.

Keywords: Agro Service Center, Development, Productivity, Facilities, Agriculture etc.

Introduction

Agriculture is the main occupation in the rural area because almost 75% population are engaged in this occupation. In rural economy agriculture occupies strategic position. It is main source of livelihood for 75% rural population. The prosperity of the rural areas is largely depends on agriculture and development of agricultural depending on the growth and development of agro-service centers. Agro service centers are an innovative idea and interesting experiment which holds the great promises to increase agricultural production through more use of fertilizer and wise use of other agricultural inputs.

Agriculture is directly linked to very many facets of sustainable development, including poverty eradication, sustainable consumption and production, management of natural resources, energy, health, education, fresh water, trade and market access as well as technology transfer and capacity building agriculture is an integral part of the general development system serving the system as a whole, and being served by it. If the effects of other sections of the development systems reduce sustainability of agriculture is also affected. Agriculture centers on integrated use of natural resources such as soil, water, climate and biological diversity. The integration of agriculture with other aspects of management and ecosystem conservation is essential in order to promote both environmental sustainability and agricultural production.

Objectives of the Study

Following objectives have been selected to complete the study–

1. To find out the level of agricultural development in the study area.
2. To find out the pattern of agro service centers in the study area.
3. To find out the level of agricultural production and productivity in the study area.

Hypothesis

Following hypothesis has been created to complete the study–

1. Agro service centers are situated in the rural area.
2. Agro service centers are responsible in the development of rural area.
3. Agricultural development depends to achieve the new technology in farming.

Data Base and Methodology

Both type of data has been used to complete the study. Primary data has been collected from the study area by the sample survey method and secondary data has been collected from the statistical magazine of Meerut district. Following methods has been used to find out the result of the study–



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Mean spacing model of E.C. Mather has been used to find out the spatial pattern of service centers and the organization of the service centers. The model is given below–

$$D = 1.0746 \sqrt{\frac{A}{N}}$$

Where,

D = Mean spacing in km

A = Area of the study region

N = No. of service centers in the study area

1.0746 = Spacing constant

To find out the agricultural productivity index the method of S.S. Bhatia (1967) has been used. The method is given below–

$$lyc = \frac{yc}{yr} \times 100$$

Where,

lyc = Crops yield index

yc = per hectare yield of crops

yr = total yield of the crops of the study region

Review of Literature

An attempt has been made to arrange the related literature of the study. Mathur (2000)¹ has been worked out on the theme of agriculture scenario of Rajasthan. Francis (2005)² explained the efficient marketing system to protect the interest of the producers, consumers and economy as a whole. Dutt and Sundram (2007)³ explained in their study that the purchase of the agriculturist's requirements and the sale of his produce are key activities in business farming. Dercon (2009)⁴ made an attempt to reduce the challenges in agricultural development. Ghose (2007)⁵ in his paper, Agricultural development, agrarian structure and rural poverty has investigated the effect of agricultural development, agrarian structure and some other variables on rural poverty by using the OLS method. Mathur (2006)⁶ in his paper "Agricultural Development, Agrarian Structure and Rural Poverty" has investigated the agrarian system in rural area. Thompson (1926)⁷ while measuring the relative productivity of British and Danish farming emphasized and expressed it in terms of gross output of crops and livestock. Ganguli (1938)⁸ presented a theoretical discussion for computing productivity in agriculture. Kendall (1939)⁹ treated it as a mathematical problem and initiated a system of four coefficient, (a) productivity coefficient, (b) ranking

coefficient, (c) money value coefficient and (d) starch equivalent or energy coefficient. Garg (1964)¹⁰ worked out the trends in agricultural development with respect to total cropped area, gross irrigated area and food grain production. Shafi (1965)¹¹ has assessed the productivity on the basis of labour population engaged in agriculture.

Study Area

Meerut district is one of the district of Uttar Pradesh and it is the district head quarters. It has 2522 km² geographical area. It lies between 28°57' to 29°02' north latitude and 77°40' to 77°45' east longitude in the Indo-Gangetic plains of India. It is bound on the north by Muzaffarnagar district, in the south by Bulandshahar district while Ghaziabad and Baghpat districts form the southern and western limits. The River Ganga forms the eastern boundary and separates the district from Amroha district and Bijnor district. The Hindon forms the western boundary and separates the district from Baghpat. The soil is composed of Pleistocene and sub-recent alluvial sediments transported and deposited by river action from the Himalaya region. It has 3 tehsils and 12 blocks.

According to the 2011 census it has a population of 34.43 lakh. It has a population density of 1346 inhabitants per square km. The population growth was 14.89% in the decade of 2001–2011. It has a sex ratio of 886 females for every 1000 males, lower than the state average of 908. It has the literacy 72.84% total, 63.48% female and 80.74% male. It has 53.06% urban and 46.94% rural population. It has 63.40% Hindus, 34.43% Muslims, 0.31% Christians, 0.54% Jain and 0.73% others religions population.

Distribution of Agro-Service Centers

Agro-service centers play an important role in the development of agriculture. Agro-service centers are an innovative idea and interesting experiment which holds the great promises to increase agricultural production through more use of fertilizers and wise use of other agricultural inputs. These service centers are as following–

1. Fertilizers, seeds and insecticides facilities.
2. Societies, SDCC Bank, L.D. Bank.
3. Veterinary institutions.
4. Markets.
5. Agricultural implements.

Table-1

Distribution of Fertilizers, Seeds and Insecticides Facilities in Meerut District, 2017

S. No.	Blocks	No. of Service Centers			Total	%
		Seeds	Fertilizers	Insecticides		
1.	Sarurpur Khurd	10	21	7	38	7.50
2.	Sardhana	17	15	6	38	7.50
3.	Daurala	6	10	7	23	4.54
4.	Mawana	15	21	0	36	7.10
5.	Hastinapur	24	24	18	66	13.02
6.	Parikshitgarh	17	25	3	45	8.88
7.	Machhra	23	31	11	65	12.82
8.	Rohta	6	22	11	39	7.69
9.	Janikhurd	9	21	5	35	6.90
10.	Meerut	5	15	10	30	5.92

11.	Rajpura	19	49	10	78	15.38
12.	Kharkhauda	4	9	1	14	2.76
Total District		155	263	89	507	100

Source: Statistical Magazine of District Meerut, 2017

According to the above table the seeds facilities centers are 155, fertilizers facilities centers are 263 and insecticides facilities are 89 in the study

area. The maximum facilities (15.38%) are present in the block Rajpura and minimum facilities (2.76%) are present in Kharkhauda block.

Table-2
Finance Facilities in Meerut District, 2017

S. No.	Blocks	ACS	National Bank	Rural Bank	Total	%
1.	Sarurpur Khurd	8	11	1	20	10.81
2.	Sardhana	7	8	0	15	8.11
3.	Daurala	6	7	0	13	7.03
4.	Mawana	11	5	1	17	9.20
5.	Hastinapur	10	7	0	17	9.20
6.	Parikshitgarh	11	6	0	17	9.20
7.	Machhra	9	7	1	17	9.20
8.	Rohta	4	16	0	20	10.81
9.	Janikhurd	7	9	0	16	8.65
10.	Meerut	3	3	0	6	3.24
11.	Rajpura	6	12	0	18	9.73
12.	Kharkhauda	4	7	0	11	5.94
Total District		84	98	3	185	100

Source: Statistical Magazine of District Meerut, 2017

According to the above table we found that the credits/finance facilities are 185 in the study area. There are 84 Agricultural Cooperative, Societies, 98 National Banks and 3 Rural Banks in the study area.

The maximum finance facilities 10.81% are available in Sarurpur and Rohta Block in the study area and minimum finance facilities are available in Meerut block in the study area.

Table-3
Veterinary Facilities in Meerut District, 2017

S.No.	Blocks	Veterinary Hospitals	Animal Development Centers	Artificial Fertility Centers	Total	%
1.	Sarurpur Khurd	1	5	6	12	7.14
2.	Sardhana	1	5	6	12	7.14
3.	Daurala	0	4	4	8	4.76
4.	Mawana	2	5	7	14	8.33
5.	Hastinapur	1	9	10	20	11.90
6.	Parikshitgarh	1	7	8	16	9.52
7.	Machhra	3	8	11	22	13.10
8.	Rohta	2	4	7	13	7.74
9.	Janikhurd	3	3	7	13	7.74
10.	Meerut	2	9	11	22	13.10
11.	Rajpura	3	2	6	11	6.55
12.	Kharkhauda	1	1	3	5	2.98
Total District		20	62	86	168	100

Source: Statistical Magazine of District Meerut, 2017 According to the above table we found that the 20 veterinary hospitals, 62 animal development centers and 86 artificial fertility centers are available in the study area. Maximum veterinary facilities are present in block Meerut (13.10%) and Machhara minimum veterinary facilities (2.98%) are present in Block Kharkhauda.

Table-4
Markets Facilities in Meerut District, 2017

S.No.	Blocks	Daily	Weekly
1.	Sarurpur Khurd	2	4
2.	Sardhana	2	3
3.	Daurala	3	5
4.	Mawana	2	3
5.	Hastinapur	1	4
6.	Parikshitgarh	2	3
7.	Machhra	1	4
8.	Rohta	2	2
9.	Janikhurd	1	3
10.	Meerut	3	1
11.	Rajpura	2	2
12.	Kharkhauda	2	3
Total District		23	37

Source: Investigation by the author.

According to the above table we found that the 23 daily markets and 37 weekly markets are

present in the study area.

Table-5
Distribution of Agricultural Implements in Meerut District, 2017

S. No.	Blocks	Plough		Advance Harrow and Cultivators	Advance Thresher	Advance Sowing Instrument	Tractors
		Wooden	Iron				
1.	Sarurpur Khurd	2613	3635	2745	45	448	1380
2.	Sardhana	1011	3929	2734	65	712	1180
3.	Daurala	1842	3122	2709	95	616	1486
4.	Mawana	3003	4103	2737	65	147	1601
5.	Hastinapur	2513	3708	2735	50	488	1536
6.	Parikshitgarh	1598	3743	2745	56	262	1583
7.	Machhra	839	2574	2729	50	204	1244
8.	Rohta	1691	3609	2745	65	540	1434
9.	Janikhurd	1429	817	2747	75	291	1014
10.	Meerut	1103	554	2750	61	306	507
11.	Rajpura	1203	1362	2749	60	285	876
12.	Kharkhauda	2403	1165	2745	64	247	1092
Total District		21247	32321	32870	751	4546	14933

Source: Statistical Magazine of District Meerut, 2017

According to the above table we found that 21247 wooden plough, 32321 iron plough, 32870 advance harrow and cultivators, 751 advance threshers, 4546 advance sowing instruments and 14933 tractors are available in the study area.

Table-6
Spatial Pattern of Agro-Service Centers in Meerut District, 2017

S.No.	Service Centers	No. of Unit	Mean Spacing in km
1.	Seeds	155	4.05
2.	Fertilizers	263	3.11
3.	Insecticides	89	5.35
4.	Agricultural Cooperatives Society	84	5.51
5.	National Bank	98	5.10
6.	Rural Bank	3	29.17
7.	Veterinary	20	11.30
8.	Animal Development Centers	62	6.42
9.	Artificial Fertility Centers	86	5.45
10.	Markets	23	10.53

Source: Computed by the Author on the basis of 2017 data.

According to the above table the agro-service facilities are distributed by the mean spacing method. Seeds facilities are available 4.05 km in the study area, fertilizers 3.11 km, insecticides 5.35 km, agricultural cooperatives societies 5.51 km, national bank 5.10 km, rural bank 29.17 km, veterinary 11.30 km, animal development centers 6.42 km, artificial fertility centers 5.45 km and markets facilities are available 10.53 km in the study area.

Agricultural Productivity

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. The productivity of regions forms is important for many reasons. Aside from providing more food, increasing the productivity of forms affects the region's prospects for growth and competitiveness on agricultural market, income distribution and savings, and labour migration. Increase in agricultural productivity lead also to agricultural growth and can help to alleviate poverty in poor and developing countries, where agriculture often employs the greatest portion of the population.

Agricultural productivity of the study area is given below in the table.

Table-7
Agricultural Productivity in Meerut District, 2017

S.No.	Blocks	Productivity
1.	Sarurpur Khurd	145.83
2.	Sardhana	154.67
3.	Daurala	146.52
4.	Mawana	139.65
5.	Hastinapur	130.76
6.	Parikshitgarh	148.54
7.	Machhra	152.68
8.	Rohta	137.96
9.	Janikhurd	126.28
10.	Meerut	139.63
11.	Rajpura	132.18
12.	Kharkhauda	143.20
Total District		141.49

Source: Computed by the Author on the basis of 2017 data.

According to the above table we find that the productivity is 141.49 in the study area. The highest productivity 154.67 is in Sardhana block and the lowest productivity is 126.28 in Janikhurd block.

Conclusion

The development of the agriculture depends on the service centers. Agricultural service centers play an important role in the development of the agriculture and increase the agriculture productivity

technology and service centers are essential in the economic development of rural area and essential for the development of the industry. Without service centers the agricultural development can not take 1st place in the world.

In the present study we found that the fertilizers, seeds and insecticides, societies, banks, veterinary institutions, markets and agricultural implements are the basic facilities present in the study area. In the study area we found that 155 seeds facilities, 263 fertilizers facilities, 89 insecticides facilities, 98 national bank, 84 agriculture cooperative societies, 3 rural bank, 20 veterinary hospitals, 62 animals development centers, 86 artificial fertility centers, 23 daily markets and 37 weekly markets are present in the study area. In the examine of the facilities of the study area are found that seeds facility centers have situated 4.05 km distance in the study area and fertilizers facilities centers have 3.11 km distance. Credit facilities have no nearest distance between two service centers. These facilities are situated in the range of 5-25 km which is the more distance to the villagers. Transportation facilities are not better condition in the study region without transportation facilities we can not achieve the level of high development in the agriculture sectors. The standard of the agriculture implements is very poor, this statement is not capable for the high growth and development in the agriculture.

Suggestion

In the present study we found that agriculture service centers play an important role in the development of the agriculture but these facilities are not essential in the development of the agriculture sector. Some suggestion has been created to achieve the high development in the agriculture sectors. These are as follows–

1. Dry and short terms agriculture is required in the study area.
2. Required industries based crops in the study area.
3. Pulses and oil seeds crops agriculture is required to achieve the soil fertility for long period in the study area.
4. To achieve high level productivity in the agriculture in the study area required agro-facilities centers.

5. Micro finance facilities are required to establish the cottage industries in the study area.
6. Transportation and communication facilities are required for the development in rural area.
7. Farmers awareness programmes are required in the study area to achieve the sustainable development in agriculture.

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