

Changing Cropping Pattern in Different Villages under Sadar Block Balasore

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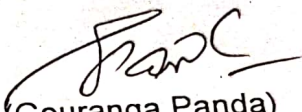
Declaration

We the following students of +3-3rd Year Arts of Nilamani Mahavidyalaya, Rupsa, Balasore do here by certify that the project report entitled "Changing Cropping Pattern in Different Villages : under Sadar Block Balasore" being submitted to Nilamani Mahavidyalaya, Rupsa, Balasore, Odisha for the award of Bachelor of Arts; is an original piece of work done by us and the same has not been submitted elsewhere for any other academic degree or diploma in this college.

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Certificate

This is to certify that the project report entitled "Changing Cropping Pattern in Different Villages : under Sadar Block Balasore" submitted by the student for the award of the Degree of Bachelor of Arts from Nilamani Mahavidyalaya, Rupsa, Balasore, Odisha, is a bonafide record of work carried out by under my guidance. Neither this project report nor any part of it has been submitted for any degree of academic award elsewhere.


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Abstract

The population explosion is a hurdle to our development. India deserves expansion of food production by adopting different cropping patterns. So the cropping pattern has undergone a change since independent and economic reform.

Cropping pattern depends on so many factors like, Size of land holding, Literacy of farmer, disease and pest, ecological sustainability, moisture availability, financial stability and marketing facility.

We use both primary and secondary data for our project work. We collect secondary data and using data from internet, different books and from official site.

For primary data we used three method.

- a. Direct interview method.
- b. Questionnaire method.
- c. Indirect oral method.

We took the hypothesis as follows:

H_0 (Null hypothesis):-The cropping in our village is not expanded.

H_A (Alternative hypothesis):- The cropping in our village is expanded.

Null hypothesis is rejected i.e. the cropping pattern under sadar block Balasore has expanded than before, but it is not up to expectation due to non fulfillment of above requirement.

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Introduction

Cropping pattern express the share of different crops in farmers total cultivated area in an agricultural year. It as an important indicator of farers decision making ability which witnesses dynamism over space and time in response to change in physical and Socio economic factors. Cropping pattern refers to the proportionate area under different crops during a agricultural yea. It means the series of crops at a point of time.

Cropping pattern must ensure the greatest efficiency of main, Fertilizers, Irrigation and other input. It is dynamic concept as no cropping patter can be sweet able for all times to come. A success cropping pattern implies the most efficient use of arable land, Consequent upon application of water resources, bio-comical inputs and the like. A cropping pattern is determined by the interaction of physical and social economic factor over a period of time. In addition, it must offer the cultivators the possibility to maximize agricultural productivity per unit area per unit of time. No cropping pattern can be good for all times to come. But there is upon a tendency for the cropping pattern to stabilize over a period a time in different agro climatically homogenous farming area.

Chapter-I

Literature Survey

Cropping patterns and cropping system In India.

The choice of crop cultivation of farmer is guided by the factors like physical, Social and economy. Some time they cultivate a number of crops at their farms and rotate a particular crop combination over a period. But it is not worthy that the best farming practices always followed by certain cropping patterns as well as cropping system for raising the productivity and also for maintain the fertility of soil.

Cropping Pattern in India.

Cropping pattern is a dynamic concept. because it is changes over space and time. It can be defend as the proportion of area and under various crops at a point of time. In other words, it is a yearly sequence and special arrangement of sowing and follow of a grain area. In India the cropping pattern determined by Rain fall, Climate, Temperature, Soil type and Technology.

The cropping patterns in India can be presented by taking the major crops in to consideration as the base crop and all other possible alternative crops. It is very important to identify crops and their sowing agro climatic condition so that they can be categories. For example, Wheat , Barley and Oats are taken as one category.

List of food grain in their required for agro climatic condition

Food Grains	Agro climatic condition
Rice	Temperature : 22-32 Rainfall : 150-300 cm Soil type : Deep clay
Wheat	Temperature : 10-15 (Sowing time) Temperature : 21-26 (Ripening and harvest) Rainfall : 75-100 cm Soil type : Well-drain and clayey loamy
Millets	Temperature : 27-32 Rainfall : 50-100 cm Soil type : They are in deficiencies. They are inferior alluvia.
Grams	Temperature : 20-25 (Mild cool and dry climate) Rainfall : 40-45 Soil type : Loamy soil
Sugar cane	Temperature : 21-27 Rainfall : 75-150 cm Soil type : deep rich
Cotton	Temperature : 21-30 Rainfall : 50-100 cm Soil type : Black soil in Malawi Plateau. However well in alluvial soils are plain and red and late peninsular region.
Oil seeds	Temperature : 20-30 Rainfall : 50-57 cm Soil type : Welldrain loams, red, yellow and well suited for its cultivation
Tea	Temperature : 20-30 Rainfall : 150-300 cm Soil type : Welldrain and Loamy soil.
coffee	Temperature : 15-28 Rainfall : 150-250 cm Soil type : Welldrain and Loamy soil.

Table-1

(8)

Regional Distribution of Crops In India

Cereals	Wheat	Uttarpradesh and Haryana
	Rice	West Bengal and Chhattisgarh
	Gram	Madhyapradesh and Tamilnadu
	Barley	Maharastra and Rajastan
	Bajra	Maharastra and Rajastan
Cash crops	Sugar cane	Uttarpradesh
	Poppy	Uttarpradesh and Madhyapradesh
Oil seeds	Coconut	Kerala and Tamilnadu
	Linseed	Madhyapradesh and Uttarpradesh
	Groundnut	Andrapradesh and Tamilnadu
	Rape and Mustard	Rajastan
	Sesame	Uttarpradesh
Fibre crops	Sunflower	Maharastra
	Cotton	Maharastra
	Jute	West Bengal
	Silk	Karnataka
	Hemp	Madhyapradesh
Plantation	Coffee	Karnataka
	Rubber	Kerala and Karnatak
	Tea	Assam and Kerala
	Tobacco	Gujurat, Maharastra and Madhyapradesh
Spices	Paper	Kerala, Karnatak and Tamilnadu
	Cashew nuts	Kerala, Tamilnadu and Andrapradesh
	Ginger	Kerala and Uttarpradesh
	Turmeric	Andrapradesh

Table-2

(9)

Cropping System in India:

The Indian agriculture is decided by the soil types and climatic parameters which determined over all agro ecological setting for nourishment and appropriateness of a crop or set a crops of cultivation. There are three dusting crop season in India, namely kharif, Rabi and Zaid. The Kharif season started with south with monsoon under which the cultivation of tropical crops such as rice, cotton, jute, jowar, bajra and tur are cultivated. The Rabi season starts with the unset of winter October to November and ends with M arch to April. Jaid is a short duration in a summer cropping season begging after harvesting of Rabi crops. There are four cropping system in India which is discuss below.

1. **Rainy Season Cropping System:** In the system of cropping rice, sorghum, pearl millet (bajra), maize, ground nut and cotton are grown.
2. **Winter Cropping System:** In the system wheat, barley and oats, sorghum and chickpea are grown.
3. **Plantation and Other Commercial Crops:** Sugar cane, tobacco, potato, jute, coffee, robber, spices and condiments are important crops are grown in this system.
4. **Mixed Cropping :** In the system, pulses and some oil seed are grown with maize, sorghum and pearl millet.

Types of Cropping System in India:

There are three types of cropping system followed in India which is given below.

1. **Mono cropping or mono culture:** In the system only one crop in grown on farm land year after year.
2. **Multiple cropping :** In the system, farmers grow two or more crops on farm land in one calendar year with intensive input management practices. It includes inter cropping mixed cropping and sequence cropping.
3. **Inter cropping:** In the systems farmers grow two or more crops simultaneously on the same field in one calendar year.

The Indian agricultural practices are still lacking by intensive planning because India has diversified agro climatic zone, which is unfortunately not giving sufficient production. If our farming system relied on modern cropping pattern and cropping system, then we have a predominance of food grain cops, our farming will also inclined towards commercial crops and most importantly it will noticeable increase the production of individual crops.

Factors affecting Cropping Pattern In India

Cropping pattern refers to the proportion of area under different crops at a particular period of time. A change in cropping pattern means a change in the proportion of area under different crops. It can be described in a number of ways but the most convenient number is classified agricultural production in to two groups. That is food grains and non food grains. They have been discussed as bellows.

Cropping pattern of food grain crops In India.

India rains second in world rice and wheat production to more than 21% and 11% of world rice and wheat output. Food grain constitutes 64% of the gross cropped area (GCA) although it accounts for less than 25% of the total value of output of agriculture and allied activities.

In India there is an existing imbalance in the cropping pattern of the food grains because a large proportion of the area under food grains is occupied by cereals.

The food grain occupied and area of 97.32 million hector in 1950-51 has increased to 126.74 million Hector in 2011-12. in these years, the area under cereals such as rice and wheat has grown. But the same under course cereals and millets has decreased. The following shows this.

Year	Rice	Wheat	Coarse Cereals
1950-51	30.81	9.75	37.67
2011-12	44.07	29.82	26.62

Table-3

The above table's shows rice is the major cereal crops among food grain and showed a gradual increase in the area and so also the wheat. But coarse grain like jowar, bajra and maize showed a decline in the percentage of the area if we study the area cultivation of food grains and non food rains, there was gradual shift from non food grains to food grains.

Reasons of Imbalance of Crop Pattern:

Prices; of food grains have been rising quit first and the farmers have started growing food crops in the similar way they grow commercial crops like, cotton, oil seeds, crop, sugar cane etc cultivation of food grains has become highly the remunerative and productive under the influence of new technology. Traditionally, the minimum supports price the wheat and rice has been maintained reasonable high (in comparison to millets such as Jowar and Bajra) this has helped the farmers to increase their production.

There has been a change in the consumption pattern and people have moved from coarse cereals to heat and rice for their main dietary grain. This is because of the increase in the income of the people and coarse cereals being their inferior goods.

The strategic objective of agricultural development in India has been changing over time. In 1960s, it was to maintain the prices of food grains at low level. The government significantly supported the growth of wheat and rice cultivation via its policy intervention, procurement and technology. In 1960s to 1980s, it was maximize food production. In 1980s to 1990s, it was to go for a demand driven production pattern. Since 1990s, it was to reduce inputs of agricultural commodities.

Cropping pattern of non-food grains

Among non-food grain crops, oilseeds form an important group which also include other crops like Cotton, Jute, Sugarcane, Tobacco, Tea, Coffee etc. The area has soon increasing and decreasing trends.

Sometimes there is an increase in area and sometimes there is a decrease in the area but over all there was not much change in the area of cultivation.

Common factors affecting cropping pattern in India:

- 1. Geographical features:** Cropping pattern of any region is influenced by geographical features such as soil, climate, rainfall etc. Apart from this, it depends on the nature and availability of irrigation facilities.
- 2. Economic motivations:** Economic motivations are also important in determining the cropping pattern. The prices influence the average under the crops in two ways. Firstly, variations in the inter-crop price disparities lead to shifts in the average between the crops. Secondly, maintenance of the level of prices for the crop provides a better incentive to the producer to increase the output than what a very high level of prices does, if there is no uncertainty of this level being maintained over a number of years.
- 3. Govt. policies:** Fixed procurement price of wheat and rice and other government controls have induced farmers to shift to cultivation of cash crops like sugarcane. Farmers also would choose the combination of crops which would give the maximum income. Relative profitability per acre is the main consideration which influences the cropping pattern. Small farmers are first interested in production of food grains for their requirements and cultivate only a small relative acreage to cash crops than large farmers. Food crops include wheat, rice, pulses, oilseeds etc. all these bring sharply in focus the possibility that while these individual measures may push the cropping pattern in the direction intended to but if the overall effect of all measures taken together on the entire cropping pattern is taken, it may not be in accordance with national requirements.

1. Changing Cropping Pattern in Odisha

Odisha is primarily an agrarian economy having nearly 30% contribution to the net state domestic product (NSDP) with 73% of the work force engaged in this sector. The cropped area is about 87.46 lac hectares out of which 18.79 lac hectares are irrigated. Climate and soil play a vital role in Odisha's agriculture economy. The total cultivable land exploited for cropping is about 40% of the total geographical area and the exploitation is comparatively more in the coastal districts of Odisha that is Balasore, Bhadrak, Cuttack, Ganjam, Jajpur, Jagatshingpur, Kendrapada, Khorda, Nayagarh, Puri etc.

Types of Crops:

The weather of Odisha favours a lot of crops for cultivation, among these crops rice, pulse, oilseeds, jute, Roselle, sugarcane, coconut turmeric are important crops. There are also cash crops; like tea, cotton and rubber. The state contributes one – tenth of the rice production in Odisha. A part from irrigation floods, droughts, low yield per hectare and division and fragmentation of land are the most important agricultural problems of the state. Jute, gram, sesame, mustard and maize are second ranking crops in different districts. District wise Cuttack and Balasore rank second in jute production, Puri and Fulbani rank high for gram and Mayurabhanj for maize product.

Food grains

Food grains include cereals, millets and pulses. Among cereals the most important crop is rice. It is followed by ragi, maize, wheat, small millets and bajra. All these, except wheat are coarse cereals and belong to hardier crops which are mostly cultivated in the middle, rolling of lands plateaus of Odisha.

Pulse

The most important pulses grown in Odisha are Gram, Tuar, Arhar. According to the classification the pulses of Odisha can be broadly divided into Kharif and Rabi crops.

Oilseeds

Sesame, ground nut, mustard, castor and linseed are the principal oil seeds in Odisha. Oilseeds are categorized into Kharif and Rabi crops.

Cotton

Cotton cultivation has been taken up extensively in Koraput, Balangir and Kalahandi district where sweet soil and climate conditions are found.

Tea

It is concentrated in the areas of eastern ghats, Keonjhar mountainous region of Fulbani and Koraput.

Coffee

It is concentrated in forest lands of eastern Ghats, Koraput, Kalahandi, Malkanagiri, Raigada, Udayagiri and Balliguda areas of Kalahandi district.

Changing in cropping pattern in odisha from 2014-17

Crop Groups	Crops	Share in total cropped area		
		2014-15	2015-16	2016-17
Cereals	Rice	47.31	53.97	55.58
	Wheat	0.27	0.21	0.21
	Ragi	2.51	2.41	2.39
	Maize	2.02	1.91	2.21
	Jowar	0.22	0.19	0.14
	Bajra	0.07	0.05	0.04
	Small Millets	0.72	0.58	0.41
	Total cereals	53.13	59.32	61
Pulses	Kharif	7.24	6.64	6.89
	Rabi	14.91	13.49	12.41
	Total	22.15	20.13	19.3
	Total foodgrains	75.27	79.45	80.3
Oil seeds	Ground nut	3.59	3.34	3.09
	Till	4.35	3.42	2.73
	Castor	0.29	0.29	0.21
	Mustard	1.72	1.49	1.32
	Linseed	0.34	0.35	0.25
	Niger	2.08	1.83	1.7
	Sunflower	0.05	0.07	0.07
	Safflower	0.03	0.03	0.02
	Total oil seeds	12.44	10.82	9.4
Vegetables	Potato	0.11	0.11	0.1
	Sweet potato	0.54	0.6	0.54
	Onion	0.48	0.59	0.29
	Total vegetable	9.01	6.16	7.08
Cash crops	Sugar cane	0.44	0.53	0.29
	Jute	0.35	0.22	0.15
	Mesta	0.34	0.36	0.32
	Sun hemp	0.14	0.14	0.13
	Cotton	0.06	0.3	0.53
	Total cashcrops	1.33	1.55	1.42
Condiments and Spices	Chilies	1.01	1.01	0.92
	Coriander	0.23	0.26	0.21
	Garlic	0.2	0.19	0.13
	Ginger	0.11	0.15	0.18
	Turmeric	0.26	0.3	0.31
	Total Condiments and Spices	1.81	1.91	1.74

**Table-4
(15)**

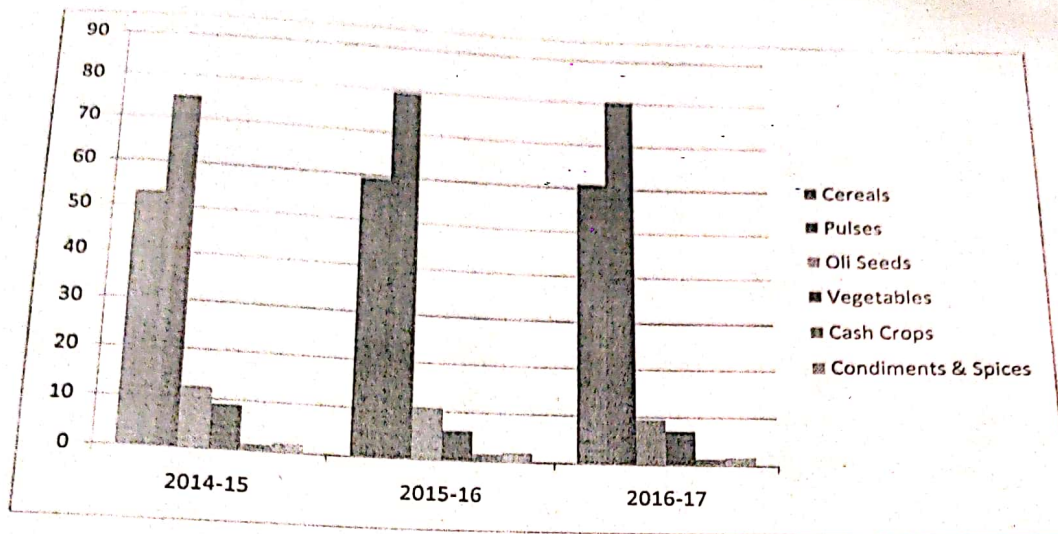


Figure-1

Cropping Pattern in Odisha

The cropping pattern has shown a change trend in Odisha in recent years. The area under rice increased from 47.3% of the gross cropped area of the state. During the period 1990-2005, the area under some cereals (Wheat, Ragi, Jowar, Bajra and small millets) Rabi Pulses, Oilseeds (Castor, Linseed and Sunflower) and Cash crop (Jute, Mesta, Tobacco) declined by varying degrees and increased under selected cereals (Rice and maize), Oil seed crop Sunflower, Cash crop cotton and condiments and spice crop jinger. The vegetable crops like Potato, Sweet potato and onion have not revealed any clear pattern of changes during the period studied.

Changing Cropping Pattern of Paddy in Different District in Odisha

<i>District</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Balasore	77.19	85.36	84.66
Balangir	75.85	80.1	82.54
Cuttack	74.04	78.78	80.86
Ganjam	81.06	83.02	80.8
Dhenkanal	66.81	71.89	71.85
Puri	84.26	75.59	87.28

Table-5
(16)

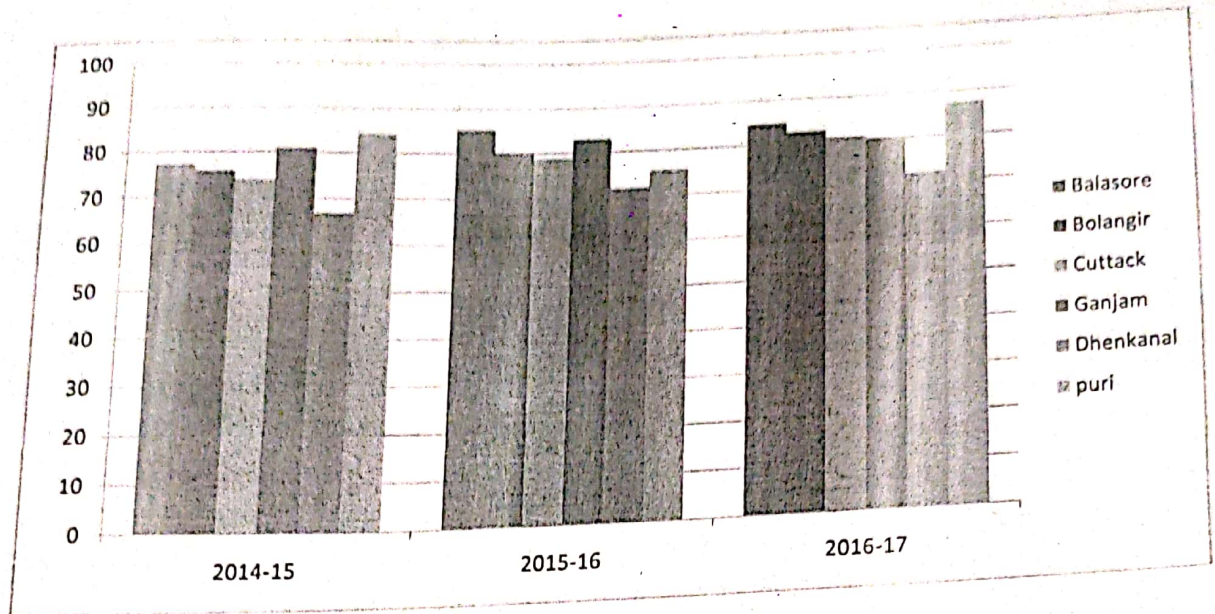


Figure-2

Soil

The soil is one of the important resources of our country, as the fertile soil helps us in producing many crops. This serves the food requirement not only within the country but also in other parts of the world.

Although it is not the same at every place on the earth. This type of soil of a place is determined by climate, landscape and vegetation of that place. Soil also depends on the time of its formation.

Different types of soil are characterised by their colour, texture and chemical properties. The soil has particles of different sizes. The relative amounts of the size of various particles in the soil determine the texture of soil.

Major Soil Types of Balasore District

Soil type	Blocks	Important characteristics
Saline soil	Bhograi, Portions of Ballapal, Balasore, Remuna, Bahanaga and Soro along coast line.	Soil are sandy loam or clayey, neutral to strongly Alkaline low in N and P ₂ O ₅ and high in K ₂ O
Alluvial soil	Simulia, Soro, Balasore, Remuna, basta, Bhograi, Ballapal and Jaleswar	Mostly acidic and natural. salt content is within 1 ds/m organic carbon status is medium, available Phosphorus is low to medium. Available potash is medium to high.
Laterite soils	Jaleswar, Basta, Nilagiri, Oupada, and Khaira	Mostly acidic and neutral, Organic carbons status is medium. Available phosphorus is low. Available potash is medium to high.
Sandy soil	Balasore, Remuna, Oupada, Bahanaga Soro, Simulia and Khaira	High porosity with low water holding capacity, Low in organic carbon and Soil fertility.

Table-6

Almost 44.00% soils of the district are acidic in the nature followed by 5% saline and only 51.00% normal in reaction (comprehensive district annual plan 2011-12 Balasore District).

Area under major field Crops and Horticulture In Balasore District: 2008-19

Major field crops cultivate	Area in (Hector)						Grand Total
	Kharif			Rabi			
	Irrigated	Rain fed	Total	Irrigated	Rain fed	Total	
Paddy	84.03	127.01	211.4	34.1		34.1	245.5
Ground nut		0.05	0.05	8.63	6.43	15.06	15.1
Mung	0.01	0.06	0.07	5.12	2.4	7.52	7.5
Biri	0.05	0.18	0.23	4.09	2.56	6.65	6.8
Maize	0.05	0.27	0.32	0.08		0.08	0.4

Table-7

Horticulture crop fruits	Total area (In Hector)
Mango	4.39
Citrus	0.8
Papaya	0.06
Pineapple	0.04
Guava	0.32
Saputo	0.07

Table-8

Horticulture crop Vegetables	Total area (In Hector)
Bingil	10.22
Tomato	8.91
Chili	3.97
Potato	0.11
Onion	1.01

Table-9

Plantation crops	Total
Banana	0.71
Coconut	1.13
Cashew nut	0.56

Table-10

Food crops and...

Quantity In (Acre) : 2015-16

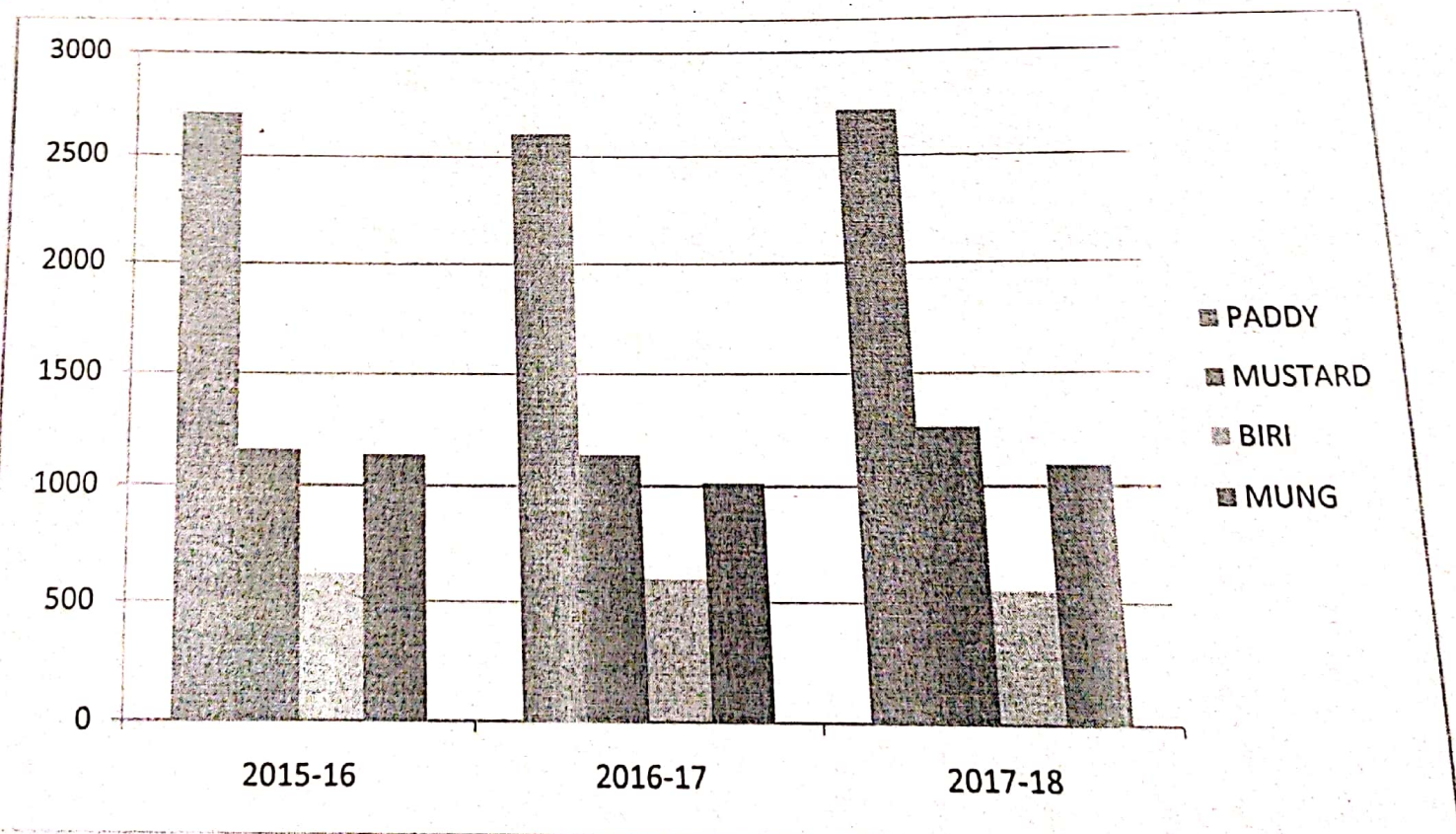
	Rabi				
	Kharif Paddy	Paddy	Mustard	Biri	Mung
Bidhara Sethi (Agamouda)	550	227	150	90	57
Jadunath Mahalik (Hatiadiha)	600	300	100	77	98
Chakradhara Behera (Taharpur)	775	280	125	85	0
Gopal Ch. Parida (Rupsa Samil Hasanpur)	800	302	145	200	179
Padmalochan Panda Pinchhabania	500	262	89	0	192
Debendra Panda Chakapodadiha	600	402	47	92	157
Maheswar Behera Anko	800	300	202	0	247
Santosh Ku. Jena Aghiria	700	333	201	0	112
Sudhakar Giri Podadiha	600	300	100	77	98
Total	5925	2706	1159	621	1140

Table-11

(20)

2016-17					2017-18				
Kharif	Rabi				Kharif	Rabi			
Paddy	Pady	Mustard	Biri	Mung	Paddy	Pady	Mustard	Biri	Mung
562	223	152	120	23	565	225	145	118	49
560	260	80	99	66	650	333	112	67	102
720	334	130	72	0	780	279	139	101	0
757	252	150	189	200	700	300	147	205	177
525	260	111	0	102	550	247	90	0	150
649	399	59	0	186	700	350	112	0	147
776	322	250	22	220	789	302	260	0	240
727	300	127	0	150	750	350	147	0	130
560	260	80	99	66	650	333	112	67	102
5836	2610	1139	601	1013	6134	2719	1264	558	1095

Table-12



Horticulture, Plantation and Live Stock

Year/ Villages	Quantity in (Acre)			
	2015-16			
	Vegetable	Fruits	Fishery	Poultry
Bidhara Sethi (Agamouda)	70	32	40	35
Jadunath Mahalik (Hatiadiha)	90	35	55	76
Chakradhara Behera (Taharpur)	75	46	53	36
Gopal Ch. Parida Rupsa Samil Hasanpur	100	65	35	45
Padmalochan Panda Pinchhabania	100	47	90	50
Debendra Panda Chakapodadiha	90	45	25	56
Maheswar Behera Anko	98	30	20	50
Santosh Ku. Jena Aghiria	80	32	36	35
Sudhakar Giri Podadiha	90	35	55	76
Total	793	367	409	459

Table-13

2016-17				2017-18			
Vegetables	Fruits	Fishery	Poultry	Vegetables	Fruits	Fishery	Poultry
71	30	37	33	75	37	39	40
82	27	57	65	95	40	60	75
76	42	55	38	74	48	54	45
102	56	30	43	120	57	32	44
87	50	92	56	92	32	98	49
76	57	30	60	80	60	28	62
97	35	27	48	99	37	32	46
78	31	38	39	82	30	45	42
82	27	57	65	95	40	60	75
751	355	423	447	812	381	448	478

**Table-14
(22)**

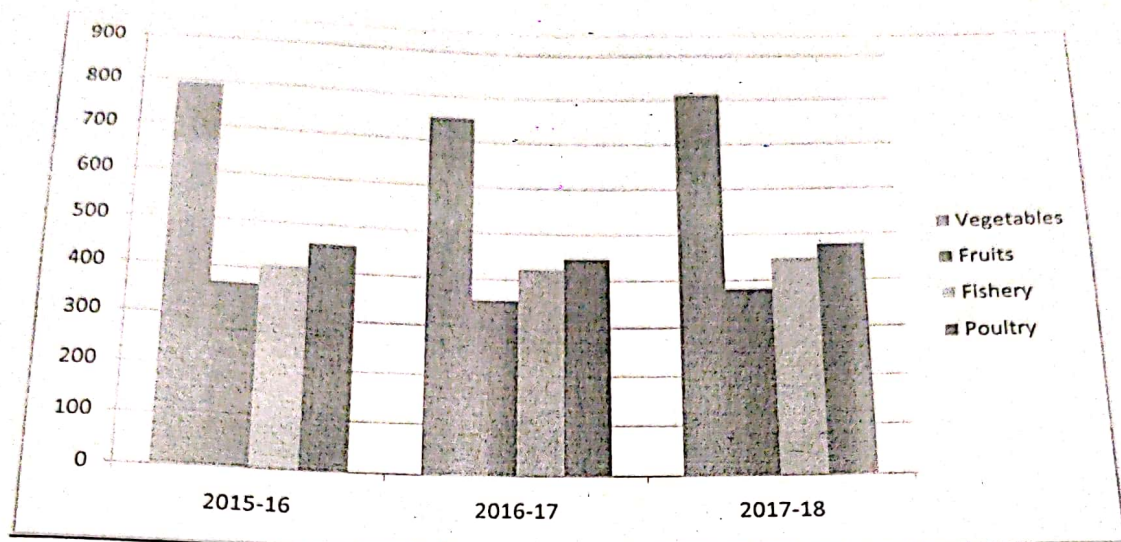


Figure-4

Technical Contribution-2

This data collected from different villages under Sadar Block Balasore shows the following facts in table-11.

- a. The Paddy production is the leading cultivation both in Kharif and Rabi season.
 - b. In Kharif season only paddy is produced.
 - c. In Zaid season (between Kharif and Rabi) there is no cultivation.
 - d. The production of variety of cereals is found only in Rabi season.
 - e. Mustard production found extensive followed by Mung and Rabi.
 - f. In all these years production of paddy is more as compared to other production.
- From table xii, it is clear that
- a. Vegetable is an essential farming generally, Brinjal, Tomato, Chili, Onion, Cauliflower, Cabbage etc. are cultivated expectative scale.
 - b. Fruits and fisheries are permanently cultivated. Fruits like Mangoes, Coconuts are long lasting fruits and are extensively cultivated due to saline soil.

- c. Poultry is considered to be another occupation by some people and they have a permanent house for poultry farming.
- d. The vegetables produced are sold in local market and given to sale. When there is plenty of production.
- e. Fruits are generally consumed by the farming household and distributed among neighbors and relatives.
- f. Fishers and poultry are cultivated on cash crop basis and the help farmers income to rise.
- g. Vegetable of the top of the list to have change in cropping pattern.
- h. Fisheries and poultry also help in this respect.
- i. Irrigation is expanded in this area by deep bore well.
- j. Fertilizer and pesticide is available in nearby market.
- k. Storage facility is not available but products are sold easily.

☞ Future Work:

Cropping pattern depends on so many factors like, size of land holding, literacy of farmer, disease and pest, ecological sustainability, moisture availability, financial stability and marketing facility.

It is necessary to improve all these determinants of cropping pattern for better result government should come forward to help farmers to adopt varieties of cultivation to later the need of society. This can reduce import of food grains and net country self sufficient. Finance through bank, crop insurance, security of tenants, training to farmers, land storage, irrigation are basic need to adopt and change cropping pattern over time.

☞ Conclusion:

Indians have one culture that is agriculture. Agriculture is the way of India, Indians and Indian economy. Agriculture can be attractive job and beneficial to farmer if they adopt cropping pattern to meet the need of people. The population is going day by day. To meet pace of population growth, cropping pattern is only way out.

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