

Role of agriculture to mitigate poverty of rural area: a case study of Sagar Island, West Bengal, India

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Abstract

This paper explores the linkages between increases in agricultural productivity and poverty reduction. The evidence suggests that there are multiple pathways through which increases in agricultural productivity can reduce poverty, including real income, employment generation, rural non-agricultural multiplier effects and food prices effects. This study area has been considered as Remote Island. Here intensive subsistent agriculture system is present still now. Traditional agriculture system does not help adequate production in this sector. So food crisis as well as poverty is attached with most of the rural people. More than 40 % peoples are living in below poverty line. They do not have fixed income. They are engaging as marginal farmers and small agricultural labors also. To discuss role of agriculture in reduced poverty, I have taken 50 years census population data (1971-2011), and 10 years agricultural data (2002-2011). Data reveals that total populations in this Island are increasing at certain ratio. But agricultural productions are not increasing in satisfactory. However total agricultural lands are not increased. For the growing of new settlements total agricultural lands are decreasing day by day. Only Modern agricultural system should be reduced poverty in this study area.

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I. Introduction:

Throughout history, increases in agricultural sector productivity have contributed greatly to economic growth and the reduction of poverty. The past 30 years have seen global successes in food production lead to an overall decline in world food prices, increase caloric intake, reductions in the percentage of undernourished people, and boosted rates of return to some key investments in agriculture.

Generally we know that economic growth is essential for reducing poverty and that agriculture has in many places connected broader economic growth and the rural poor, increasing their productivity and incomes. Those higher rural incomes increase the demand for consumer goods and services, in turn stimulating the rural economy, boosting growth and reducing poverty even further. Agricultural sector growth reduces poverty by harnessing the productive capacity of the poor's key assets of land and labour, by lowering and stabilizing food prices, by providing labour – intensive employment for the poor and by stimulating growth in the rural economy.

In recent decades, this virtuous set of relationships has been threatened. A new global trading condition has been disadvantageous to poorer producers. Developing countries continue to give high level of protection to their own markets. Recent policies for economic restructuring have not produced positive results. Gaps opened by the removal of public support to agriculture have not been filled by the private sector. As a result public investment in agriculture has been declined.

At the same time, the focus on reducing poverty has sharpened. International donors and national governments are targeting poverty more explicitly, through new and more effective approaches. But these efforts have not yet given enough attention to what economic growth can do to reduce poverty and or how agriculture can contribute to that growth.

While most empirical studies shows that agricultural growth is relatively more important than growth in other sectors there are exceptions, underscoring the existence of potentially important differences in the sectoral GDP elasticity's of poverty across countries, depending on the structure and institutional organization of their economies (Loayza, and Raddatz, 2006). A common finding is that the poverty reducing powers of agriculture declines as countries get richer (Christiaensen and Demery, 2007; Ligon and Sadoulet, 2008).

Previous research suggests that agricultural income growth is more effective in reducing poverty than growth in other sectors because (1) the incidence of tends to be higher in agricultural and rural population than elsewhere, (2) most of the poor live in rural areas and a large share of them depend on agriculture for a living (World Bank, 2008b, Christiaensen and Demery 2007). However even if the evidence of poverty is lower within the population of nonfarm source could be proportionally more effective in reducing poverty.

In this paper I have tried to discuss role of agriculture to mitigate poverty of rural area, a case study of Sagar Island, west Bengal, India.

Study area:

Sagar Island (also known as Ganga Sagar) lies on the continental shelf of Bay of Bengal about 150 km (80 nautical miles) south of Kolkata, in West Bengal. The area of the island is about 251.59 sq km with 43 villages and a population of over 180408 with population density of 717 / sq km. The latitude of the study area is 21° 37' N to 21°52' N and the longitude of the study area is 88°02' E to 88°11'E. The Island has scatter Mangrove swamp, waterways and small rivers.

The island is a famous Hindu pilgrimage. Every year on the day of Maker sankranti (middle of January thousand of Hindus gather to take a holy dip at the confluence of Ganga and offer puja in Kapil Muni Temple. The Sundarban along the Bay of Bengal has through quaternary (began about 2 million Years ago and extends to the present) sediments deposited mainly by the mighty river Ganges, Brahmaputra, Meghna and their numerous distributaries.

The building up of this estuarine area is not complete. The mangrove dominated delta is a complex ecosystem comprising one of the three largest single tract of mangrove forests of the world. The Sundarban floor varies from 0.9m to 2.11 m above sea level. Sagar Island such an area, which despite its tremendous economic potentiality is lagging behind in comparison with many other areas which are in geo-economic, geo-environmental and geo-hydrological in same region.

Data Base & Research Methodology:

Methodology for data collection is divided into two segments. Secondary and primary sources. Secondary sources mainly consist of literature survey, peer reviewed articles and research papers and government published documents. Primary data sources consist of 10 % household survey of total households following random sampling method. The inputs from the conducted interviews and feedback received from Questionnaire survey were analyzed against the actual data collected and the literature review. To analysis this topic I have collected 50 years census population data (1971-2011) and 10 years agricultural data and irrigation data (2002-2011).

Agriculture's central role in stimulating pro-poor growth:

In most poor countries, agriculture is a major employer and source of national income and export earnings. Growth in agriculture tends to be pro-poor –it harnesses poor people's key assets of land and labour, and creates a vibrant economy in rural areas where the majority of poor people live. Agriculture connects economic growth and the rural poor, increasing their productivity and incomes. The importance of agriculture for poverty reduction however goes well beyond its direct impact on rural incomes. Agricultural growth particularly through increased agricultural sector productivity, also reduces poverty by lowering and stabilizing food prices, improving employment for poor rural people, increasing demand for consumer goods and services and stimulating growth in the non farm economy.

A positive process of economic transformation and diversification of both livelihoods and national economies is the key to sustained poverty reduction. But it is agricultural growth that enables poor countries, poor regions and ultimately poor households to take the first steps in the process.

A more challenging context for agriculture growth: Today, rural households are face challenges much different than those faced by the " green revolution" producers who achieved sustained gains in agriculture productivity only a few decades ago. Over the past 20 years there has been a substantial decline in public sector support for agriculture and many producers have lost access to key inputs and services. While public sector provision of these services was not very efficient, it often provided the sole linkage to markets for poor rural producers. Today, such links are tenuous and complicated by much greater integration of the global economy.

Economically integration is accompanied by other challenges that further weaken the socio-economic position of the rural poor. Topographically this study area has been considered as flood plain. This area has no relief variation. Rainy season agriculture system is the prime agriculture of this area. Here agriculture is totally depending on rain water. Paddy is the main crop of this island. Agricultural productivity has been changed in rapid way. Climate change with growing population density is increasing pressure on an already fragile natural resource base that is the mainstay of rural livelihoods. Conflict conditions, many of which result from, or are provoked by poverty, are further eroding the livelihood systems and resilience of rural poor women and men.

Findings and analysis:

Existing agricultural situation: Agriculture is one of the most human activities. It is still one of the main sources of income. The traditional Agricultural system has been found in this study area. Most of the people (more than 70%) are Corley depend on agriculture. Maximum area is considered as monocarp. Rice- rice crop sequence is principally followed in the area with vegetables & oilseeds in some pockets of upland & medium land. Marginal farmers owned the major share of total cropped area in comparison to small farmers. For both the categories maximum yield was obtained from upland (2.90 – 10.65 ton ha) while the minimum yield was recorded from lowland (1.82-2.14 ton ha).

Cropping intensity was maximum in midland area followed by upland & lowland areas. Upland & midland areas are considered as double crop in some pockets of this study area. Lowland areas are mostly monocrop except few patches remained fallow during the Rabi season. Aman is cultivated in monsoon season.

The total area is 12803 hectors covering for cultivation. Total production is 24.302 thousand metric ton, and yield is 1898.12 Kg/hectors (District Statistical Handbook, 2008). Boro is mainly cultivated in post monsoon season. 73 hectors is covering for Boro cultivation. Total production is 0.250 thousand metric ton and yield is 3429.07 Kg/hectors (source- census of India 2001).The production of aman paddy is very low and fails to offer decent returns to the farmer 1.5 to 2 tons per hectare against a national average of 3.28 tons per hectare. The income is to the tune of Rs 6000 per acre against an investment of Rs 4000 per acre in monsoon season. There are three dominant reasons why agriculture will remain subsistence in this study area. Firstly the land holdings are small. There is also land loss to deal with. Finally there is a limited potential to develop irrigation facilities, which means multi-cropping cannot be practiced extensively.

The growing population has been exerting tremendous pressure as well between 2002 to 2011, the land available for aman agriculture had sunk from 14700 to 14170 hectares with the rise in population settlements have also increased from 28398 to 42382 (Census of India 2001 & 2011).Therefore total population are also increasing in rapid way. In 2001 total population was 180408.It converted to 206801 in 2011.The average land holding is 0.82 hectare per family & about 0.084 hectare per capita. The national average of operational land holding is 1.33 hec per capita.

Apart from all this there are governance deficits and institutional shortcomings that do not allow farmers of our study area to get a better price for whatever little they produce. Development of rural infrastructure with proper marketing and storage facilities are the necessary pre-requisite for successful rural agro based industries. Ease of transportation is an integral part of proper infrastructure. In the entire study area this infrastructure is minimal.

This lack sometimes leads to huge losses for the cultivators. Sagar is famous for the production of watermelon. With no proper storage, transport, credit & marketing facilities their producers do not get any opportunity to sell these non- food grain crops in distant places at competitive prices. There is no cold storage in entire area.

Growth of population status:

In the last three decades, population increased rapidly in the Sagar Island. In 1991 census, the total population and population density were 1, 49,222 and 593/km², which increased to 1, 80,408 (1.21%) and 717/km² respectively in 2001. It converts into 206801 in 2011. The total area of the Island is 251.59 km² of which agriculture dominates in more than half of the total area (53.6%). Of the total agricultural area (134.76 km²), more than 86% area is rainfed and the contribution of irrigated agriculture is confined in less than 14% of the area. Thus, a substantial amount of area remains unirrigated and away from assured irrigation/water availability. The mismatch between the growth of population and agricultural production is producing several socio-economic problems *viz*, low per capita income, consumption, work participation rate and employment etc. exhibits slow economic growth and insecurity in rural livelihood

Table: Area of production aman , boro rice and area under irrigation of Sagar Island (2002-2011)

| Year | Area under Aman (Hec) | Production of Aman (m.ton) | Area under Boro (Hec) | Production of Boro (m.ton) | Area under irrigation (hec) |
|------|-----------------------|----------------------------|-----------------------|----------------------------|-----------------------------|
| 2002 | 14700 | 34175.00 | 498 | 1521.20 | 2451 |
| 2003 | 14750 | 34324.50 | 506 | 1538.74 | 2469 |
| 2004 | 14750 | 34298.50 | 512 | 1582.08 | 2497 |
| 2005 | 14812 | 43976.00 | 515 | 1981.17 | 2345 |
| 2006 | 15190 | 35498.00 | 528 | 1871.12 | 1990 |
| 2007 | 14770 | 35698.18 | 575 | 2044.12 | 2774 |
| 2008 | 14720 | 32074.74 | 580 | 1999.07 | 2774 |
| 2009 | 14003 | 30186.45 | 740 | 31.63.50 | 2774 |
| 2010 | 14750 | 31508.50 | 860 | 2623.00 | 2774 |
| 2011 | 14170 | 25863.31 | 992 | 3988.52 | 2774 |

Irrigation facilities:

Irrigation facility is marginal and limited coverage (<10%) and more particularly, irregular and poorly maintained. Lack of assured irrigation water even life saving irrigation water is another bottleneck in optimum, year round agriculture production system. Most of the canals and creeks which drain the Island are full of brackish or saline water and have no utility for irrigation. Innumerable household ponds and few canals are generally used to restore rainwater for *Rabi* cultivation and for domestic water supply. There is no major reservoir in the study area, so most of the water developments existing draw directly on ponds and canals which almost dried up in summer and water scarcity spread gradually all over the Island. Uneven distribution of rainfall and a decreasing or total failure of rainfall occasionally cause deficiency of soil moisture due to minimal infiltration and high evapo -transpiration cause crop to fail

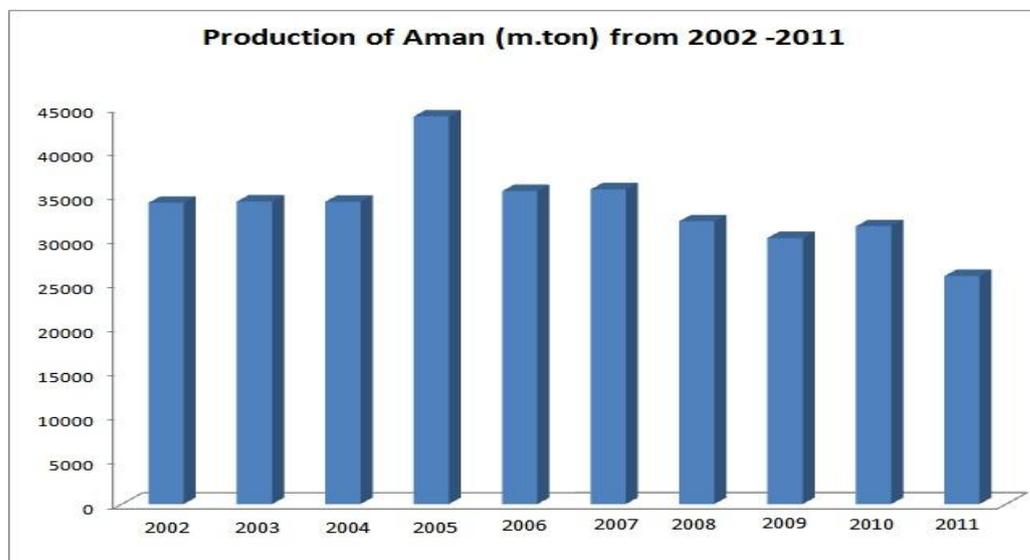
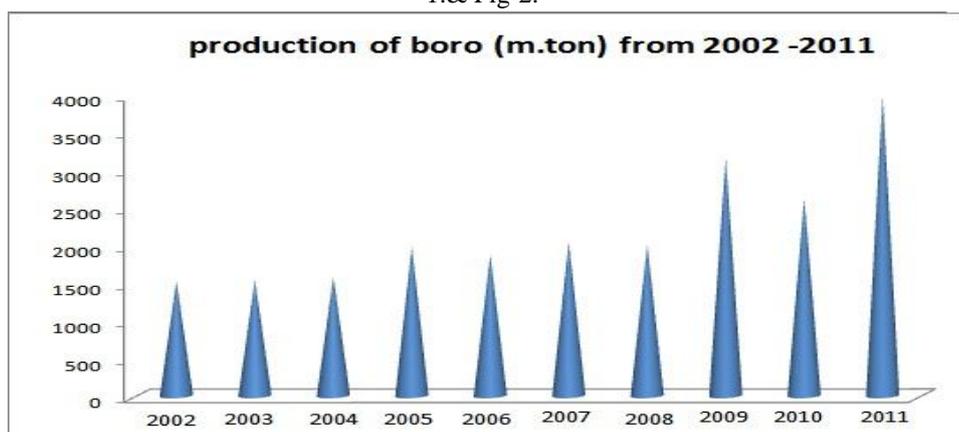


Fig -

1.& Fig-2.



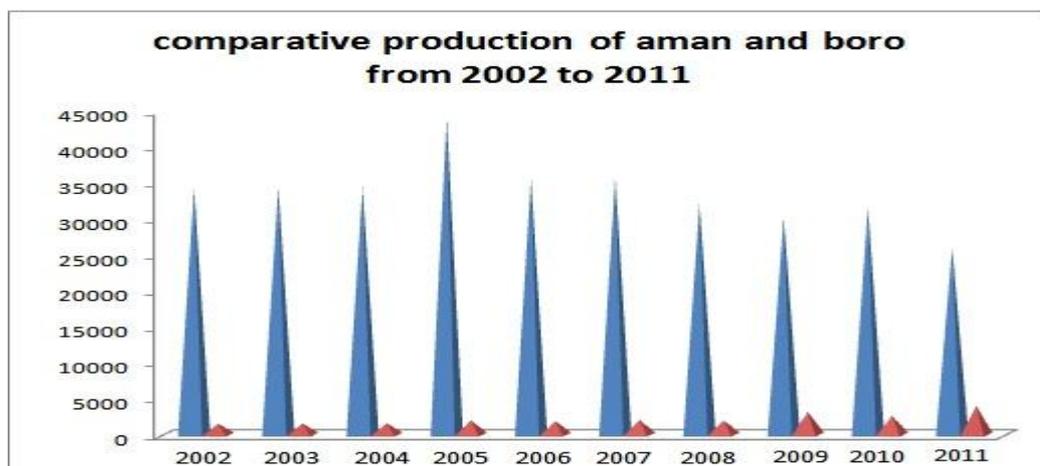


Fig-3.

Main obstacles in Women growth in Agricultural Sector:

In this study area few women holding of agricultural productive resources such as lands, animals. Women have no power for decision making process, either inside or outside the home. However women perform all un-mechanized agricultural tusks and perform multiple tasks which add more burdens to them. Women workers in agriculture suffer from high illiteracy rate among them and drop out of schools. They have no proper knowledge about modern agriculture system. Women earn fewer wages, especially in joint informal and private sector. Therefore women do not know their legal rights.

More work less pay: Generally man can easily shift from one place to another place for better job opportunities and better income facilities. They can move as a migrant from their birth of place to anywhere. But women cannot shift from their living place. It is therefore becoming essential for men to migrate in search of better – paid work. Women are filling this vacuum. Women are forced to accept work in agriculture in their own village under very bad conditions, because they cannot migrate as easily as men. The dependence of women’s labour of family farms, especially during the peak periods of sowing and harvesting has become very common.

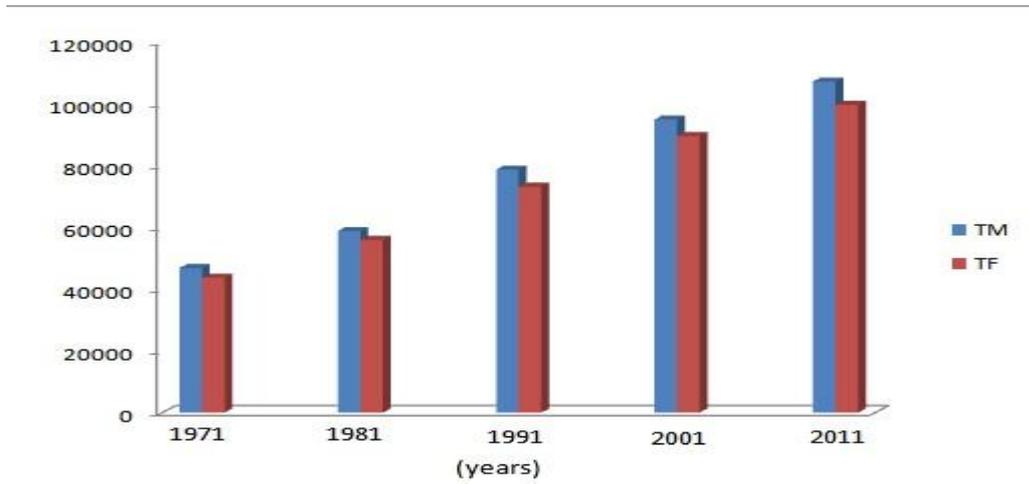
Farmers on the other hands also seek to prefer women as agricultural workers. The farmer is forced with the increasing costs of production required for modern agriculture. He finds that he can squeeze his labour costs by using lower – paid women workers. Similarly the work of women within family based agriculture is preferred because it is cheaper than hiring labour. Women agricultural workers although they present a big proportion of all women workers continue to receive lower wages than men. The ministry of labour puts the differences at 60 % of men wages, while the Indian labour journal showed that women received 75 % of men earnings.

Table - showing total population, total male, male agricultural laborers, total female and female agricultural laborers’ from 1971 to 2011.

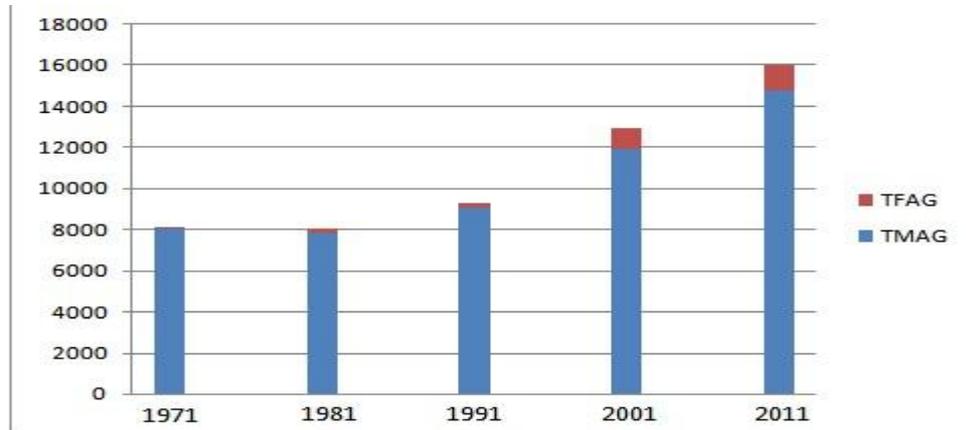
| year | Total population | Total male | Male agricultural laborers | Total female | Female agricultural laborers |
|------|------------------|------------|----------------------------|--------------|------------------------------|
| 1971 | • 88540 | 46820 | 8014 | 43691 | 79 |
| 1981 | • 112653 | 58779 | 7842 | 55882 | 173 |
| 1991 | • 151213 | 78682 | 9064 | 73150 | 214 |
| 2001 | • 182409 | 94909 | 11919 | 89501 | 1054 |
| 2011 | • 206801 | 107179 | 14813 | 99620 | 1237 |

(Source - Census of India 1971- 2011)

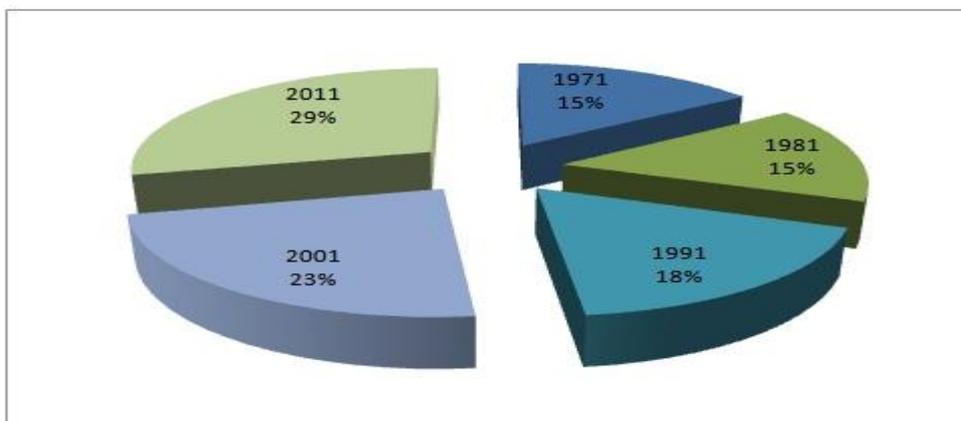
Bar graph showing increasing of total male and female population from 1971-2011. (Fig -4). (TM= Total male, TF= Total female)



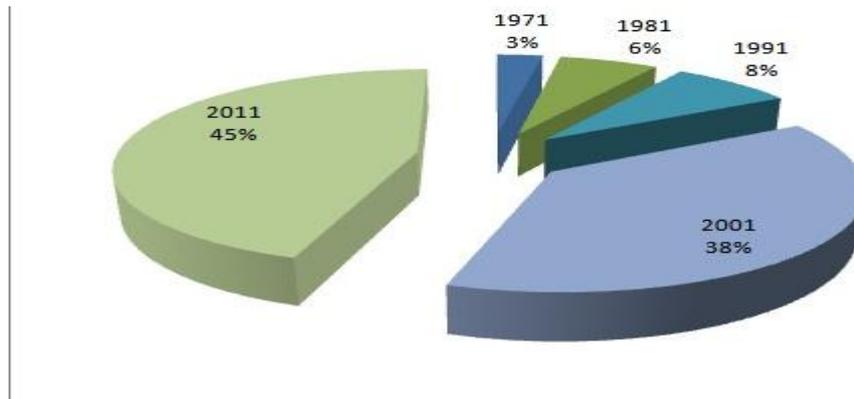
Bar graph showing increase of male and female agricultural laborer's from 1971-2011. (Fig -5), (TMAG & TFAG= Total male & female agricultural labors)



Proportional Pie graph showing percentage of male agricultural laborer's during 1971-2011. (Fig -6)



Proportional Pie graph showing percentage of female agricultural laborer's during 1971-2011. (Fig -7)



In 1971 total male and female agricultural labors were 8014 and 79. In 1971 total female agricultural labors were very negligible. From the given table it is apparent that before the year 2001, the increase of male agricultural labor was satisfactory, but the increase of female agricultural labor was not sufficient. After the year 2001 the increasing rate of female agricultural labor was very rapid. In 1971 total female agricultural labor was only 79, which converted into 1237 in 2011. For the necessity of income of the poor family, a certain number of females are coming into agricultural works. Poverty and insecure income are the prime reason behind it. Most of the rural women lack higher living dream.

In 1971 total male and female agricultural labors was 15% and 3% of total male and female. In 1981 it was 15% and 6%. Within 10 years there was no increase rate of male agricultural labors, but female agricultural labors increased 3%. From 1971 to 2011 total male agricultural labors increased 15% to 29%. The increasing rate was 14%. On the other hand from 1971 to 2011 female agricultural labors increased 3% to 45%. Here increasing rate was 42%. Within 50 years increasing rate of female agricultural labors was very high than male agricultural labors. Maximum involvement of female agricultural labors in agricultural fields indicates greater income and secure rural economy of this rural area. Hope participation rate of female agricultural labors will increase in near future to ensure healthy family income. If participation rate of male and female agricultural labors will increase in year after year, family income also increased. I hope poverty will be reduced in near future.

Recommendations:

1. Recognition of labour work of working men and women in the rural economy may be accounted in monetary terms.
2. More facilities should be provided to poor rural people for land, agricultural and livestock extension services.
3. Measures should be taken to enhance people's literacy rates. A separate education policy for backward persons may serve the purpose.
4. Priority must be given to agricultural laborers in accessing credit on soft terms from banks and others financial institutions for setting up their business, for buying properties, and for house buildings.
5. Rural women must be aware of their existing rights and find access to judicial relief and redress. It should be done by removing discrimination through legal reforms, and providing legal aid, assistance and counseling.
6. Women must be involved in decision making bodies that have the potential to introduce structural changes. This action will bring some changes in the gender relations in the society.
7. More irrigation facilities are to be arranged in dry season to increase agricultural production in xeric period. Greater production of all seasons may be mitigating poverty of this study area.
8. In this area maximum agricultural farmers and laborers are using local aman seeds for paddy cultivation. So total production has been decreasing year after year. They do not know how total production will increase in near future, and food crisis will be removed. To inform them about modern agriculture system, crop rotation, crop diversification procedure, open workshops which are to be arranged in every village by government officials, are very necessary.
9. To increase production of rice, utilization of HYV seeds are very important. If most of the labors use these seeds, an abrupt change in total production will come.

10. A greater no of agricultural persons are harvesting their own land without soil test. They do not know actual soil type of their own land. To get better amount of production they are using chemical fertilizer, which are very harmful for land productivity. Over utilization of chemical fertilizers are reducing total production. An active soil testing centre should be set up by Government to give them the chance for soil test.
11. Better and consistent income from the agriculture, can secure their rural economy, which can reduce their poverty gradually.

Conclusion:

The connections between the agricultural and non-agricultural rural economies are key drivers of diversified livelihoods. A thriving agriculture sector underpinned by improved productivity will expand the rural economy and influence wages and food security. Traditionally, agricultural policy has focused on increasing agricultural production, neglecting investment in post-harvest enterprises and non-agricultural assets for more diversified rural livelihoods while treating as socially undesirable those household strategies involving movement out of rural areas. To reverse this trend, Governments and external partners should improve their understanding in national policies, establish functioning land markets, so that people are more able to move to new forms of economic activity, promote entrepreneurship, and investments in infrastructure, education and health services to new livelihood patterns. This is a new context for agricultural policy, and a new agriculture agenda is needed to address it. The new agenda must promote investments in higher productivity activities must encourage the development of the broader agricultural sector and rural economy, so that the benefits from agriculture can be realized. It must also make it easier for small producers and landless agricultural workers to diversify out of agricultural production. If the agricultural production is optimum level, the poverty of rural area will be mitigating gradually.

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