



An Analysis of Women Empowerment with reference to Agriculture Industry in India: A case study of BIMAROU States

KEYWORDS

gender difference, women, agriculture, BIMAROU states, etc

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ABSTRACT *Indian women are extensively involved in agricultural activities. However the nature and Extent of their involvement differs with the variations in agro-production systems. The mode of female participation in agricultural production varies with the landowning status of farm households. Their roles range from managers to landless labourers. In over all farm production, women average contribution is estimated at 55% to 66% of the total labour with percentages, much higher in certain regions. In the Indian Himalayas a pair of bullocks works 1064 hours, a man 1212 hours and a woman 3485 hours in a year on a once hectare farm, a figure that illustrates women significant contribution to agricultural production. The impact of W.T.O rules and policies of trade liberalization in the agriculture sector on women is distinctive for four reasons. Women have been the primary seed keepers, processors. They have been the both experts and producers of food, from seed to the kitchen. W.T.O impacts women. The Trade Related Intellectual Property Rights (TRIPS) agreement impacts women knowledge of and control over seed. The Agreement on Agriculture impacts women livelihood and income security.*

INTRODUCTION:

India has a national tradition bound to agriculture fertility. Based on 2011 World Bank Data, only 17.5% of India's Gross Domestic Production (GDP) was accounted for by agricultural production. Yet for a majority of the country, an estimated 72% of the 1.1 billion people who live in rural India. Agriculture in India defines familial tradition, social relations and gender roles. Female in the agricultural sector, whether through traditional means or industrial, for subsistence or as an agricultural laborer, represents a momentous demographic group. Agriculture is directly tied to issues such as economic independence, decision-making abilities, agency and access to education and health services and this manner has created externalities such as poverty and marginalization, and compounded issues of gender inequality.

Employment in agriculture (% of total employment)

Employees are people who work for a public or private employer and receive remuneration in wages, salary, commission, tips, piece rates, or pay in kind. Agriculture corresponds to division 1 (ISIC revision 2) or tabulation categories A and B (ISIC revision 3) and includes hunting, forestry, and fishing.

Table showing the current position of agriculture in India

	%of land area	% of irrigated area
Agriculture land	60%	35.2%
Average actual precipitaaion millimeter (2011)	1083	
Land under cereal production Ha/ thousand (2010-12)	97000	
Fertilizers consumption in percentage (200911)	181.5	
Kilogram per ha of arable land (2009-11)	178.5	
Agriculture employment % of total employment (2010-12)	47.2%	

Source: data collected from
worldbank.org/indicators/SL.GR.EMPL.ZS

The **BIMARU states** are four northern Indian states: Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh. BIMARU is an acronym formed from the first letters of the names of the states. It was coined by Ashish Bose in the mid-1980s. **BIMARU** has a resemblance to a Hindi word "Bimar" which means sick. This was used to describe the bad state of economy in backward states Bihar, Madhya Pradesh, Rajasthan and Uttarpradesh. Later Odisha was included in the list resulting in BIMAROU. Several studies, including those by the UN,

showed that the performance of the BIMARU states affected the GDP growth rate of India. Some of these states are also a part of Red Corridor. Another factor determining the BIMARU states economic situation is the lack of investment in irrigation and flood control. In spite of the highest incidence of floods in this region, the investment to manage this has been rather meager.

Gender division of labor

In India, the typical work of the female agricultural laborer or cultivator is limited to less skilled jobs, such as sowing, transplanting, weeding and harvesting, that often fit well within the framework of domestic life and child-rearing. Many women also participate in agricultural work as unpaid subsistence labor. According to United Nations Human Development Report only 32.8% of Indian women formally participate in the labor force, a rate that has remained steady since 2009 statistics. By comparison men constitute 81.1%.

Percentage distribution of workers in Agriculture

Category	Rural			Urban			Combined		
	F	M	total	female	male	total	female	male	total
agricultural labour	43.4	27.4	33.2	19.03	3.42	4.71	39.43	20.82	26.69

Agricultural economics originally applied the principles of economics to the production of Crops and livestock — a discipline known as agronomics. Agronomics was a branch of economics that specifically dealt with land- usages. It focused on maximizing the crop yield while maintaining good soil ecosystems. Throughout the 20th century the discipline expanded and the current scope of the discipline is much broader. Agricultural economics today includes a variety of applied areas, having considerable overlap with conventional economics. Economics is the study of resource allocation under scarcity. Agronomics, or the application of economic methods to optimizing the decisions made by agricultural producers, grew to prominence around the turn of the 20th century. The field of agricultural economics can be traced out to works on land economics.

OBJECTIVES:

1. To understand the present status of agriculture industry in BIMAROU states.
2. To examine the role of women in selected states, as well as the problems faced by them n agriculture sector
3. To analyze SWOT of the agriculture industry in creating Women Empowerment in Indian agricultural sector.

METHODOLOGY:

Duration of the study: Duration of the study will be year 2007-08 to 2015 – 16.

Type of the study: Analytical study will be taken in to consideration while understanding the participation of women in agriculture & factors which influence them to venture into agriculture and the problems faced by them while starting and promoting the business in BIMARU states.

Sample area: four districts of each state

Sampling Design: The BIMARU states will be consider for Women Empowerment in Agriculture Industry as the samples for the study using stratified random sampling method and cluster sampling methods.

Data Collection: Primary data will be collected from respondents using questionnaire and interview schedule methods by visiting near places. Secondary data will be collected from various books, journals, magazines, newspapers and internet sources and various respective authorities and boards.

Tools for Analysis: Weighted Average, Mean Score, Simple Percentage analysis and chi-square and T test will be considered for checking the validity of the analysis.

HYPOTHESIS FOR THE STUDY: The study is based on some null hypothesis;

H01: There is no significant impact of Agriculture industry in uplifting of Economic conditions of Rural Women.

H02: There is no significant difference between Cost and Benefit analysis of agriculture industry in BIMARU states with special reference to women empowerment.

Review of Research and Development in the subject:

Some review of literatures from both domestic and foreign authors:

National

Kesarwani Ranjana and Yadav Awdhesh, (2014), Disparities in Social development and Status of women: An analysis of India and its States, emphases on the status of women. The higher status of women has been widely acknowledged as an important tool in social and economic development of any society. A diverse body of literature has emerged regarding the measurement of women status and its relationship with variables of social and economic development. Thus, focus of the article is to examine the association between women's status and social development in India. All three rounds of National Family Health Survey data were analyzed for 26 states of India and inter-state comparison is done in the context of changing status of women and social opportunities. To assess the women changing status, different indicators like female literacy rate (age 6+), median age at first marriage, women using modern contraceptive, not anemic, Institutional delivery, exposed to any source of media, current work status, involved in the decision Making to own Health and access of money are considered. However overall literacy rate, percent of urban population, under five mortality rate, percent of household with piped drinking water, household with any toilet facility and electricity facility, household with house type, full vaccination coverage, crude birth rate, crude death rate and total fertility rates have been considered for social indicator. To examine the changing status of women and social development we have created the two indices for each dimension named as Women Status index (WSI) and Social Development Index (SDI) using the Taxonomic approach. In the end, the nexus between social development and women status has been figured out with the help of correlation and regression analysis and upshots proves the intense association between the two dimensions.

UDAI BHAN SINGH & NRIPENDRA KISHORE MISHRA, (2014), women work participation in rural uttar pradesh: a regional analysis,

states that Women are vital and productive agent in Indian economy but their employment status is critical because their participation in different economic activities is very low as compared to male.

Women face various types of discrimination in different walks of life, including education and consequently land up in low paying job. The basic aim of this study is to understand the variations in the growth process of the participation of women in gainful activity at state level in general and at district level in particular. For this purpose, data has been collected from four economic regions such as Western U.P., Eastern U.P., Central U.P. and Bundelkhand region of Uttar Pradesh.

R. K. P. Singh, Krishna M. Singh, A. K. Jha (2012), "Effect of Migration on Agricultural Productivity and Women Empowerment in Bihar" in this study, It was observed that the efficiencies of human labor and irrigation in rice production were higher than non-migrant households and statistically significant, indicating rational use of these two critical inputs on migrant households in Bihar. This observation leads to the conclusion that the migration might have helped in judicious use of human labor at native place due to migration of surplus labor force for gainful employment to destination of migration. Remittances have been utilized for meeting consumption needs, improved livelihood, better education to children and better health care facilities which help in overall improvement in livelihood on migrant households in Bihar. Migrant households also preferred to save money to meet their requirements in unforeseen situations. Hence, migration can be said to be one of risk-coping strategies for the weaker sections of the society and helped developing the saving habits among migrant households.

Ashish Mathur (2012), Women Entrepreneurs in the Indian Agricultural Sector, focuses on Agriculture is the backbone for any country's economic development and it creates and for the opportunities of employment and business for the women also as it is a labor intensive industry. Women are the axis of the economy and their values govern the rural market. It is a popular belief that economic development takes place because of rapid industrialization. The basic aim of the paper is to analyze the conditions of women workers in the agricultural sector so as to enhance the potential of the Indian agricultural sector. The paper aims to frame a strategic framework for the quality of the agricultural sector through the women entrepreneurs.

Research foundation science & technology, (2012), impact of WTO on women in agriculture, has stated that Women.s status, power, relevance is, therefore, being impacted by W.T.O rules at every level of the food chain. The Trade Related Intellectual Property Rights Agreement is transferring control over knowledge of seed and biodiversity from rural women to global corporations. The cases of the bio-piracy of Neem, Basmati, and wheat are not just cases of attempts to transfer the heritage of the South to the North. They are cases of usurping the knowledge and expertise of women. The industrialized corporatized agriculture promoted by the Agreement on Agriculture is robbing women of livelihoods in food production and food processing.

SOFA Team2 and Cheryl Doss,(2011), The Role of Women in Agriculture, give attention on data shows that women comprise about 43 percent of the agricultural labour force globally and in developing countries. But this figure masks considerable variation across regions and within countries according to age and social class. Time use surveys, which are more comprehensive but typically not nationally representative, add further insight into the substantial heterogeneity among countries and within countries in women's contribution to agriculture. They show that female time-use in agriculture varies also by crop, production cycle, age and ethnic group. A few time-use surveys have data by activity and these show that in general weeding and harvesting were predominantly female activities. Overall the labour burden of rural women exceeds that of

men, and includes a higher proportion of unpaid household responsibilities related to preparing food and collecting fuel and water. The contribution of women to agricultural and food production is significant but it is impossible to verify empirically the share produced by women. Women's participation in rural labour markets varies considerably across regions, but invariably women are over represented in unpaid, seasonal and part-time work, and the available evidence suggests that women are often paid less than men, for the same work.

Malavika Karlekar, (1991), Women and Economic Reform in India: A case study from the health sector, give emphases on under the overall rubric of economic reform, the Government of India put into operation a set of wide-ranging policies and programmes. While some of these had been on the anvil from the mid-eighties onwards, it is only in the present decade that several measures were initiated with a certain determination. However, the reform package has had a mixed response, with considerable apprehensions of how these are going to affect certain sectors of the population; various people's movements including the women's movement have been greatly concerned with some aspects of globalisation and how it will affect the less privileged. For instance, the introduction of Free Trade/Zones has generated the need for cheap labour; but what will more, low paid jobs mean for women's status? With increasing competition and the thrust towards already over-crowded urban centres there will be an increase in crime and violence; how will women - major pillars of the national as well as individual family economies - cope with more stress and tension? Thus, before analysing the implications of the reform package, it is important to look at some basic parameters of Indian women's lives today. As we proceed, it will be clear that women's health and well-being - the focus of this paper - are intrinsically linked to other aspects of their status.

Swaminathan, (2011), the famous agricultural scientist, some historians believe that it was woman who first domesticated crop plants and thereby initiated the art and science of farming. While men went out hunting in search of food, women started gathering seeds from the native flora and began cultivating those of interest from the point of view of food, feed, fodder, fibre and fuel. Women have played and continue to play a key role in the conservation of basic life support systems such as land, water, flora and fauna. They have protected the health of the soil through organic re-cycling and promoted crop security through the maintenance of varietal diversity and genetic resistance. Therefore, without the total intellectual and physical participation of women, it will not be possible to popularize alternative systems of land management to shifting cultivation, arrest gene and soil erosion, and promote the care of the soil and the health of economic plants and farm animals.

Prasad & Singh (1992), That women play a significant and crucial role in agricultural development and allied fields including in the main crop production, livestock production, horticulture, post harvest operations, agro/ social forestry, fisheries, etc. is a fact long taken for granted but also long ignored. The nature and extent of women's involvement in agriculture, no doubt, varies greatly from region to region. Even within a region, their involvement varies widely among different ecological sub-zones, farming systems, castes, classes and stages in the family cycle. But regardless of these variations, there is hardly any activity in agricultural production, except ploughing in which women are not actively involved. In some of the farm activities like processing and storage, women predominate so strongly that men workers are numerically insignificant.

Aggarwal (2003), Studies on women in agriculture conducted in India and other developing and under developed countries all point to the conclusion that women contribute far more to agricultural production than has generally been acknowledged. Recognition of their crucial role in agriculture should not obscure the fact that farm

women continue to be concerned with their primary functions as wives, mothers and homemakers.

Despite their importance to agricultural production, women face severe handicaps. They are in fact, the largest group of landless labourers with little real security in case of break-up of the family owing to death or divorce; inheritance laws and customs discriminate against them and land reform and settlement programmes usually give sole title and hence the security needed for obtaining production credits to the husband. Agricultural development programmes are usually planned by men and aimed at men. Mechanization, for example alleviates the burden of tasks that are traditionally men's responsibility, leaving women's burdens unrelieved or even increased. The excess burden of work on women (the double day of the farm work plus house work) also acts as a stimulus to have many children so that they can help out with chores from an early age. Extension workers almost exclusively aim their advice at men's activities and crops. In some regions, this bias may depress production of subsistence food crops (often women's crops) in favour of increased production of cash crops (often men's crops) so that family nutrition suffers. It may not be out of place to mention here that considering their dual responsibilities within and outside the home, it would be in the fitness of things that more and more in the village training is organized for rural farm women to suit their convenience with due realization that institutional training is important in its own place.

In order that farm women get a fair deal at the hands of change agents, one of the remedial measures that needs to be undertaken is to induct a sizeable number of well trained women personnel in training and extension programmes of agricultural development agencies at all levels and more so at the grass-root level.

According to 1991 census the male cultivators has increased in the country by 11.67 percent from 76.7 in 1981 to 85.6 million in 1991. The female cultivators however have increased at much faster rate of 45.23 percent from 14.8 million in 1981 to 21.5 million in 1991. As shown in table 2.1, the number of male agricultural labourer increased by 31.48 percent, but that of female by 36.45 percent. 74 percent of the entire female working force is engaged in agriculture operations. About 60 percent of agricultural operations like sowing of seeds, transportation of sapling, winnowing, storage of grain etc are handled exclusively by women, while in other jobs they share the work with women.

International

Saquina Mucavele, MuGeDe - Women, Gender and Development, Republic of Mozambique - Southern Africa (2011), The Role of Rural Women in Agriculture, Women are the backbone of the development of rural and national economies. They comprise 43% of the world's agricultural labor force, which rises to 70% in some countries. In Africa, 80% of the agricultural production comes from small farmers, who are mostly rural women. Women comprise the largest percentage of the workforce in the agricultural sector, but do not have access and control over all land and productive resources. During the last ten years, many African countries have adopted new land laws in order to strengthen women's land ownership rights. This has helped improve the situation of rural women. To this effect, the lack of appreciation of the role of rural women in agriculture is harmful and gives rise to a lack of specific policies, policies which are misdirected, high levels of poverty, illiteracy and non-involvement in the design and planning of programs and policies, which involves a process of mutual learning that reflects the real and specific needs of rural women. Despite the important roles they play in agricultural economies, rural women in Africa suffer from the highest illiteracy rates and are the most visible face of poverty. Women guarantee livelihoods, especially in rural areas.

The Executive Summary of the IAASTD Synthesis Report, (2014), Women in agriculture, states that Gender, that is socially constructed relations between men and women, is an organizing element of existing farming systems worldwide and a determining factor of ongoing agricultural restructuring. Current trends in agricultural market liberalization and in the reorganization of farm work, as well as the rise of environmental and sustainability concerns are redefining the links between gender and development. The proportion of women in agricultural production and postharvest activities ranges from 20 to 70%; their involvement is increasing in many developing countries, particularly with the development of export-oriented irrigated farming, which is associated with a growing demand for female labor, including migrant workers.

Gap Analysis: in spite of so many studies no study is conducted on the same subject and Bihar states
PROFILE OF BIMAROU STATES

Agriculture Profile of Bihar

The state has 5.71 million ha of cultivated area, of which 3.43 million ha (61%) has assured irrigation. The soils are deep alluvial, but suffer due to salinity/alkalinity and nutrient deficiencies of sulphur, boron and zinc. Occasional flooding and imperfect drainage affect crop growth. Rice, wheat and winter maize are predominant crops of the state. The productivity of different crops in the state is less than the national average. The total food-grains production is 7.7 million tonnes. Suggested interventions for natural resource management for agriculture in the state are as follows: Site-specific nutrient management on 0.5 million ha to produce additional 2.6 million tonnes of food-grains, Introduction of pulses and oilseeds on rice fallows with supplementary irrigation facility Zero tillage on 1.5 million ha having excess soil moisture after rice harvest to enhance production by 0.45 million tonnes Promotion of quality protein maize having tremendous food and feed potential

Agricultural profile of Madhya Pradesh

Madhya Pradesh is known as the Heart of India. It is the second largest state by area and sixth largest state by population. Agriculture of Madhya Pradesh is one of the main sectors of the state's economy. Madhya Pradesh is primarily an agriculture state. About 73 percent population of the state is rural, which directly or indirectly depends on the agriculture. Agriculture plays an important role by contributing immensely to the economy. The major perennial rivers of Madhya Pradesh namely Narmada River, Betwa River, Chambal River originate in Madhya Pradesh and flow to the seven bordering states. The soil of Madhya Pradesh is deficient in nitrogen and phosphate nutrients, The natural calamities like drought floods and hailstrom are the common features that affect agriculture in Madhya Pradesh.

Agriculture Profile of Rajasthan

Rajasthan is an agrarian state, where eighty percent of the total population resides in rural area and largely dependent on agriculture as the source of their livelihood. The economy of state is mostly depended on agriculture. 22.5 percent of state's GDP comes from agriculture. Recognized as the largest state of India, Rajasthan has cultivated area of almost 20 million hectares but due to some unavoidable circumstances on 20% of the total cultivated area is irrigated. This really is a tense situation.

The weather is arid and hot. Large portion of terrain is dry. Droughts are common in Rajasthan and state has experienced some severe droughts in last few decades. Due to unstable weather conditions farmers have to depend on both rain and ground water agriculture. With the decreasing ground water level the cropping situation is more terrible as the farmers in the state have to survive mostly on ground water received from Punjab Rivers in the north, the Narmada River in the south and the Agra Canals from Haryana and Uttar Pradesh are the water providing sources to the dry land. Northwest-

ern Rajasthan is irrigated by the Indira Gandhi Canal. The use of chemical fertilizers and pesticides has increased the crop productivity and now the state is self sufficient in the production of food grains.

Profile of Orissa

Orissa is an agrarian state with Agriculture and Animal Husbandry sector contributing 21.11% to Net State Domestic Product (NSDP) in 2007-08 (Q) at 1999-2000 prices and providing employment directly or indirectly to 70% of total work force as per 2001 Census. The share of Gross State Domestic Product (GSDP) from Agriculture and Animal Husbandry during 2007-08(Q) at constant price (1999-2000) is 19.51%.

Evidently, Agriculture plays a critical role in the economy of the state and livelihood of majority of its populace. The per capita availability of cultivated land was 0.39 hectares in 1950-51, which has declined to 0.13 hectares in 2007-08. During 2000-01 there were 40.67 lakh operational holdings in the state out of which marginal and small holdings account for 83.8 %, medium 15.9% and large, less than 1%. The average size of holding is only 1.25 ha. The size of operational holdings along with wide spread poverty pose a big problem in agricultural growth of the State.

Agricultural profile of U.P

Agriculture is the main occupation of 66 % of the population of the state. The net cultivated area in the state is 167.50 lakh / ha, the state produce 255.67 lakh metric tones of wheat, 130.22 lakh metric tones of rice, 23.80 lakh metric tones of pulse etc. horticulture Crops are 30 lakh ha under horticulture crops which is 12 % of the total cultivated area of the state.

The Role of Rural Women in Agriculture

Women are the backbone of the development of rural and national economies. They comprise 43% of the world's agricultural labor force, which rises to 70% in some countries. Rural Indian women are extensively involved in agricultural activities. However the nature and extent of their involvement differs with the variations in agro-production systems. The mode of female participation in agricultural production varies with the landowning status of farm households. Their roles range from managers to landless labourers. In over all farm production, women average contribution is estimated at 55% to 66% of the total labour with percentages, much higher in certain regions. In the Indian Himalayas a pair of bullocks works 1064 hours, a man 1212 hours and a woman 3485 hours in a year on a once hectare farm, a figure that illustrates women significant contribution to agricultural production.

WOMEN WORKERS IN AGRICULTRE (MILLION)

AGRICULTURE	2011 CENSUS
CULTIVATION	21.5
AGRICULTURE LABOUR	28.2

Multi-Dimensional Role of Women

- (i) Agriculture: Sowing, transplanting, weeding, irrigation, fertilizer application, plant protection, harvesting, winnowing, storing etc.
- (ii) Domestic: Cooking, child rearing, water collection, fuel wood gathering, household maintenance etc.
- (iii) Allied Activities: Cattle management, fodder collection, milking etc.

Mainly rural women are engaged in agricultural activities in three different ways depending on the socio-economic status of their family and regional factors. They are work as:

- (i) Paid Labourers
- (ii) Cultivator doing labour on their own land and
- (iii) Managers of certain aspects of agricultural production by way of labour supervision and the participation in post harvest operations.

SHARE OF FARM WOMEN IN AGRICULTURE OPERATION (%)

ACTIVITY	INVOLVEMENT (%)
LAND PREPARATION	32
SEED CLEANING AND SOWING	80
INTER- CULTIVATION ACTIVITY	86
HARVESTING, REAPING, WINNOWER, DRYING, CLEANING, STORAGE	84

Future of Rural women

- Steps to be taken
- Direct involvement of women in programming and management.
- Effective collaboration with community organizations.
- Organizing and strengthening of women SHGs.
- Sensitization and advocacy of equi-gender society.
- Identifying women's needs and priorities while generating employment.
- Organizing women into different groups to undertake certain productive activities to earn their livelihood and develop rural community.

Problems in women participation are

1. Some of the farm women may inhibited to participate.
2. Most of the women were willing to take up jobs, though they remained unemployed.
3. New jobs require a different kind of skills.
4. As wage-earning agriculture labourers, women suffer other kind of disadvantages also.
5. While men's attended farmer's camps to learn about the uses of new implements, fertilizers, pesticide and crop rotation, etc.
6. Constraints on time and mobility by women's dual domestic and agricultural roles.
7. Inefficient transfer of agricultural knowledge from husband to wife.
8. Lack of incentives to increase productivity.

Suggestions to overcome the above problems

- The women in rural area should be educated.
- To promote rural development programmes.
- A good and democratic leadership should be created at the grass roots level.
- Women's clubs and other organizations should be set up in the village.
- Several meetings and training of village women should be conducted.
- The training should be able to create awareness, generate interest, motivate learning, impart knowledge, change attitude and generate skills.

Recommendation

- Correct the statistical invisibility of women's work through preparation of an account that should include in detail the work that women undertake.
- Policies and funds allocation need to address women's needs.
- Adequate attention is given to the educational process through which women engage with the institutions in an informed and empowered way.
- Agricultural education be made gender sensitive and research, development, extension and services be engendered to give due recognition to the multiple role played by women agriculturists.

Health & safety issues of women in Agriculture

- Burden of family planning
- Dangerous machinery
- Unsafe electrical wiring and appliances
- Livestock-transmitted diseases
- Exposure to toxic pesticides
- Reproductive hazards
- Stress

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