A DETAILED STUDY ON THE FARMING SYSTEMS AND ITS EFFECT ON MIGRATION AT BAJNA BLOCK OF RATLAM DISTRICT IN MADHYA PRADESH

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Abstract

The farming system is an integrated set of activities that farmers perform on their farm under the available resources and in favourable circumstances to generate productivity and profitability. It is a complex interrelated matrix of soil, animal, labour, capital and other inputs that are controlled by farm families and influenced by the social, political, economic and environmental forces. When people cannot fulfill their needs through farming they do not have any other choice other than migration. Farming and the migration are two parallel dimensions of livelihood in the location. Both are equally important for the people. This study was conducted in Bajna block of Ratlam district in Madhya Pradesh of India. For the collection of data community leaders, youths and women were contacted through phone calls. Total of 60 samples was taken for this study. Previously available contacts were used to gather more contact numbers through the snowball sampling. Later from the contacts list by using simple random sampling 60 samples were randomly chosen. This paper includes a brief three dimensions viz. agriculture animal husbandry and migration in the location. In the case of agriculture main crops (wheat, maize, cotton and soybean) cultivation and economics is briefly described, in the animal husbandry main enterprises (dairy, Poultry and goat rearing) and their economics is briefly described. In the migration dimension, several parameters are covered like wage, gender dynamics, places of migration causes, economics etc. Further in the paper to understand the farming system and its relationship with migration fifty one different livelihood systems are studies and a brief benefit-cost ratio is presented in the paper. Later on, based on the findings of these fifty-one livelihood systems recommendations are made for the betterment of the people in the location.

Key Words – *Farming system, Migration, Agriculture, Animal husbandry, B:C Ratio.*

Introduction

Farming system is an integrated set of activities that farmers perform on their farm under the available resources and in favourable circumstances to generate the productivity and profitability. It is a complex interrelated matrix of soil, animal, labour, capital and other inputs that are controlled by farm families and influenced by the social, political, economic and environmental forces.

According to a study of Tripathy (2020) a village is a geographically distinguishable place which is the habitat of some human beings who live in groups called family are socially, culturally and economically interrelated with each other. According to the data of conscious 2011 of India, 68.84 per cent of Indians have stayed in the village which is around 833.1 million people live in 640,867 different villages. Among them nearly 104 million people which is 8.6 per cent of the total Indian population is belonging from the tribal community. Agriculture, with its allied sectors, is the largest source of livelihoods in India. 70 per cent of its rural households still depend primarily on agriculture for their livelihood, with 82 per cent of farmers being small and marginal.

Agriculture is a very uncertain enterprise, totally depend on natural factors which are not in the hand of anyone. So from the ancient time, farmers of India adopt a different farming system approach to back their livelihood

and feed the family. If we observe the pages of farming history we can easily find that a farmer always has two bullocks and at least two to three cows, few birds and if possible some goat in the family. But they never use this allayed enterprises as a profit booster but as a risk reducer. Only if agriculture fails or any sudden shock hit the family they sell one of the animal or poultry and maintain the resilience of the family.

Later during the era of the 1960s on the name of food grain sufficiency the so-called "Green revolution" was introduced. The seeded the concept among the farmers like this "Agriculture is no more an uncertain livelihood, by mechanization and chemical use all the problems can be solved, if there is no rain we can extract water from the ground, if pest attacks we can kill them by chemical and we can assure the productivity by using fertilizers". A bad concept seeding ruined the whole system. Farmers started to move towards mono-cropping and even they star mono farming. Bulls are of no use now, cows become extra expenses, and birds become an extra burden to the farmers. But this was for a gift to the large farmers not to the rest 80 per cent who are small and marginal.

Now when the farming system is totally destroyed and people are depending on mono enterprise and cropping the climate started to change and the farmers have no answer to reply. So to earn some money and feed the family they started to go for some alternatives, one of them is the migration. A person is also assumed as migrant by the place of the last residence if the place in which he was registered during the census was different than the place of his last residence. The better picture of the current scenario of migration can be captured with the migration cases where the persons migrate more than once. The Census report provides information about migration on all these streams by the concepts to understand the reasons and dynamics of the movement of the population. People migrate for various reason such as education, labour works on seasonal or circular migration and again return to their place of birth are not migrants by place of birth but are migrants on the basis of the last residence. It is not true that after the 1960s only people started to migrate, but it enhances the rate of migration in our country.

The practice of seasonal migration among tribal communities is an age-old practice where the communities migrate seasonally to work in agriculture and construction sectors in their neighbouring states every year. The main reasons for the tribal community migration in Madhya Pradesh are accessed for safe water, legal land and proper access to food. The constant practice of migration makes the children and women folks of the tribal communities vulnerable to nutrition and health issues. In the state the seasonal migration is mainly of two kinds- Nawad i.e. 'forest migration' and Palayan i.e. motivated by cash earning and daily labour activities. In the cases of Palayan, even few times the entire household migrates. Sometimes the children are kept to their neighbours or grandparents but the instance are very less in number. In this case, most of the people are working in unorganized sectors.

Keeping the above points in mind the study is framed around the below-mentioned objectives.

Objectives of the study –

- To understand the different farming system model already prevalent in the location.
- To understand the migration pattern of people in the location.
- To understand the relation of those farming system and migration.
- To evolve some suitable change in the existing farming systems which will reduce the need for migration among people.

Study area and Methodology –

- **Place of study:** Bajna block of Ratlam District In Madhya Pradesh
- **Study period:** 27th February 2020 - 30th April 2020.
- **Project work type :**
- Quantitative – It had quantified the issues and there level of dominance in the system
- Qualitative – It had also studied in depth of the human sentiments, mindset and taboos over here.
- **Project work data :** Primary data ,Secondary data
- **Population under study:** All households those are engaged in Farming and Migration.
- **Unit of study:** Each households those are engaged in Farming and Migration.

- **Respondents:**
  - Agro Farmers
  - Animal farmers
  - Migrant Labours
- **Period Study:** The period from detailed planning till completion of data collection will be nearly two months. The data cleaning and the analysis will be completed and the study report will be prepared by the end April 2020.
- **Sampling**
  - State/District/Block: State is purposively selected
  - Village: 2 villages of two different Panchayat was selected purposely with the household number around 100.
  - Respondent: A sample size of 60 is selected by simple random sampling in two different villages.
- **Decision on non-responses :** The previous or the next household will be selected
- **Quality control procedures:**
  - 100 % field editing of the filled in interview schedules every day during data collection will be done.
  - 100% editing of computer entry Excel sheet with the original Interview Schedule
- **Type and preparation of data collection tool** :
  - Interview Schedule. This was prepared and finalized with the help of the study guide and Project work guide before going to the field.
  - Decision on Pre Testing: Draft Interview schedules was administered with at least 5 respondents and the Interview schedule was modified based on the responses in the field. These will not be included for the study.
  - Number of data collectors, supervisors and processors: One (Student himself)
  - Period of training the data collectors, supervisors and data processor : Few days by the guides
  - Period of data collection : 10-20 days
  - Coverage of sample units per day : 5-10Households
  - Methods of data collection: Telephonic interview and FGDs.
- **Data collection process:** According to Oliver *et.al*. (2020), data collection through the audio phone call can become a data collection tool during the COVID 19 pandemic as the physical interviews are not possible during the regional lockdown in several countries. To gather information community leaders, youths and women were contacted through phone calls. Total of 60 samples was taken for this study. Previously available contacts were used to gather more contact numbers through the snowball sampling. Later from the contacts list by using simple random sampling 60 samples was randomly chosen.
- **Data Processing:** The data will be processed by the researcher. A coding key will developed to code the data and it was used to transform the information from the interview schedule to Excel sheet. Data was coded and entered using Excel software package in the computer. Specific codes were developed to categories the incorrect responses and those which could be interpreted as if they did not know the correct answers.
- **Data analysis:** Data will be analyzed with the help of excel by using different quantitative methods and descriptive statistical methods. Hypothesis will be tested with chi square design.

Results and Discussions

Farming and the migration are two parallel dimensions of livelihood in the location. Both are equally important for the people. According to the agriculture is their primary livelihood, other than that different allayed activities and migrant labour work maintain the balance in their economy. People are well equipped with agricultural know how and skilled, but the adverse climatic conditions and the topography do no permit a yearlong agricultural activity. The main problem is the availability of water. According to the secondary data (data.org)

Ratlam district get only 5 months of rain in a year. This district get around 951mm of precipitation every year. In the months of June, July, August and September study location get a precipitation of 97mm, 305mm, 240mm and 238 mm respectively. If this months can be ignored then only 71mm precipitation is distributed among the rest eight months of the year. Due to the undulating topography and rocky surface the recharge, availability and the harvesting of the ground water is very difficult. Due to all this reasons practically this community cannot be a fully agriculture dependent community. From the past days this community always involved them small scale animal and bird rearing for the home consumption and crisis maintaining mechanisms. Rearing of cow and buffalo was common to every households. Few goats and chicks were also reared over generations.

Overview of Agriculture in the location –

As per the FGD outcomes approximately 100 per cent of the population is directly associated with agriculture. In a year two crops can be taken. According to the season and crop report of Madhya Pradesh, cereals, pulses, oil seeds, millets and vegetables are also cultivated in the region. But according the community they cultivate only four crops *i.e.* wheat, maize, soybean and cotton commercially. Other than that very few people do cultivation of vegetables in the kitchen garden for a subsistence level. The details of every crop cultivation is given below –

Wheat

Wheat is the main cereal crop as *Roti* is the staple food of the location. According to the FGD all the farmers who have land must do the cultivation of wheat. According to them this is a 3-4 months crop. It needs a temperature of 20-25 degree centigrade temperature for the cultivation according to the information from the agriculture expert of Kalukheda KVK. A loamy soil is ideal for the cultivation but the soil of Bajna is also good for wheat cultivation.

Figure 1 Wheat

Economics of wheat

Now if we observe the table no 1 and 2 it is clear that after cultivating wheat in one acre of land the farmers do not get any surplus income. From both the table it can be found that for investing Rs.1 in return they are getting only RS.0.85 in return. If we calculate the economics properly so it can be said it is a loss making livelihood. But according to the farmers they do it for the home consumption not for the profit. But still the profit can be achieved. The farmers do not follow a scientific way of cultivation and they do not have the access of enough information. According to the government the minimum support price for wheat was Rs.1840 in 2019-2020 financial year. But farmers get the amount of only Rs.1700. This things will be described in the recommendation chapter in an elaborative manner.

Table 1 Cost of Production to cultivate wheat in one acre of land

Components	Costs
Cost (A_1)	
Cost of hired labour for land preparation (Rs.)	1000
Hired labour cost for sowing and transplanting (Rs.)	0
Cost of hired machinery (Rs.)	1500
Cost of own machinery (Rs.)	0
Cost of planting material (Rs.)	520

Cost of plant protection (Rs.)	0
Cost of mulching (Rs.)	0
Cost of manure (organic) (Rs.)	0
Cost of Fertilizer (inorganic) (Rs.)	2550
Hired labour cost for weeding and hoeing (Rs.)	0
Cost of irrigation (Rs.)	2500
Hired labour cost for harvesting and post-harvest operations (Rs.)	0
Miscellaneous cost (Rs.)	1000
Total (A_1) [Rs.]	9070
Cost (A_2) = Cost A_1+ rent on leased in land (Rs.)	
Rent on leased in land (Rs.)	0
Total (A2) (Rs.)	9070
Cost (B_1) = Cost A_2+interest on own fixed capital (Rs.)	
Interest on own fixed capital (Rs.)	14667
Total (B1) (Rs.)	23737
Cost (B_2) = Cost B_1+rental value of own land (Rs.)	
Rental value of own land (Rs.)	2000
Total (B2) (Rs.)	25737
Cost (C) = Cost B_2 + cost of own family labour (Rs.)	
Cost of own family labour (Rs.)	3000
Total (C) (Rs.)	28737

Table 2 Income from cultivation of wheat in one acre of land

Components	Outcomes
Total Yield (q/acr)	14.5
Farm Gate Price* (Rs/q)	1700
Total Income (Rs./acre)	24650
B:C Ratio	0.85

Maize

Maize is the second most important crop of the location. The people also make *Roti* with the maize flour. It is a *Kharif* crop. According to the FGD farmers in the location cultivate either cotton or maize. As in cotton more investment required who has the capability to do so they go for the cotton cultivation, others do maize. According to them this is a 3-4 months crop. It needs a temperature of 25-30 degree centigrade temperature for the cultivation according to the information from the agriculture expert of Kalukheda KVK. A loamy soil is ideal for the cultivation but the soil of Bajna is also good for maize cultivation.

Figure 2 Maize

Economics of maize cultivation for one acre of land

Now if we observe the table no 3 and 4 it is clear that the farmers do not even earn from maize cultivation what they invest. The table no 4 clearly express that if one farmer invest Rs.100 from maize cultivation they get back

only Rs.46 from the investment. From the FGD the information was collected that 9 quintal of maize can be produce by the farmers from one acre of land in the location. But according to the KVK even with the indigenous seed if proper package of practices are followed the production may vary from 15-20 quintal per acre of land. On the other hand the farm get price is only Rs.1300 where the minimum support price by the government during 2019-2020 production year is Rs.1700 what the farmers are not getting due to the lack of knowledge and poor communication with the main stream. While talking with the local middleman he expressed he even purchased one quintal of maize in Rs.1800 this production year, but those maize are well graded and standardized. But most of the farmers do not do grading and standardization in the farm level as a result they sell their good and bad both quality product in a price of low grade material which incurs a huge loss to the farmers.

Table 3 Cost of Production to cultivate maize in one acre of land

Components	Costs
Land share for the crop in the season	
Cost (A_1)	
Cost of hired labour for land preparation (Rs.)	1000
Hired labour cost for sowing and transplanting (Rs.)	0
Cost of hired machinery (Rs.)	1500
Cost of own machinery (Rs.)	0
Cost of planting material (Rs.)	360
Cost of plant protection (Rs.)	0
Cost of mulching (Rs.)	0
Cost of manure (organic) (Rs.)	0
Cost of Fertilizer (inorganic) (Rs.)	2550
Hired labour cost for weeding and hoeing (Rs.)	0
Cost of irrigation (Rs.)	2500
Hired labour cost for harvesting and post-harvest operations (Rs.)	0
Miscellaneous cost (Rs.)	1000
Total (A_1) [Rs.]	8910
Cost (A_2) = Cost A_1+ rent on leased in land (Rs.)	
Rent on leased in land (Rs.)	0
Total (A2) (Rs.)	8910
Cost (B_1) = Cost A_2+interest on own fixed capital (Rs.)	
Interest on own fixed capital (Rs.)	11000
Total (B1) (Rs.)	19910
Cost (B_2) = Cost B_1+rental value of own land (Rs.)	
Rental value of own land (Rs.)	2000
Total (B2) (Rs.)	21910
Cost (C) = Cost B_2 + cost of own family labour (Rs.)	
Cost of own family labour (Rs.)	3000
Total (C) (Rs.)	24910

Table 4 Income from cultivation of maize in one acre of land

Components	Outcomes
Total Yield (q/acr)	9
Farm Gate Price* (Rs/q)	1300
Total Income (Rs/acre)	11700
B:C Ratio	0.46

Cotton

Cotton is the only cash crop of the location. People who have the capacity to incur the cost of cotton cultivation usually done it during the *Kharif* seasons. This crop take around 6-8 month on the field. This crop need an ideal temperature of 21-37 degree centigrade, where the locations average temperature during the cultivation time June to January is 27-30 degree centigrade. For the cultivation of cotton a black soil is very suitable. According to the KVK Cotton can be successfully grown on all soils, except sandy, saline, or waterlogged types.

Economics of cotton cultivation for one acre of land –

Table 5 Cost of Production to cultivate cotton in one acre of land

Components	Cost
Land share for the crop in the season	
Cost (A_1)	
Cost of hired labour for land preparation (Rs.)	2000
Hired labour cost for sowing and transplanting (Rs.)	0
Cost of hired machinery (Rs.)	1500
Cost of own machinery (Rs.)	0
Cost of planting material (Rs.)	360
Cost of plant protection (Rs.)	0
Cost of mulching (Rs.)	0
Cost of manure (organic) (Rs.)	0
Cost of Fertilizer (inorganic) (Rs.)	3000
Hired labour cost for weeding and hoeing (Rs.)	0
Cost of irrigation (Rs.)	3000
Hired labour cost for harvesting and post-harvest operations (Rs.)	0
Miscellaneous cost (Rs.)	1000
Total (A_1) [Rs.]	10860
Cost (A_2) = Cost A_1+ rent on leased in land (Rs.)	
Rent on leased in land (Rs.)	0
Total (A2) (Rs.)	10860
Cost (B_1) = Cost A_2+interest on own fixed capital (Rs.)	
Interest on own fixed capital (Rs.)	29333
Total (B1) (Rs.)	40193
Cost (B_2) = Cost B_1+rental value of own land (Rs.)	
Rental value of own land (Rs.)	4000
Total (B2) (Rs.)	44193
Cost (C) = Cost B_2 + cost of own family labour (Rs.)	
Cost of own family labour (Rs.)	4000
Total (C) (Rs.)	48193

Table 6 Income from cultivation of cotton in one acre of land

Components	Outcomes
Total Yield (q/acr)	11
Farm Gate Price* (Rs/q)	5000
Total Income (Rs/acre)	55000
B:C Ratio	1.14

Now if we observe the table no 5 and 6 it is clear that the farmers get Rs114 after investing Rs.100 in cotton cultivation. According to the farmers an yield of 10-11 quintal is expected from one acre of land, and a value of Rs.5000 people get per quintal of cotton, but in the production year 2019-2020 the government MSP was Rs5150 what the farmers do not able to get and due to the lack of field grading and standardization farmers do not get a good price from the middle man. The middleman expressed that he even purchase good quality graded cotton at Rs.5300 per quintal this year.

Figure 3 Cotton

Soybean

Soybean is the major cultivated oilseed in the region. This is also done during the *kharif* season. It is a crop of 2-4 months. The ideal temperature for this crop is around 15-32 degree centigrade. According to the meteorological data from (data.org) during the month of June to September this location record an average temperature from 26-32 degree centigrade. According to the KVK a loamy soil is very good for cultivation of soybean but the soil of Bajna is also suitable for the cultivation.

Figure 4 Soybean

Economics of soybean cultivation

Now if we observe the table no 7 and 8 it is clear that for investing Rs.100 farmers are getting Rs.131 back from soybean cultivation. Where the farmers are getting a yield of 12 quintal per acre the KVK express the average yield of 14-20 quintal per acre. The selling price is only Rs.2700 per quintal where in the production year 2019-2020 the minimum support price for the soybean was Rs.3399 in Madhya Pradesh, and the local middleman told that the good quality beans he purchased in Rs.3450 per quintal this year. In this case also lack of adequate knowledge, communication, information gap, farm grading and standardization farmers remain deprived from their share in the market.

Table 7 Cost of Production to cultivate Soybean in one acre of land

Components	Cost
Land share for the crop in the season	
Cost (A_1)	
Cost of hired labour for land preparation (Rs.)	1000
Hired labour cost for sowing and transplanting (Rs.)	0
Cost of hired machinery (Rs.)	1500
Cost of own machinery (Rs.)	0
Cost of planting material (Rs.)	1480
Cost of plant protection (Rs.)	0
Cost of mulching (Rs.)	0
Cost of manure (organic) (Rs.)	0
Cost of Fertilizer (inorganic) (Rs.)	0
Hired labour cost for weeding and hoeing (Rs.)	0
Cost of irrigation (Rs.)	0
Hired labour cost for harvesting and post-harvest operations (Rs.)	0
Miscellaneous cost (Rs.)	1000
Total (A_1) [Rs.]	4980
Cost (A_2) = Cost A_1+ rent on leased in land (Rs.)	
Rent on leased in land (Rs.)	0
Total (A2) (Rs.)	4980
Cost (B_1) = Cost A_2+interest on own fixed capital (Rs.)	
Interest on own fixed capital (Rs.)	14667
Total (B1) (Rs.)	19647
Cost (B_2) = Cost B_1+rental value of own land (Rs.)	
Rental value of own land (Rs.)	2000
Total (B2) (Rs.)	21647
Cost (C) = Cost B_2 + cost of own family labour (Rs.)	
Cost of own family labour (Rs.)	3000
Total (C) (Rs.)	24647

Table 8 Income from cultivation of Soybean in one acre of land

Components	Outcomes
Total Yield (q/acr)	12
Farm Gate Price* (Rs/q)	2700
Total Income (Rs/acre)	32400
B:C Ratio	1.31

Overview of Animal Husbandry in the location

Around 65 per cent of the families do animal husbandry in the location. Mainly three enterprises are present in the location *i.e.* dairy, goat rearing and Poultry. Dairy milk production is mainly for home consumption. Poultry and goat rearing is done as savings in the family. Very few people do this in a commercial purpose.

Dairy

This is another dimension of farming. According to the FGD and samples taken 40 per cent household have cows or buffalo. They use it for plowing and milk production. In the location very few people rear cows for commercial milk production. All the cow verities are indigenous. According to the KVK Murra and Malwa are two well-known verities of the location. Daily this two verities give milk on an average of 8liter and 5liter respectively. On an average 3 females and one mail cow is observed in each family as a unit.

Figure 5 Dairy

Economics of Dairy

Table 9 Cost of rearing in Dairy (3 female and one male)

Components	Cost (Rs)
Cost for shed	15000
Price for cows	130000
Feeding	20000
De worming	400
Medicine/ Vaccination	400
Miscellaneous	2000
Farmers own family labour	5000
Total	172800

Table 10 Income from the Dairy enterprise

Source	Income (Rs)
Milk Production	180000
Calf	60000
Total	240000
Benefit cost Ration (B:C)	1.3

From the table no 9 and 10 it is clear that dairy is a profit making enterprise in the location, by investing Rs.100 people can earn up to Rs.130. As in the location most nontribal people are vegetarian the demand for the milk is very high. But the problem is due to lack of proper supply of supplementary feeding and green fodder the milk production reduced to 5 liter a day from the expectation of 8 liter a day. If this things can be improved then farmers can get more income.

Poultry

Poultry is the supportive or risk fund of the farmers, in case of sudden money requirements they sell the birds. On an average 3 female and 2 male birds are observed as a unit size in the location. They do not sell eggs but keep it for hatching of the chicks.

Figure 6 Poultry

Method of production
The production method which is followed by people all over the world are mainly three types open, cage or night shelter system.

Open method of production – In this case the birds are released for the scavenging and not given any shelter to stay, in case of rain they take shelter under any tree or under any shed outside available.

Cage method of production – In this case the birds are totally stayed in controlled condition in the cages so that the predators and other birds cannot come in contact of the poultry birds. In this method compulsory supplementary feeding is needed.

Night shelter method of production – In this case the birds are released for the scavenging in the day time and come inside the home in night, in the case of rain and winter they stay in home only until hungry.

In Bajna 100 per cent people do the nigh shelter method of production.

Economics of Poultry enterprise

Table 11 Cost of rearing in Poultry enterprise (3 female and two male)

Components	Cost (Rs)
Cost for shed	3400
Price for chicks	1000
Feeding	1250
De worming	175
Medicine	450
Miscellaneous	150
Farmers own family labour	650
Total	7075

Table 12 Income from the Dairy enterprise

Source	Income (Rs)
Meat Production	15390
Egg	0
Total	15390
Benefit cost Ration (B:C)	2.1

From the table no 11 and 12 it is clear that poultry is a profit making enterprise. Where by investing Rs.100 farmers can earn Rs.210. But according to the farmers the mortality of the poultry is very high and the risk of predators also. If it can be commercially cultivated then the farmers will get a better income from it.

Goat Rearing

Goat is the poor man's ATM. In case of the sudden need of the big amount money people directly use their goats to mitigate the financial crisis. In the location every family has a unit flock of 5 female and one male in a house. Mainly the Malwa and Sojat verity they rear in the locations. Within 16 months goat become mature and a female can give birth of two calves at a time.

Figure 7 Goat Rearing

Economics of goat rearing

Table 13 Cost of rearing in goat rearing under two reproduction cycle (5 female one male and 18 calf)

Components	Cost (Rs)
Cost for shed	16800
Price for goats	25000
Feeding	14400
De worming	805
Medicine	1500
Miscellaneous	1000
Farmers own family labour	650
Total	60155

This table describe about the cost of rearing under two reproduction cycle of a unit of 5 female and one male goat. One female goat gives 2 calf at a time. So if we calculate with 10 per cent mortality rate of the calf then 18 calf will be reproduce newly. The above table is the cost of rearing of all the goat and calf until they become adult.

Table 14 Income details from goat rearing

Source	Income (Rs)
Adult goat selling	90000
Total	90000
Benefit cost Ration (B:C)	1.5

From the above table it is clear that this enterprise is a profit making enterprise and can give a return of Rs.150 by investing Rs.100 in it. According to the KVK is supplementary feeding and green fodders can be supplied the

growth rate will be more and the average weight of goat will increase from 10kg to 15 kg at that time farmers will earn little more from this enterprise.

Migration

Migration and labour work is an integral part of the livelihood in the location. The study location situated in one of the dry states of India *i.e.* Rajasthan. Only 2 seasons in a year water is available for cultivation (*Rabi* and *Kharif*). Rest of the months in a year people over the location become unemployed. So they try to find alternative source of earning. They leave their house go to nearby cities and even cross the state borders in search of livelihood. There they do unskilled labour works. They work either as agricultural labour in the harvesting seasons or do constriction works.

Time of migration

After the harvesting of wheat people start to migrate, it vary from last week of March to the first week of April and come back before the monsoon starts.

Period of migration

It depends on the family need, if the family is small and the bread earners are less they do migration for less days if they have sufficient land in the native to cultivate. On the other hand the livestock is also another component. If in the family livestock is their other than the agriculture then there is an alternative source of income. In such cases the migration become very rare if there is no need in the family. But if the number of maily members is high and the earning in native is not sufficient people migrate by keeping few family members in native. The period of migration varies from 3-6 months.

Type of migration

If we try to understand the type of migration on the aspect of period of migration, all the migration happened in the location are seasonal migration. But if we study in depth we can find another aspect where this migrations vary. If we watch this dimension of study through the lens of number of family members migrate we can find two types of migration here *viz*. Family migration and only mail migration.

Family Migration

In this case the whole family migrate to the places where they get additional livelihood. It has been observed that the small and nuclear families do such kind of migration. Mostly the unit size of this families are one couple (adults) and two kids (one teenager and one infant). The couples use to work as labour and the teenager take care of the infant, drinking water and cooking during the work hours. Usually this families do not do any type of livestock rearing in the household level.

Only mail migration

In this case the families are big and joint families, where only males migrate to the place of alternative livelihood, the kids, women and the aged members of the family stay in the home, take care of the livestock and small scale agro-activities.

Table 11 Details of migration mobility, work and wage

Places	Works	Distance (Km)	Wage	
			Skilled (Rs.)	Unskilled (Rs.)
Nimaz	Agricultural Labour	200	-	350
Ratlam	Construction Labour	50	700	400
Gujrat	construction Labour	400	700	550
Malwa Region	Agricultural Labour	150	-	350
Rajasthan	Stone Mining	450	600	350
Mandosar	construction Labour	100	700	400

Place of Migration

The table no 15 is representing the major places where the people from the location usually migrate. This places are Nimaz which is 200 km away from the location, Ratlam 50 km away, Gujrat 400 km away, Malwa region 150 km away, Rajasthan 450 km away and Mandosar which is 100 km away from the study location. Among this Ratlam, Gujrat and Mandosar are the urban areas and the others are rural are.

Works done during migration

As the people of the location are mainly farmers they only know the farming other than that in any sector they work as the unskilled labour. They work in the agricultural fields during the harvesting season, they work as unskilled constriction labour in in different urban areas and also work in marble stone mining areas of Rajasthan.

Wage

For different activity and different places the wage can change. If we see the agricultural labour work it is Rs.350 everywhere but in the case of Contraction work the skilled labour wage is Rs.700 in every place but the unskilled labour wage is Rs.400 in Ratlam and Mandosar but Rs.550 in Gujrat. For mining work the skilled labour wage is Rs.600 and unskilled labour wage is Rs.350.

Gender dynamics in migration

From the FGD it was found that the tendency of migration in male is more than the female in location. Most of the time female stay back to take care of home and family and male went to migration. But in the case of family migration women workload is more. From the daily calendar of male and female during the migration time shows that the women get a lesser sleeping and recreation time than man as they have to work in both the places as labour and household work also. In such case they have to face a huge drudgery during the migration days (red indicators are indicating male daily calendar and the blue one is for the female).

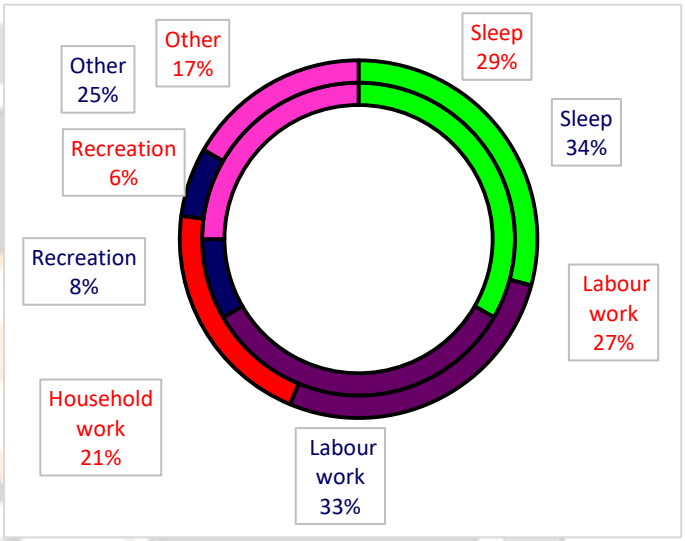

Chart 1 Gender wise work distribution during the migration time

Accommodation

According to the migrants if they do construction work then they can stay in the construction sites but in the case of agro-labour or mining work they have to stay under tree or under the sky. In such case they usually bring plastic sheets and make tent out of it. For food they have to cook their own with the available grocery in the location. For medical services they usually find some local magician or if there is hospital nearby they went to the places. During the migration lot of medical issues came and even accidents happen so the expenditure in the medication is one of the big linkages in their saving.

Causes

It is clear that the people migrate as they want to find a better income source but still there is a question that if they can do the work in Ratlam only 50km away then why they go to distant places like Gujrat or Rajasthan? When this question was asked in to the FGD many answers came forward like –

- Better wage rate
- Good connection with contractor.
- Low job availability in Ratlam.
- Job security.
- Personal security etc.

Economics of Migration

Table 12 Economics of Different types of migration

Work	Family Migration (2 adult one Teen one infant)					
	Income	Expenditure				Net Profit
	Wage	Food	Medical	Shelter	Total	
Agricultural Labour	63000	54000	3000	1000	58000	5000
Stone Mining	63000	54000	3000	1000	58000	5000
construction work	81000	54000	3000	0	57000	24000
Work	Only Male Migration (1male)					
	Income	Expenditure				Net Profit
	Wage	Food	Medical	Shelter	Total	
Agricultural Labour	31500	18000	1500	1000	20500	11000
Stone Mining	31500	18000	1500	1000	20500	11000
construction work	40500	18000	1500	0	19500	21000

The table no 16 is representing the economics of two types of migration in the location. In the case of the family migration the families get a net profit of Rs.5000 in both the cases as agricultural labour or in the mining, but in the case of construction work they get Rs.2400 net profit from three months hard work. Now coming to the only male migration as they migrate alone the income is low and the expenditure on food is also very low. But due to the bad habit of alcohol there is a huge drainage of money and the medication also cost them more. As per the above table this type of migration get a net profit of Rs.11000 from the agricultural labour work and mining and Rs.21000 from the construction work.

Table 17 Details of different type of Farming system and relationship with migration

Case	Details	Net Income	B:C Ratio
Case 1	Wheat + Maize	-17297	0.68
Case 2	Wheat + Soybean	6216	1.12
Case 3	Wheat+ Cotton	2720	1.04
Case 4	Wheat +Maize+ Poultry	-8982	0.85
Case 5	Wheat + Soybean+ Poultry	14531	1.24
Case 6	Wheat +Cotton +Poultry	11035	1.13
Case 7	Wheat + Maize+ Dairy	51903	1.23
Case 8	Wheat + Soybean +Dairy	75417	1.34
Case 9	Wheat +Cotton +Dairy	71920	1.29
Case 10	Wheat + Maize+ Goat rearing	12548	1.11
Case 11	Wheat + Soybean +Goat rearing	36061	1.32
Case 12	Wheat +Cotton+ Goat rearing	32565	1.24
Case 13	Wheat +Maize +Poultry +Dairy	60218	1.26
Case 14	Wheat + Soybean +Poultry +Dairy	83732	1.36
Case 15	Wheat+ Cotton+ Poultry+ Dairy	80235	1.31
Case 16	Wheat +Maize+ Poultry+ Goat rearing	20863	1.17
Case 17	Wheat + Soybean+ Poultry+ Goat rearing	44376	1.37
Case 18	Wheat+ Cotton+ Poultry+ Goat rearing	40880	1.28
Case 19	Wheat + Maize+ Dairy+ Goat rearing	81748	1.29
Case 20	Wheat + Soybean+ Dairy+ Goat rearing	105262	1.37
Case 21	Wheat+ Cotton+ Dairy+ Goat rearing	101765	1.33
Case 22	Wheat +Maize +Poultry+ Dairy+ Goat rearing	90063	1.31
Case 23	Wheat + Soybean+ Poultry+ Dairy+ Goat rearing	113577	1.39
Case 24	Wheat+ Cotton+ Poultry+ Dairy+ Goat rearing	110080	1.35
Case 25	Wheat + Maize+ Family Migration	-5963	0.95

Case 26	Wheat + Soybean +Family Migration	17550	1.16
Case 27	Wheat+ Cotton+ Family Migration	14053	1.10
Case 28	Wheat + Maize +Male Migration	-2963	0.96
Case 29	Wheat + Soybean +Male Migration	20550	1.28
Case 30	Wheat+ Cotton +Male Migration	17053	1.18
Case 31	Wheat +Maize +Poultry +Male Migration	5352	1.07
Case 32	Wheat + Soybean+ Poultry+ Male Migration	28865	1.36
Case 33	Wheat+ Cotton+ Poultry+ Male Migration	25368	1.24
Case 34	Wheat + Maize+ Dairy +Male Migration	66237	1.27
Case 35	Wheat + Soybean +Dairy +Male Migration	89750	1.37
Case 36	Wheat+ Cotton +Dairy +Male Migration	86253	1.32
Case 37	Wheat + Maize+ Goat rearing+ Male Migration	26882	1.20
Case 38	Wheat + Soybean +Goat rearing+ Male Migration	50395	1.38
Case 39	Wheat+ Cotton+ Goat rearing+ Male Migration	46898	1.30
Case 40	Wheat +Maize +Poultry +Dairy +Male Migration	74552	1.30
Case 41	Wheat + Soybean+ Poultry+ Dairy+ Male Migration	98065	1.39
Case 42	Wheat +Cotton +Poultry +Dairy+ Male Migration	94568	1.34
Case 43	Wheat +Maize +Poultry +Goat rearing +Male Migration	35197	1.25
Case 44	Wheat + Soybean +Poultry +Goat rearing+ Male Migration	58710	1.42
Case 45	Wheat +Cotton+ Poultry+ Goat rearing+ Male Migration	55213	1.34
Case 46	Wheat + Maize +Dairy +Goat rearing+ Male Migration	96082	1.32
Case 47	Wheat + Soybean +Dairy+ Goat rearing+ Male Migration	119595	1.39
Case 48	Wheat+ Cotton+ Dairy+ Goat rearing +Male Migration	116098	1.35
Case 49	Wheat +Maize +Poultry +Dairy +Goat rearing+ Male Migration	104397	1.33
Case 50	Wheat + Soybean +Poultry +Dairy +Goat rearing +Male Migration	127910	1.41
Case 51	Wheat +Cotton +Poultry +Dairy +Goat rearing+ Male Migration	124413	1.37

This above table is describing about the different farming system and their relationships with migration in the location. Through the personal interview, discussions and focused group discussions it can be found that in the location there is twenty four different type of farming systems. When they are incorporated with the two types of migration the number of livelihood system has been found is fifty one in the location. This above table contains the brief of net income and the benefit cost ration of all fifty one livelihood systems. Now we will compare the farming system with the presence of migration in their livelihood here below –

The case 1, case 2 and case 3 is purely agro based farming system, where the case 1 is advised to be avoid at any cost in the location as it is a loss making farming system with a benefit cost ration of only 0.68 where the net loss is Rs.17297, on the other hand the other two *viz*. case 2 and 3 are somehow satisfactory with the benefit cost ratio of 1.12 and 1.04 respectively where they are earning an net income of Rs.6216 and Rs.2720. Now the question comes as there is a very less revenue from this farming systems should people migrate or not. Now if we take the case 25, case 26 and case 27 is the same farming system which is incorporated with the family migration. Here also the case 25 should be avoided by the people in the location as it gives a net loss of Rs.5963 where the other two cases *viz*. case number case 26 and 27 is giving a benefit cost ratio of 1.16 and 1.10 respectively. Now it is clear that with the existing farming system of their family if they do migration they are getting an improvement in the income. But is it necessary? Once they do the family migration they are losing the opportunity to adopt the other farming system cases *i.e.* Case 4, Case 5, Case 6 …… Case 22, Case 23 and Case 24. On the other hand with a minimum investment of Rs.7075 they can transform their farming system from Case 1, Case 2 and Case 3 to Case 4, Case 5 and Case 6. Where they can achieve a better benefit cost ratio of 0.85, 1.24 and 1.13 than the benefit cost ratio Case 25, Case 26 and Case 27 which id 0.95, 1.16 and 1.10 respectively. And they can extend their farming systems by choosing more additional enterprises over time and can adapt any of the farming system between *i.e.* Case 4, Case 5, Case 6 …… Case 22, Case 23 and Case 24. Like this they can avoid the drudgery of migration and can lead a peaceful life in the location as there is no extra benefit in migration for them.

Now coming to the only male migration. Basically they are the part of either joint or an extended family who migrate. As the male members only migrate during the non-agricultural seasons so this type of migration do not hamper the agriculture in the family, and as the women kids and the old age persons stay back in home they can take care of the other family enterprises. So they can adapt any of the farming system between Case 1, Case 2 …….. Case 23, Case 24 and at the same time the male members can go and earn as a migrant labour in the nearby places. This migration will add Rs.14333 (one male) in each farming system they follow. If the males

stop they bad habit of alcohol then this amount can increase. Basically this males are in disguised unemployment during the no-agricultural season as a part of a big family they pay the opportunity cost of Rs.14333 if they stay back home. So it is better to migrate and do some more income for the family for a better stander of living.

For Better Understanding a conceptual framework is given below –

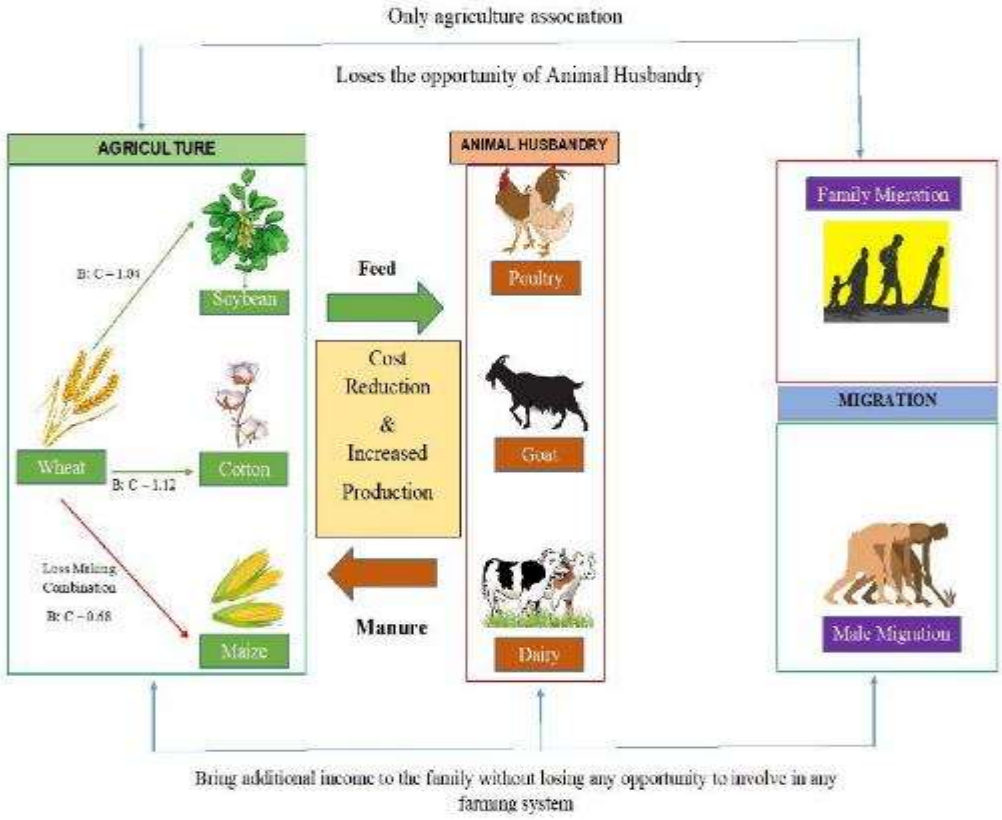

Figure 8 Farming System And Migration Conceptual Framework

Conclusion

Madhya Pradesh is one of the dry states of India. Bajna block do not have any natural water source. The farming is totally dependent on the rain water. Only two times cultivation done in the location. Due to that people over there suffers from severe economic crisis during the summer seasons. As a result they start to migrate for any additional income source. Doing animal husbandry is also quite common in the place. Farming and the migration are two parallel dimensions of livelihood in the location. Both are equally important for the people. Agriculture is their primary livelihood, other than that different allayed activities and migrant labour work maintain the balance in their economy. People are well equipped with agricultural know how and skilled, but the adverse climatic conditions and the topography do no permit a yearlong agricultural activity. The main problem is the availability of water. In such case people start to migrate. But the family migration is not a good option, other than that the families can do any other livelihood activity which do not need much water. Keeping all this mind some recommendations are made to the people of the location is here below –

- ♣ Avoid the Case one (Wheat and Maize cultivation) farming system. This is a loss making combination.
- ♣ Stop Family migration, instead of that adopt any farming system from Case 4 to Case 24. It will be more safe and Profitable.
- ♣ The main cause of only male migration is disguised unemployment, in such case these males can be trained with activities like mushroom cultivation and bee keeping, which can become an FPO in future.
- ♣ To increase the productivity without increasing input cost zero budget natural farming can be started in the location which will be very viable.

♣ To increase Profitability a better agro-communication system should be implemented to bridge the gap between farmers and relevant information.

But this recommendation are made with the possibility of success and failure equally, but in future to understand the scope of this activates in the location studies can be organized.

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