Progress report
(2009-2010)

on

Enhancing Livelihood of Rural Women through Livestock Production

Division of Agricultural Extension
ICAR Research Complex for NEH Region
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Enhancing Livelihood of Rural Women through Livestock Production

1.Project title: **Enhancing Livelihood of Rural Women through Livestock Production**

2. Investigators:
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3. Objectives:

- Assessment of socio-economic conditions and women's role, gender issues, policies and programmes in livestock production
- Identification and refinement of appropriate technology to address the gender needs
- Facilitate appropriate intuitional mechanism and capacity building for up scaling of appropriate technologies

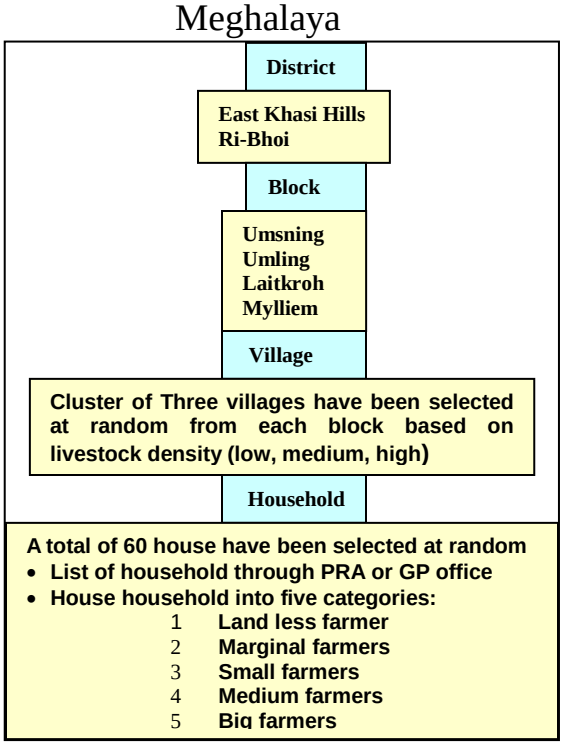
4. Start of project: 2009-2010

I. Methodology adopted in the study

1. Methodology for sampling plan

a. Site selection

The major objective of site selection is to identify the locations where livestock plays an important role in the livelihood improvement of tribal people. The site for data collection was selected using multistage random sampling techniques. The main domain was selected randomly from district based on production system (High and Low altitude) and livestock density. The livestock population was collected from livestock census data. For each block three villages were selected taking livestock population into consideration (low, medium and high). From each village cluster 60 households were selected randomly.



b. Selection of household

In each stratum, the sample household was selected based on the proportional allocation as given below. It required a total of 60 respondents from each village/cluster of village in different categories.

2. Collection of Secondary Data on Pig Production System

a. Key informant interview

- Community leaders
- Local community representatives (headman, secretary, etc.)
- Local community representatives women's group

Interviews with key informants like community leader, village headman, secretary, SHG leader and leader of women's group.

b. Informal interviews

A cross-section of rural community members including village leaders, men and women, leaders and members of women's group were conducted.

II. Findings from Secondary Data on Pig Production

II.1. Agricultural and livestock stats in Meghalaya

Meghalaya (Abode of the clouds), located south of Assam, called the Scotland of East by the colonial rulers long ago, is small state with an area of 22,429 sq. kms. and with a total population of 2,318,822 (2001 Census). The state of Meghalaya has seven districts namely, East Khasi Hills, West Khasi Hills, East Garo Hills, West Garo Hils, South Garo Hills, Ri-Bhoi and the Jaintia Hills. The bulk of the population belongs to three major tribal communities i.e., the Khasis, the Garos and the Jaintias (also better known as the Syntengs or the Pnars). In Meghalaya, the percentages of rural and urban tribal population are 86.44 per cent and 13.56 per cent respectively.

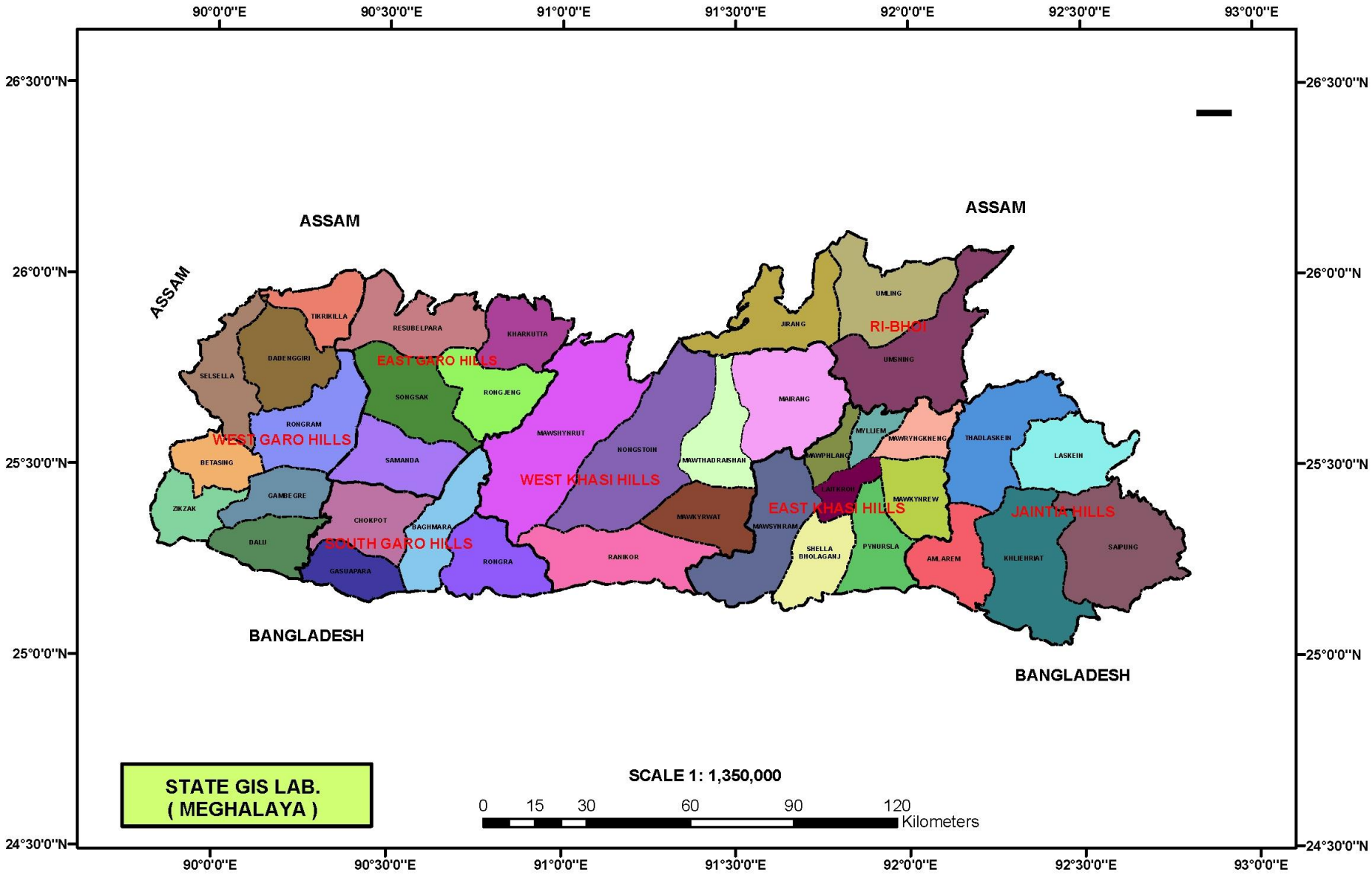
Agricultural operations having limitations in Meghalaya due to its topography, climatic conditions and socio-economic conditions claiming only about 10 per cent of the total land for cultivation, livestock and poultry provide the only alternative avocation the villagers fall upon for a subsidiary living. The topography, climate and socio-economic conditions makes the people to depend more on Animal Husbandry activities mainly due to the practice of traditional agriculture in hilly areas allows only about 10 per cent of the total land in the state. Thus, livestock and poultry farming is the only alternative avocation on which the villagers can fall upon for a subsidiary living.

II.2. Total livestock and poultry population (2003) in thousands

State	Cattle	Sheep	Goat	Pig	Horses/ ponies	Total livestock	Total poultry
Meghalaya	767	18	327	419	2	1533	2821
NEH region	3048	57	1379	2273	16	7043	14798
India	185181	61469	124358	13518	751	385620	489012

Source: Dept. of Animal Husbandry and Dairying, Govt. of India

C & RD BLOCK MAP OF MEGHALAYA



II.3. Total livestock population and density/sq.km

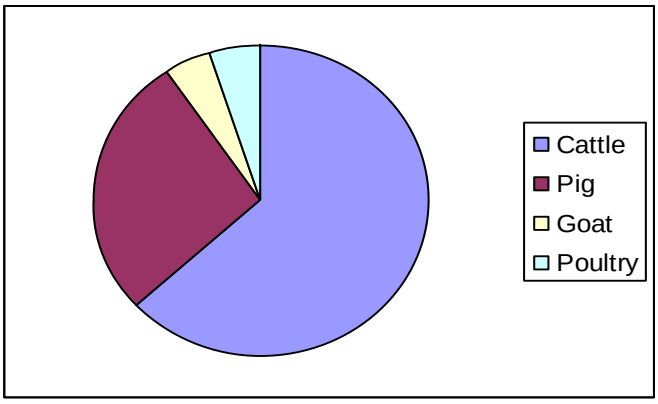
Livestock	Population	Percentage of population	Density/sq.km	Density/000 persons
Cattle	635	21.23	29.20	NA
Buffalo	33	1.10	1.50	NA
Sheep	22	0.75	1.03	13
Goats	195	6.52	8.72	110
Horse/ponies	2	0.06	NA	NA
Pig	280	9.36	13.11	166
Poultry	1824	60.98	81.42	1028

Source: Dept. of Animal Husbandry and Dairying, Govt. of India

II.4. Production of meat, milk and egg production

The details of livestock production, meat production, population density and per capita consumption of different kinds of meat are presented in the figure and table.

Fig: Contribution of Meat production from different livestock (%)



Livestock production in Meghalaya

The production of beef and pork in Meghalaya is given in the table below:

Products	Requirement (thousand tonnes)	Deficit (thousand tonnes)
Beef	35.8	12.3
Pork	14.5	5.5

Veterinary institute and other Infrastructure facilities for the farmers

The numbers of veterinary institute and other infrastructure facilities for farmers available in the state is enlisted in tabular form for simpler eye-view.

Item	Nos.
Veterinary Hospitals/polyclinics	4
Veterinary Dispensaries	59
Veterinary aid centre/stockmen mobile/ Dispensaries	-

Artificial Insemination centre	87
Cattle breeding farms	5
Pig breeding farms	10
Poultry breeding farms	10
Goat breeding farms	1
Sheep breeding farms	1
Rabbit farms	2
Fodder seed production farms	4
Bull station and Frozen semen stations	3
Diseases Investigation laboratories	-

Centrally sponsored piggery development schemes

Livestock development schemes and programmes were developed by the government for the benefit of the livestock farmers, some are named as under:

1. Border areas special piggery development programme
2. Integrated piggery development
3. Piggery production for unemployed
4. Piggery production for SF/MF&AL
5. Piggery production under SLBP
6. Distribution of piggery units to farmers
7. Foot and mouth diseases control
8. Animal diseases surveillance and systematic control of livestock diseases

Socio-Economic Profile of the Selected Villages

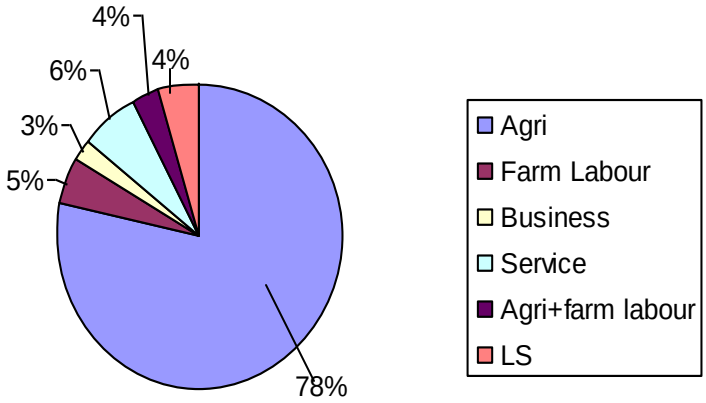
A. Social

The study revealed that most of the families were headed by male (62.50%) and the few families (37.50%) headed by female is due to non-availability of elderly male in the family. Majority of the population (99.3%) are Christians and others (0.8%) comprise of Seng Khasi (local traditional religion), Hindu, Buddhist and Muslim. The interviewees belonged to the Scheduled Tribes (99.3%) and Scheduled Caste (0.7%) category whereby the latter is result of migration of minority groups. In the Khasi society, family structure was mainly composed of Nuclear family (75.3%). Since the youngest daughter is the heir to the ancestral property and the parents reside with them while the rest of the siblings move out to settle independently.

Head of family	Male : 62.50% Female : 37.50%
Religion	Christian : 99.2% Others : 0.8%
Caste/category	ST :99.3% SC :0.7%
Family structure	Nuclear :75.3% Joint :24.7%

Family occupation

The main family occupation is found to be agriculture (78%) among the respondents, the next comes the section of people holding service (6%) like school teacher, office goer, etc. whereas 5 per cent of the people had adopted farm labour as their main occupation. Agriculture alongwith farm labour is the main source of income for 4 per cent of the respondents while livestock farming in addition to service is taken up by 4 per cent of the respondents.



Subsidiary occupation

The respondents had also adopted many subsidiary occupations with most of them practicing livestock farming (65%) for subsidiary income while service was avocating 10 per cent of their subsidiary income. 7.5 per cent of the people had taken up business to increase their source of income while some were dependent on occupations like farm labour (5%), livestock farming-service (2.5%), agriculture-farm labour (2.5%), livestock farming-farm labour (2.5%) and agriculture (2.5%).

Livestock farming	65%
Service	10%
Business	7.5%
Livestock +service	2.5%
Agri+ Farm labour	2.50%
Farm labour	5%
Agriculture	2.5%
Livestock+farm labour	2.5%

Family background

From the study conducted at the selected village level the female population was found to be higher (50.9%) as compared to the male gender (49.1%) in the society. As we come across the marriageable age of the village folk, youngsters of the age group 20-25 years settle down independently. Their main occupation found to be agriculture they depend on agriculture for their livelihood. Focusing on the educational status, females are found to be much more educated than the males and the educational level is also comparatively high, as a result the drop out cases in males is eventually found to be high. The earnings of the respondents is perceived to be a sum of Rs. 6635/year/head on an average.

Gender	Male : 50.9% Female : 49.1%

Marital status	Age: 20-25 years, Marriage system different
Occupation	Agriculture
Education	Literacy rate in female (87%), middle: 22.6%(Female), 14.68% (male), High-26%, Graduate-5% Education level high in female
Income	Rs 6635/year/head

Organizational membership

The organizational membership here includes the NGOs, Village Council, Women's organizations, Student's Union, local federations and SHGs which altogether play an important role in the socio-economic development of the society. Male members of the society play a major contribution in the organizational membership. No women participated in the organizational membership as either ordinary member or office bearer except in the women's SHG and Women's Organization

Organization	Male		Female	
	Office bearer	Ordinary member	Office bearer	Ordinary member
NGO	4.55%	None	None	None
Village council	13.64%	14.5%	14.5%	None
Women's Organization	None	None	None	13.64
Student union	4.55%	None	None	None
Federation of Khasi-Jaintia Association	4%	None	None	None
SHGs	13.64%	22.73%	4.5%	40.91%

B. Economic

Ownership of fixed assets: Female is entitled to 100 per cent ownership of assets, in Meghalaya since tribal people of the village follow matrilineal system of society. Hence the female has complete ownership rights.

Irrigation

The farmers depend mostly on rainfall for irrigation, 70 per cent of them have rainfed fields while 30 per cent irrigated their fields adopting channel irrigation and drip irrigation. For source of water people in the villages rely upon ponds 98 per cent of which belongs to the community and 2 per cent are private ponds.

Irrigated	0-30%
Rainfed	30-100%
Ponds	2% private 98% community

Type of Housing

Construction of house in the villages is done by the villagers themselves who are well acquainted with it. Hence, majority of the respondents lived in mixed type of house (65%), 30 per cent lived in kutcha houses and a minimum of 5 percent population lived in pucca type of dwellings.

Experience in livestock farming

87 per cent of the respondents had experience in backyard poultry farming where almost every household reared poultry for subsidiary income, the next immediate successor being pig farming (86%) where pigs are reared traditionally. Dairy rearing experience although is comparatively less coming up to merely 46 per cent from the respondents, this is due to the fact that dairy animals are kept for manure and meat purpose, not for milk as milk consumption in the villages is nil. They find more labour consuming for care and maintenance of cows. Only 7 per cent are keeping goat as the market value of venison in the village is comparatively low. Other livestock animals like rabbit are kept for new ventures and hobby as this does not earn them revenue.

Piggery	86%
Dairy/cattle	46%
Backyard poultry	87%
Goat	7%
Others, rabbit	2%

Farm machinery and equipments

The farm machineries adopted by the interviewees is low, due to lack of awareness about the new modern technologies, unaffordable cost of technology and farm machineries.

Tractor	Hired -17.5%	Pruning tools	Owned-5%
Power tiller	Owned-9.09% Hired-90.91%	Pump-set	37.5 %(Hired -40%, Owned -33.4%, Shared -26.67%)
Harvester Thresher	Hired-10%	Winnower	Owned-2.5%
Tiller	Hired-2.5%	Hand tools	Owned-98% (1-5 nos.:47.5%, 6-10 nos.:42.5%, 11-15 nos.:7.5%, 16-20 nos.:2.5%)
Disc plough	Hired-2.5%	Power sprayer	5 % (Hired -50%, Shared -50%)
Sprayer	12.5 %(Shared: 80% Hired: 20%)	Fishing net	7.5 %(Shared -66.7%, Owned -33.37)
Micro-irrigation system	Owned-12%	Desi plough	Hired-2.5%

Conveyance/transport facilities

95 per cent of the people in the village use four wheeler for transport, 77.55 per cent hired, 7.5 per cent of the respondents owned them and 5 per cent on shared basis. Bicycle is used for transport by 7.5 per cent of the respondents. Only 7.5 per cent owned two wheelers. Hand cart and bullock cart are not put to use due to hilly terrain.

Hand cart	0%
Bullock cart/improved	0%
Bicycle	7.5 % (Owned -2.5%, Shared -5%)
Two wheeler	7.5%
Four wheeler	95 %(Hired-77.55%, Shared -5%, Owned -7.5%)

Electricity

When interviewed about the availability of electricity at home and farm, 87.5 per cent respondents had electricity connection while the remaining 12.5 per cent did not have power supply and of those accessing electricity only 12.5 per cent installed it at their respective farms.

Available at home farm	 87.5% 12.5%

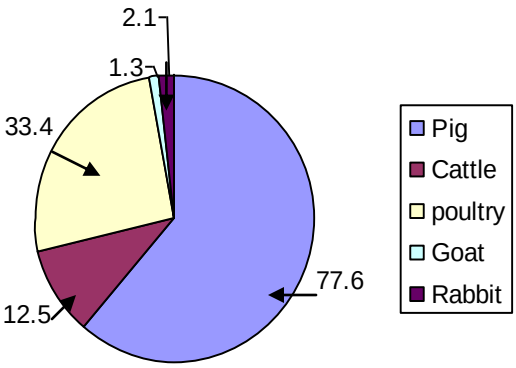
Household assets/utilities

For sanitation and hygiene the villagers had constructed a low cost latrine (67.5%). The household utilities such as mobile, smokeless chullah and television has more use than other items like music system, DVD/VCD player, kerosene stove, refrigerator and gas stove.

Latrine	Low cost latrine:67.5% Sanitary latrine: 32.5%
Water tap	22.5%
Smokeless chullah	55%
Kerosene stove	10%
Gas stove	2.5%
Refrigerator	5%
Television	50%
Mobile	70%
DVD/VCD	12.5%
Music system	30%

Livestock holding

The livestock holding in pig was found to be highest (77.6%), next stands poultry with 33.4 per cent of the farmers keeping the latter for domestic consumption, this is the result of the recent bird flu plague where birds became victim and met a fatal end, this discouraged poultry farming. Whereas other livestock animals viz., rabbit, cattle and goat were kept by few numbers of livestock rearers.



Interaction with livestock farmer during data collection

Type of Animal Shed

Few pig rearers are keeping their animals in pucca housing. Majority had their animals housed in mixed type of shed while 37 per cent constructed kutcha type of dwelling for their animals.

Pucca	3%
Mixed	60%
Kutcha	37%

Pucca type of housing for pigs

Katcha type of shed

Breeds of livestock reared

From the data collected, in breeds of pig 39 per cent was found to be improved and 61 per cent native which is highest number of adoption among cattle, poultry and pig. The lowest improved breed being observed in cattle (5%) and poultry shows an adoption rate of 12.5 per cent comparatively better than the latter.

Pig	Native-61% Improved-39%
Cattle	Native-95% Improved-5%
Poultry	Native-87% Improved-12.5%

Improved breed of pig at farmer's farm

Major crops grown

Out of the total individuals interviewed 90 per cent families grew crops. The variety of crops grown consisted of ginger (87.5%), Rice (50%), French bean (22.5%), Maize (17.5%), Sweet potato (15%), Strawberry (15%), Chilly (12.5%), Cauliflower (10%), Brinjal (7.5%), Mustard (5%), Cabbage (5%) and others (2-4%).

Ginger	87.5%	Tomato	12.5%
Rice	50%	Cauliflower	10%
French bean	22.5%	Brinjal	7.5%
Maize	17.5%	Mustard	5%
Sweet potato	15%	Cabbage	5%
Strawberry	15%	Others	2-4%
Chilly	12.5%		

Strawberry cultivation

Cereal cultivation

Extension Services

Prioritizing the activities performed by extension services, it highlighted the lack of extension services in the villages which plays a great role in the developmental process of urban areas. The extension services hardly reach out to the people, including the different organizations and institutes. Among the extension methods high preference was given to demonstration, the localites lag behind in communication as their only lingua-franca is the Khasi language. This method gives them a good learning opportunity up to maximum extent. Discussion was preferred by a handful of people who are fairly educated (40 %) and 35 per cent gave preference for on farm trial while only 15 per cent preferred awareness programme. Several reasons were cited for not availing the extension services which are shortage of time, not convenient to attend at the venue, organized without prior notice and lack of timely extension services.

Extension workers coming to village	Yes :37.5% No: 62.5%
Frequency of contact	VLEW: Never (90%) AEO: Never (80%) ICAR: Occasional (35%) VAS: Occasional (35%) NGO: Never (80%) Others: traders -Occasional(35%)

Preference of extension methods	Demonstration: 70% Discussion: 40% On farm trail:35% Awareness programme:15%
Reasons for not availing the extension services	Shortage of time Not convenient to attend at the venue, Organized without prior notice, Lack of timely extension services

Participation in livestock related training

The farmers had participated in training related to pig production, backyard poultry and rabbit at trainings conducted at ICAR (17.5%) and Rural Resource Training Centre (NGO) (15%). The duration of the trainings held with not more than 3 days.

Pig production technology	1-3 days	ICAR (17.5%), RRTC (15%) Useful (80%)
Backyard poultry	1-3 days	
Rabbit	1 days	

Livestock Development programme

While assessing the awareness of farmers regarding livestock development programmes, it was observed that 80 per cent were aware of Breed Improvement Programme and Vaccination-Deworming, 47.5 per cent for Castration Programme, 40 per cent of Backyard Poultry Programme, 35 per cent for Piggery Development Programme and the least in Farmers Training Programme (17.5%).

	Y	N
Farmers training programme	17.5%	82.5%
Breed improvement programme(AI)	80%	20%
Vaccination and deworming	80%	20%
Piggery development	35%	65%
Castration programme	47.5%	52.5
Backyard poultry	40%	60%

Source of information

The people received information from various sources viz., interpersonal sources (78.5%), mass media which counted television, radio, newspaper, poster and exhibition (21.5%) and the village council was found to be comparatively less effective of all in dissemination of new improved technologies, this is due to lack of awareness among the members of the council.

Interpersonal : 78.5%

Mass Media : 21.5% (Television and Radio, Newspaper, Poster and Exhibitions)

Village Council: 17.5%

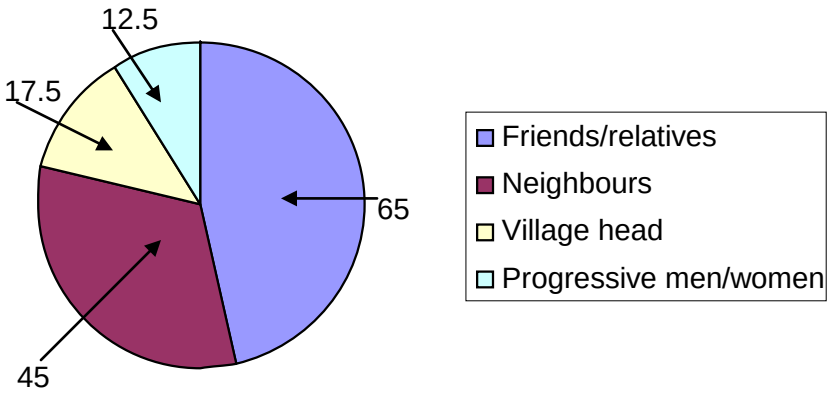


Fig: Pie chart depicting various sources of information

Accessibility of livestock services

AI in cattle: 27 per cent had done artificial insemination in cattle at doorstep/institution on payment. It was poorly accessible and 72 per cent had not adopted it.
AI in pig: 45 per cent was done at doorstep, free of cost and accessibility was good.
First aid/treatment: The first-aid/treatments were given at veterinary hospitals/clinics (50%) and at doorstep (50%) which determined good accessibility.
Deworming and vaccination: 45 per cent of the deworming and vaccination are done free of cost at the veterinary hospital/clinic. It was fairly accessible.
Insurance: 2-5 per cent of the respondents had it done at doorstep by State Department Bank and NGOs. It was poorly accessible.
Feed: Feed was available only in the market by making payment, it had poor accessibility.

Constraints in adoption of improved livestock technology

Some constraints faced by the farmers in adoption of improved livestock technology are in enlisted under broad heads of resource, technology, financial, social, infrastructure, market and environment. In winter there is shortage of feed and fodder, vaccines are not available at veterinary clinics, reduced human labour and the present depleting resources of grazing lands are posing difficulty in improved livestock rearing. In technological field, problems arise involving lack of availability of improved breeds, high risk of survival and lack of information. The financial drawbacks are high cost of technology and availability of cash and credit. Distribution of land and labour shortage or migration is constraints faced socially. Infrastructural constraints like lack of irrigation facilities, electricity and village roads are also counted. Markets are not available in some of the villages and genuine price to the product was difficult to achieve. Water quantity and quality in the villages created inconvenience also is the degrading soil fertility is of great concern to the farmers.

Resource	Feed, fodder (winter) Veterinary services: vaccine Human labour Shortage of grazing land
Technological	Improved breeds Higher risk Lack of information

Financial	High cost of technology Availability of cash and credit
Social	Distribution of land Labour shortage/migration
Infrastructural	Irrigation, Electricity and road (minor)
Market	Facilities near village, price
Environmental	Water quantity/quality Soil fertility

Access and control over resources/services

People had complete access to cultivable land and livestock although they had control over grazing and water resources, forest and firewood. In financial resources there was complete access to liquid assets, partial control for credit/loan and capital/critical input. The villagers had complete access to transport, communication, electricity, market and implements and partial control on technology and house. The inhabitants of the area could access local knowledge and formal education and had c0ntrol over training/skill upgradation, extension functionaries and hired labour simultaneously having no control to family labour. When it came to the social resources, there was complete access to meetings held in the village, access to institution and partial control to become a member of an organization (SHG/NGO).

Natural resource	Cultivable land and Livestock – Complete access, Grazing/water resources/bodies-Control Forest/firewood-Control
Financial	Liquid assets- Complete access Credit/loan-Partial/control Capital/critical input–Partial control
Physical	Transport/communication/electricity-Complete access Technology/house-Partial control Market/implements-Access
Human/information assets	Local knowledge/formal education-Access Training/skill up-gradation-Control Extension functionaries-Control Family labour-No control Hired labour: Control
Social	Members of organization(NGO/SHG)-Partial control Access to institution: Access Meeting-Complete access

Role of respondent in livestock production activities

The activities carried out in the farm by the farmers vary depending on the type of work accomplished. For breeding purpose, the activities were done jointly by 70-80 per cent and independently by 20-30 per cent of the respondents. The transportation and disposal of placenta

was done solely by male. The men (70%) does most of the purchasing of upgraded pigs from the market as the markets are available at distant places from the villages. Pregnant animals were taken care of jointly (50.6%) and the rest left the animals unattended (49.4%). It was clearly visible that 70-80 per cent of the respondents denied any participation in the care of new born and winter management of piglets. Castration though practiced adopted the traditional method by 52.5 per cent of the respondents whereas no participation was shown by 47.5 per cent as there was no need to castrate the piglets. 90-100 per cent of the construction works for animal shed is performed by males whereas for cleaning of the kutcha type of shed is not suitable for women to enter and hence here too men take up most of the cleaning activities (80%). The feeding of the animals is looked after by women (70-80%) as they tend to stay at home and purchase of feed is made up by men. In fodder cultivation, the harvesting and chopping which involves less labour is carried out by 70-80 per cent female. Identification of sick animals is initially observed by the females as they feed the animals more often and later on the handling of sick animals is taken care of by men. Joint ventures can be seen in selling of livestock animals but there is no participation in processing.

Breeding	Independent- 20-30%, Joint-70-80% Transport and placenta disposal-male (100%) Upgraded pigs: Purchase of superior germplasm-Male: (70%) AI in pigs: Care of pregnant animals: joint (50.6%), no participation- 49.4%) Care of new born and Winter management: No participation (70-80%) Castration: traditional method (52.5%), no participation (47.5%)
Housing	Construction- male (90-100%), cleaning - female (20%)
Feeding	Female (70-80%)
Fodder cultivation	Joint-70-80%, harvesting and chopping by female
Health care	Male (70-80%), identification of sick animals-jointly Vaccination and deworming-jointly
Processing and marketing	Selling of live animals-jointly, No participation-processing

Decision making pattern in livestock production

The decision making in most of the activities relating to livestock production is done jointly by both male and female. The decision is taken jointly for breeding by 70-80 per cent of the respondents. The feeding materials are decided upon by the female (78.7%) as they are the ones who meet the feeding duties for the animals. Health care of animals is looked after jointly by 70-80 per cent of the respondents. Care of new born and sick animals is decided by female (60-78%). When the shed is to be cleaned is taken care of by female (82.3%). The selling and marketing of live animals is also dependent on the female's opinion (72%). Selection of livestock enterprise and availing credit facilities is decided by both the gender of the family.

Breeding	Joint (70-80%)
Feeding	Female (78.7%)
Health care	Care of new born and sick animals-female (60-78%) Joint (70-80%)
Management	Cleaning of animals and shed by female (82.3%)
Marketing	Live animals –female (72%)
Miscellaneous	Selection of livestock enterprise-Joint Availing credit facilities-Joint

Technology adoption and perception

Looking into the adoption and perception on various technologies, it was assessed that under breeding technology, upgraded pigs were adopted by 64.5 per cent of the interviewees and the perception score was average. The reason behind the non-adoption of the technology was non-availability of upgraded pig, costly and more risky for survival. Artificial insemination was adopted by 50.5 per cent and found not difficult to adopt, in the circumstances where it is not adopted the reason is cited as lack of awareness, availability and skilled person. Adoption rate for winter management is 20-30 per cent with average score, less adoption is due to manpower requirement and unaffordable. Castration was adopted by 27.5 per cent and it was found costly, required manpower and facing difficulty for transportation of animals. The farmers practice traditional method of feeding method (76.7%) and rear livestock in an inexpensive manner and hence, concentrate feed is fed by 2 per cent of the respondents which is otherwise said to be costly by the rest and cannot afford to purchase costly feed for the animals. People preferred low cost feeding (55%) as it is not difficult to continue with the method for a long period. Low cost housing was adopted by 45per cent and the perception is that it is not difficult friendly method whereas 2 per cent adopted modern housing perceived costly and simple traditional method was adopted by maximum farmers (53%). Vaccination and deworming is adopted by 50 per cent respondents and 7 per cent had adopted mineral mixture supplementation and lack of awareness and services hampered the adoption rate in both the cases. Only a meagre percentage of respondents had adopted record keeping (2-3%), this is due to lack of awareness, complex, illiteracy and small scale farming. Scientific method of processing is not practiced and traditional curing is done by 15 per cent of them.

Breeding technologies	<u>Upgraded pigs</u> adoption rate:64.5%, <u>Artificial Insemination</u> adoption rate: 50.5% <u>Winter management</u> adoption rate: 20-30% <u>Castration</u> adoption rate:27.5%
Feeding	Concentrate feeding : 2% costly Traditional method :76.7% Low cost feeding : adoption rate: 55%

Housing	Low cost housing : adoption rate-45% Modern housing : 2% Simple Traditional : adoption rate -53%
Health care	Vaccination and deworming: adoption rate-50 Mineral mixture supplement: 7%
Record keeping	Adoption rate: 2-3%
Processing	Not adopted:100% Traditional method of curing and drying-15%

Changes in the production system and role of women past 10 years

Over the years some changes have been observed in the pattern of crops grown as new /hybrid varieties of rice, vegetables and pulses are cultivated along with increased maize cultivation followed by introduction of strawberry cultivation, floriculture and application and use of inorganic fertilizer, insecticide and modern machinery. Livestock species are also improved to a large extent especially in pigs and poultry. Rabbit rearing was introduced as a new venture for some budding entrepreneurs. Availability of labour is less 50-60 per cent due to the introduction of employment schemes and SHGs and the grazing resources are found to be depleting (60-70 %)

Livestock productivity and management system

Common feed resource comprised of rice bran, wheat bran, broken rice, sweet potato, colocasia, banana stem, tapioca and weeds. Green fodder, tree leaves, kitchen waste, vegetables and concentrate feed (1-2 kg/day) were fed; in summer and rainy season the feed consisted of green fodder being available in plenty and during winter only dry fodder and concentrate feed is fed.

Types of feed given

Depending on the type of farmers the feeding materials varied, the semi-scavenging landless farmers fed their animals with broken rice, leaves and other wastes, whereas the small farmers fed rice bran, broken rice and vegetable wastes but the medium farmers fed their animals a better balanced feed made up of maize, rice polish, leafy vegetables and kitchen/hotel waste.

Type of farmers	**Feeding practice**
Semi scavenging (Landless)	Broken rice+ leaves+ other wastes
Small	Bran + broken rice + waste vegetables
Medium	Maize + rice polish + leafy vegetables+ kitchen/hotel waste

Breeding management of pig

The breeding of animals were done by natural service in 67 per cent of the respondents although they had to pay a large sum of money and 33 per cent had adopted artificial

insemination despite giving them free of cost at doorstep. The farmers declined to adopt the new technology as they perceived it involves higher risk of losing their animals.

Health management

The following are the details involved in health management of livestock:

- Availability of vety. Hospital and distance: 2-20 Km
- Control of ticks of animals : followed
- Sick animals treatment : only major
- Deworming : followed by 47.5 per cent
- Common diseases : Pig- swine fever, acute diarrhoea
  Cattle-Foot and Mouth Disease, Bovine Q
  Poultry: Ranikhet disease, Chronic Respiratory Disease
- Approx cost of expenditure: : Pig-Rs 200-500/animal
  Cattle- Rs 50-200/animal
- Mortality rate : 5-7 per cent per annum

Housing management

The villagers maintain the animal housing with locally available materials in a cost effective manner for their secondary source of livelihood and details are enumerated below:

- 100% intensive system of housing and separate housing
- Type of shed: Kutcha/mixed-75 %
- Type of floor: Wooden/kutcha
- No of animals kept/shed:1-3
- Bedding material: Paddy straw/grasses
- Ventilation and drainage facilities: Available
- Source of drinking water: Pond/river/public water supply

Utilization of income:

The income is utilized for children's education, purchase of piglets, chicks, tools and implements, planting materials and household consumption.

Male -7.5%
Female -25%
Both -67.5%

Traditional livestock knowledge of farm women

Women had been following the age old traditional livestock rearing practices which they had inherited from their recent ancestors since childhood, it is found more convenient to use and practice by them as it requires materials available in and around their dwelling places only which also serves more economic means.

Feeding resources	Knowledge of identifying pig feed and fodder Knowledge of identifying Non –conventional pig feed: weeds
Feeding practices	Traditional feeding practices of pig and poultry

Breeds and breeding	Knowledge of selection of good breeding male Traditional method of identifying heat animals Knowledge of diagnosis of pregnancy in pig
Diseases control	**Sick animals**: Treat with Kanga plant with ash or local plants (2-3) **Skin diseases**: Application mobile oil with ash or local plant leaves as bedding materials **Wound**: Turmeric power + mustard oil or mixing local plant leaves and applied over the wound

Gender issues in pig production

- Purchase and transport of pig: Since the pigs/piglets are purchased from market, transportation of the animal is required and for this woman faces hardship in doing so without the help of men.
- Restraining the pig/piglet during medication: For the purpose of restraining the pig/piglet during medication it is difficult for womenfolk to hold the animal in place, for this they need a strong hand and hence depend on menfolk.
- Construction of pig shed: Construction of pig shed is solely carried out by men in the villages, either by the family members or by hiring in absence of male family member.
- Entry in the pig shed: Here, the traditional housing system is of katcha type made of locally available materials like wooden planks, straw and bamboo with poor drainage system, slurry floor and lack of entrance, this prevents or makes it difficult for women to enter the shed.
- Cleaning of pig shed particularly in the traditional housing system: The traditional housing system poses a disadvantage for women to enter the shed and clean it regularly.
- Shifting of pig from one place to another place or shed: The female gender finds the shifting of animals inept for them as it involves more physical input/labour.
- Oral medication of pig: Same as for restraining the animal during medication.
- External application of medicine: Same as for restraining the animal during medication.
- Management of newborn piglet and sow: It is unsuitable for most of the fairer sex of the society to handle management of newborn piglet and sow.
- Collecting water for cleaning of shed particularly from distant place: In these areas the water source is located at distant places, it is difficult to carry water just for the purpose of cleaning the shed as it is already difficult to fetch water for drinking and other consumption.
- Land preparation for cultivation of fodder: Women can help up in fodder cultivation with light works like weeding, planting/sowing, harvesting, earthing up, mulching, etc., but land preparation and digging up of tubers is usually done by men as it involves hard work.
- Inability to update recent technology through training programme, field visit, etc.: Training, technology upgradation, awareness programme, field visits, etc., are not held regularly and hence people lack adoption of modern technologies and it does not reach *en masse*.
- Male gender having problem in decision making: The matrilineal society culture prevailing in the area has reserved ownership rights of assets to women and this handicapped the male gender in the society to a large extent in the arena of decision making.

Summary:

The interaction with the farmers had helped produce and throw enormous light into the study conducted in accordance with its formulated objectives. The study revealed information which would have been impossible without personal interview of the respondents. The majority of the families are headed by male and few by female unless there is absence of an elderly male in the family. The state and the society following a matrilineal system, the ownership rights of fixed assets is entitled to female. The dominant family structure is composed of nuclear type as per the traditional concept. A major component of the population is dependent on agriculture as the main occupation for livelihood and next to it comes the service holders and then farm labour as the landless farmers make their earnings by working in others farm. Livestock production serves a subsidiary occupation providing some sort of financial security to them as keeping livestock animals when they are financially stable and selling the animals gather them enough amount during the cultivating season for planting materials and schooling of children. Organizational membership system exists which includes NGOs, Village Council, Women's organizations, Student's Union, local federations and Self Help Groups (SHGs) where high participation is seen in the SHGs and the farmers benefit from the revolving fund while working in association. Many of the respondents lived in a mixed type of housing. Poultry and piggery are the largely adopted livestock farming systems since it is believed to be easily manageable and hence, gain more experience in it. Lack of awareness among the people and high cost has resulted in less adoption of modern technologies and machineries. Among the livestock holdings, pigs fared well with 77.6 per cent respondents adopting it and poultry coming next to it with 33.4 per cent. The widespread type of housing for keeping of pigs was mixed type of shed (60%). In the region not many had adopted improved animals but maximum was seen in pig production. 90 per cent of the respondents cultivated crops, among the various crop cultivation ginger plantation was dominant (87.5%) and with much difference rice was cultivated (50%) and others are like french bean, maize, sweet potato, strawberry, chilly, cauliflower, brinjal, mustard and cabbage. Extension service coverage is fair in these areas and the villagers hardly have access to timely approach. Since communication creates some barrier in making trainings, discussions and lectures highly successful, whereas demonstrations have make up for this. Trainings were provided by ICAR and Rural Resource Training Centre (RRTC working in collaboration with ICAR) to the farmers relating to crop cultivation and livestock farming. The respondents are well-aware of Vaccination, Deworming and breed improvement programmes. Interpersonal relations proved to be the main source of information to them as the information passes by word of mouth among the kith and kins. The adoption of improved breed had certain constraints as cited by the respondents some of which were availability of feed and fodder, the consumption rate is higher compared to local/native breeds, they feel greater threat to their animals by adopting in the environment housing the native ones, financial constraints not to be chalked out among the rest has a very important role to play in the adoption. Complete access were gained to cultivable land, livestock, liquid assets, transport, communication, electricity and meetings, partial control over credit/loan, capital/critical input, technology, house and members of organization(NGO/SHG) and absence of control in family labour. In participation of livestock activities women handle most of the works which does not involve hard and heavy work such as feeding the animals, harvesting, chopping and intercultural operations while men perform the difficult tasks involving ploughing of fields, cleaning and construction of shed, etc. Decision making is done jointly by both male and female in the family. The changes visible ten years then and now can be mentioned clearly with the use of new improved varieties or hybrids in crops and livestock. Although artificial insemination is adopted it has not yet convinced a larger population of the farmers. Diseases commonly occurring in pigs are swine fever and acute diarrhoea, in

cattle are Foot and Mouth Disease (FMD) and Bovine Q, and Ranikhet disease as well as Chronic Respiratory Disease is frequently seen among poultry birds. The income from sale of livestock is utilized by both male and female (67.5%) to purpose of childrens' schooling, purchase of fresh stock of piglets, chicks, purchase of tools and implements, planting materials and for household consumption. Farm women were equipped with traditional livestock knowledge which is passed on from their ancestors practicing since childhood, here in domestic works children also have a share and substitute the womenfolk at times in absence of adults. Some gender issues are identified and they are the purchase of animals from market and their transportation, construction of shed, restraining the animals during medication, cleaning of shed in the traditional housing system, shifting of animals and land preparation for cultivation of fodder are some of the drawback areas which inhibits women to take up livestock production single-handedly as a source of livelihood.

FINANCIAL PROGRESS FOR THE YEAR 2009- 10

Scheme: "Network project on Enhancing Livelihood of Rural Women through Livestock Production."

Name of the Centre: ICAR Research Complex for NEH Region, Meghalaya

Sl.No	Component	Sanction 2009-10 (Rs.)	Fund Released (2009-10) (Rs.)	Actual Expenditure Incurred upto 31st March 2010 (Rs.)
1	Travelling Allowance	50,000		25,000
2	Research Contingency	2,80,000		2,68,562
3	Non-Recurring Contingencies	30,000		23,996
	Total	**3,60,000**	**3,60,000**	**3,17,558**