MINISTRY OF MAHAWELI DEVELOPMENT

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POTENTIAL FOR LIVESTOCK PRODUCTION IN MAHAWELI SYSTEM B

by

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MARD PROJECT

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Summary

Present study shows that there is a great potential to improve the livestock industry in System B, specially for cattle, buffalo, goat and layer chicken. Other resources like land, skills, animal feed, marketing services for animal products and extension services are also available in the area. However, these services are not very satisfactory. The major constraints for improvement of livestock production in the area are; unavailability of land and compounded animal feed (specially poultry feed), poor knowledge of the farmers on intensive livestock production, problems of extension services, and disorganized marketing facilities for animal products (ie. milk eggs and meat). Most of the problems associated with livestock production in System B could be solved by;

i) introducing intensive livestock production systems,

ii) culling the unproductive animals,

iii) upgrading the existing herd, through artificial insemination,

iv) improving the coordination between the different institutes involved in livestock production.

It is proposed to set-up Livestock production Support Centers (LPSC) at unit level (village) through farmer organizations. This LPSCs are administered by a representative committee and a trained person will undertake the management of the center. Responsibilities of the each center are to;

i) provide all the inputs necessary for livestock industry in the area (eg:- feed, drugs, extension services, AI, animals etc), and

ii) marketing of the products (eg:- milk, meat and eggs and live animals).

Also, it is very important to establish a hatchery (poultry layers), a goat breeding unit and an animal feed processing factory at the already existing Draft animal and Diary Development Unit (DA and DDP) of the MASL. These will issue the breeding animals and compounded animal feed to the local farmers.

Improving the facilities at the Artificial insemination center at Polonnaruwa farm also is very essential. Training of farmers on intensive livestock production systems should be done by utilization of facilities at the DA and DDP, DAPH and Universities.

Extension problems identified by this study should be solved through the LPSCs. As a start few units (villages) can be selected on a pilot basis to implement the proposed livestock development project. Regular monitoring and assessing of the progress should be done in each pilot project. It is recommended to implement the successful outcome of the pilot units within the entire Mahaweli System B.

1. OBJECTIVES OF THE PRESENT STUDY

The objective of the study is to evaluate the present livestock production situation in System N and to suggest a work plan to improve the income of the settler farmers through Livestock production.

2. METHODOLOGY

A field survey was carried out in System B by using the questionnaire to collect the necessary data. Three hundred and twenty five farmers and 56 shop owners were randomly selected and interviewed.

3. RESOURCES AVAILABLE FOR LIVESTOCK PRODUCTION IN SYSTEM B

3.1 Animals

3.1.1 Livestock population

* A large number of animals are found in System B (Tables 1, 2 and 3)
* However, the data available from different sources are contradictory.
* According to the data in Table 1, the buffalo population is higher than neat cattle.
* Male to female ratio of neat cattle and buffaloes is around 1:1.
* The number of vaccinations (FMD) done in System B (Table 18) is not in agreement with the

number of neat cattle and buffaloes in the area (Tables 1 and 3).

* The population of layer chicken is quite high (about 10,000).
* A fair number of animals (especially neat cattle, buffalo and poultry) are available for use as foundation stock in upgrading programmes.

3.1.2 Breeds of animals

* A majority of farmers owned low productive local animals (Table 4).
* All the pig farmers keep improved breeds.

3.1.3 Present average production levels

* The average production levels of milk, buffalo milk and eggs per family per month is about 18 litres, 5 litres and 50 respectively (Table 7).

3.1.4 Purpose of raising livestock

* Neat cattle were reared mainly for milk production; 32% of the farmers used them for draught power (Table 5).
* The main purpose of buffalo farming in the are is for draught power. A very few farmers (8%) used them for milk production.

* The number of traders around System B is also increasing (Table 6), and the demand for draught animals has some doubts.
* About 85% of the farmers raised chicken for egg production.

3.1.5 Average herd/flock size

* A majority of the farmers owned less than 5 animals (e.g. neat cattle, buffalo, goat and pigs) per head (Table 8).
* There is only a small number of large herds.
* The flock size of chicken is quite high.

3.1.6 Animal ownership

* Sixty two percent of the farmers in System B are involved in livestock production.
* Most of the farmers (about 87%) raise their own animals (Table 9).
* Some animals are jointly owned (about 4%).

3.1.7 Methods of animal production

* Neat cattle, buffalo and goat are raised entirely under extensive system of management (Table 10).
* Some of the poultry farmers raised chicken under intensive (about 8%) and semi-intensive (about 27%) system.

3.1.8 Type of livestock raised by farmers

* The most popular animal raised on System B, is neat cattle, followed by buffalo, chicken and goats (Table 11).

3.1.9 Stocking rate of cattle and buffalo

* According to the data in Tables 1 and 2, the stocking rate of cattle and buffalo is about 0.70 and 1.92 respectively.

3.2 Land

3.2.1 Land available for livestock production

* In addition to farmer-owned land, there are about 15,625 ha of land available for livestock production in System B (Table 12), which include forest, water logged land, canal banks and reservation land,

3.2.2 Land ownership

* About 80% of the people owned land (Table 13).

3.2.3 Size of land owned by farmers

* A majority of the farmers (about 82%) own 3 acres of land.

3.3 Manpower

3.3.1 Number of families in System B

* There are about 17,581 families in the area (Source: PMU, 1993 March).

3.3.2 Family size

* Average family size is about 4.6
* Table 15 also shows that 71% of the families have less than five members.

3.3.3 Occupation of the people

* The majority of the people are farmers (Table 16).
* The percentage of unemployed people in the area is about 11%.

3.3.4 Use of labour in livestock production

* Ninety percent of the farmers used only family labour in livestock production.
* Hired labour is mainly used by large herd owners.

3.4 Feed Resources

3.4.1 Availability of grass and tree fodder

* No farmer in the area has planted improved grass or fodder for feeding of animals.

* Neat cattle, buffalo and goats mainly feed on natural grasses and bushes.
* Grass and fodder production mainly depends on the rainfall pattern of the area.
* A few types of fodder trees are available in System B and can be used for feeding during the dry periods of the year.
* The low productivity of the animals in this area is partly due to the poor quality of feeds given to them.

3.4.2 Production levels of agro-industrial byproducts

3.4.2.1 Straw

* The estimated straw production in System B is about 50,000 - 60,000 mt/yr.
* Very little straw is used for feeding of cattle (for instance, only 2% of the farmers feed cattle with straw).
* Very few farmers (27%) have some knowledge on feeding of urea treated straw to cattle.

3.4.2.2 Rice polish

* The estimated rice polish production in the area is about 4,000 kg/yr.

* Only about 15% of the farmers used rice polish to feed the animals (especially, chicken).
* There are about 310 rice mills in System B (Table 17).

3.4.2.3 Cereals

* Only about 20% of the farmers used cereal byproducts to feed the animals, but not regularly.
* There is no programme or system to collect agro-industrial byproducts to formulate animal feed or to sell to the farmer.

3.4.3 Number of feed selling point in the area

* There are only nine shops selling poultry food in System B
* Most of the feed selling points are situated far away from the farming area.

3.5 Supporting Services

3.5.1 Vaccination

* DAPH and DA & DDP provide the extension services to the farmers (Table 18).
* Vaccination of animals were done free of charge.

* The number of vaccinations done against FMD does not agree with the number of cattle and buffaloes in System B.

3.5.2 Training of farmers

* Short term training programmes have been conducted for 500 farmers by DA and DDP.

3.5.3 AI service

* No proper facilities are available to provide AI service to the farmers.
* There is no trained staff to conduct the AI service.
* Only about 57 inseminations have been done in the area.
* The AI cadre at Polonnaruwa has most of the facilities, but at present, the liquid N_2 plant is out of order.
* DA and DDP provide natural service to the cows through bull service centres, and charge Rs. 25/= per mating.

3.5.4 Breeding materials

* DAPH and DA & DDP provide the breeding materials to the farmers (Table 19).

* Only a few numbers of neat cattle, buffaloes, goat and pigs have been issued to the farmers in System B.

3.5.5 Resources available at farms of DA and DDP

* Table 20 shows the resources available at farms.
* No data is available from the NLDB farms in System B.
* DA and DDP have opened 3 centres to provide the facilities for treatment of animals.

3.6 Marketing

3.6.1 Institutes involved in collection of milk

* MILCO and Nestlé Pvt. Ltd. collect milk through farmer organizations.
* Small scale processors only collect very limited amounts of milk.

3.6.2 Number of milk collecting centres

* There are about 17 milk collecting centres in the area (Table 21).
* Only about 44% of the cattle owners are members of these cooperative societies.

3.6.3 Amount of milk collection

* The milk collection is about 725,505 litres per year (Table 22).
* Cooperative societies collect more milk from the area than DA and DDP.
* About 45 - 50% of milk produced in the area is collected.

3.6.4 Number of shops selling animal products

* Only a limited number of shops sell animal products such as milk, eggs, meat and cheese etc. (Table 23).
* Comparatively, a larger number of shops sell eggs than other animal products.
* The reasons for not selling animal products are (Table 24):

  (a) Lack of refrigeration facilities
  (b) Religion (associated with meat)
  (c) Lack of demand (e.g. milk and meat products)
  (d) Lack of profit.

3.6.5 Demand/supply of animal products

* 88% of the shops cannot meet the demand for animal products due to:

  (a) Lack of storing facilities

(b) Irregular supply

(c) Higher demand during the harvesting periods.

* Only about 28% of the cattle owners used milk to produce curd and ghee.

4. PROBLEMS ASSOCIATED WITH LIVESTOCK PRODUCTION IN SYSTEM B

4.1 Population of Livestock

* No reliable (correct) information is available regarding the livestock population in System B (Tables 1, 2 and 3).
* The ratio of male to female cattle and buffaloes is about 1:1 and 1:1.4 respectively (Table 1). This means that there are lots of unproductive male animals, and this number of male animal are not needed for profitable animal production.
* The ratio of cows to fallowers (heifers and calves) of cattle and buffaloes are 1:0.5 and 1:0.45 (Table 1) respectively, and is too low. In other words, the population of young animals is very low, and this could be due to:

(a) higher mortality rates among young animals

(b) longer calving intervals

(c) late age at first calving

This could be due to poor management practices.

* The number of large herds in the area is decreasing, due to unavailability of land to keep them.
* Farmers are selling their cattle and buffaloes to buy tractors. This is not very uncommon.
* The stocking rate of cattle is about 0.70 or 1.92 which is quite high for a dry zone where grass production is very low.

4.2 Low Productivity of Animals

Table 4 shows that 73% of the neat cattle and 96% of the buffaloes are low productive local animals.

4.3 Lack of High Productive Animals for Breeding

* The lack of high productive breeding animals is one of the main reasons for not raising livestock (Table 25).
* There is a very remote possibility of buying breeding animals (e.g. cattle and buffaloes) from the government farms in the area (Table 19).
* Cull animals (animals issued by the government farms to farmers for breeding programmes) cost between Rs. 8,000 - 10,000. Very few farmers are willing or able to spend this much of money to by animals.
* Even private poultry breeders do not have any programme to supply chicks to the farmers in System B.

* Theoretically, DA, DDP and NLDB farms should be able to provide necessary animals to upgrade the neat cattle and buffaloes in the area. However, it is not occurring yet.

4.4 Upgrading Programme

* Previous cattle breeding programmes have paid more attention to improve draft power than milk production, but less and less people are using draft power. The number of tractors in System B has increased from 133 to 406 during the last five years (Table 6).

* Available data suggest that a long term breeding programme of neat cattle and buffaloes should consider the improvement of milk production.

4.5 Methods of Livestock Production

* The main method of meat cattle, buffalo and goat production is the extensive system - free range system (Table 10).
* It would not be possible to maintain animals under the free range system in the future, since the land size is small.
* A few large herds may be able to use government land. However, they should be able to keep the animals off the paddy fields, and it would be a full-time rather than a part-time enterprise.

* There is no point in keeping local animals under an intensive or semi-intensive system.

4.6 Land Availability

* Each farmer has only about ½ ac which can be used for livestock production (Table 14).
* The best way of getting maximum production from a limited land area is rearing high productive animals under intensive management system.

4.7 Manpower

* Farmers do not have much family labour (Table 15).
* Livestock production is a part-time enterprise of the people and 76% of them are mainly involved with crop production.
* Utilization of labour in crop production is seasonal.
* 90% of the farmers used only family labour for livestock production.
* Table 25 shows that lack of labour is one of the reasons for not keeping livestock.
* Since availability of labour is limited, proposed livestock scheme should utilize the labour of women and children. Keeping animals near houses under intensive system will enable family labour to be used more efficiently.

4.8 Feed Resources

* One of the major problems faced by the poultry farmers is the lack of availability of poultry feed in System B (e.g. 85% of the farmers complained about the shortage of poultry feed).
* Only about 9 shops in the area sell animal feed.
* Two percent of the farmers used straw to feed cattle.
* Very few farmers know about proper feeding methods for animals, preservation of grass and how to improve the quality of available feed.

4.9 Farmer Training

* The knowledge of the farmer on scientific livestock production is very limited. For example, 30% of the farmers have some understanding about the estrous cycle of cattle.
* A very limited number of training classes (about 20) have been conducted to the farmers.

4.10 AI Services

* AI is the cheapest and effective method of upgrading the low productive local cattle. However, only a very limited number of AI has been done in the System B (about 57).
* Reasons for above:

  (a) Lack of trained personnel

(b) Poor knowledge of the farmers about AI

(c) Poor transport facilities

(d) Unavailability of semen samples. (The AI Centre at Polonnaruwa is not functioning properly at the moment.)

4.11 Number of Extension Workers

* One Veterinary Surgeon and 4 LDI of the DAPH have to provide the extension service to the entire area of System B and 1 villages of System C (81 GS Divisions).
* Extension workers visit farmers only once a year.
* Extension workers of DAPH do not have proper transport facilities.

4.12 Poor Coordination Between Different Institutes

* It was notices that there was very poor coordination between Mahaweli Development Authority, DAPH, DA and DDP, MILCO and Nestlé Pvt. Ltd.
* Farmers do not have a close relationship with DAPH. Farmers contact the VS and other extension workers through the Unit Manager. This method requires more time for the message to reach the VS office.

4.13 Number of Milk Collecting Centres

* The number of milk collecting centres in the are is totally insufficient (Table 21).

* Farmers have to travel longer distances to sell milk and this discourages the small producer.

4.14 Amount of Milk Collection

* Only about 45 - 50% of the milk produce in the area is collected.
* Very few small holding farmers sell milk.
* Only about 40% of the farmers milk the cows (Cattle). A large number of animals have never been milked.

4.15 Marketing

* A very few shops sell animal products (Table 23). However there are a larger number of places that sell eggs than other animal products.
* The main reason for not selling animal products are:
    I. No storage facilities (e.g. refrigerators)
    II. Religion (mainly for meat)
    III. Lack of profit
    IV. Lack of demand (e.g. cheese and sausages)
* No proper marketing and pricing system for selling of live meat animals.
* Demand for animal products are much higher than their supply.
* No continuous supply of animal products to the market.

4.16 Income from the Livestock Sector

* Average income from the livestock sector is very low (Rs. 280/- per family). However, the income of the members of the Dairy Producers Cooperative Societies are around Rs. 2000 per month. (They owned large herds of cattle.)

4.17 Selection of Farmers for Livestock Production in Kandegama Village

* One farmer in the village used land for livestock production.
* Only five out of 16 farmers really like to raise livestock. But, now they also used land for paddy cultivation.
* AS yet, the Mahaweli Development Authority has not provided the improved breeds of cattle which they promised at the beginning of the year.
* No encouragement or good support services for raising livestock.

5. WORK PLAN TO IMPROVE THE LIVESTOCK PRODUCTION IN SYSTEM B

* There is a considerable potential to improve the milk goat and egg production in system B.
* Organize Livestock Cooperative Societies in each Village/Unit (initially about 5 model Units).

* Form a mother organization of livestock Cooperative Society for System B.
* Possible members of the mother organization:
    I. Four representatives from Unit/Village level Livestock Cooperative Societies
    II. Representative from MA
    III. Representative from MAD
    IV. Representative from DA and DDP
    V. Representative from DAPH
    VI. Representative from Private Hatchery
    VII. Representative from Milco/Nestlé
    VIII. Representative from Manning Market
    IX. Coordinator/Consultant
    X. Representative from Livestock Production Supporting Centres.
* Select young educated farmer of unemployed person from each Unit/Village and provide a comprehensive training programme on Livestock production, especially in the area of AI, breeding, vaccination, treatment of animals and feeds and feeding of animals
* Set up Livestock Production Supporting Centres in each Unit/Village or for each Livestock Cooperative Society.
* A trained young person will be in charge of each of the above centres.

* Functions of the Livestock Production Supporting Centres:

    I. Collect milk, egg and other animal products from the farmers and sell to processors of distributors.

    II. Sell/provide drugs and feed, and breeding materials (eg. chicks) to farmers.

    III. Vaccination and treatment of animals.

    IV. AI (main breeding procedure in proposed project)

* Livestock Production Supporting Centres will be a completely private organization and charge money for all services offered to farmers.
* Fees or charges for all services will be decided by the Livestock Cooperative Society.
* Provide complete and comprehensive training programmes to the farmers for scientific livestock production.
* Solve the problems associated with AI Centre at Polonnaruwa after discussion with DAPH, in order to get the necessary semen samples for breeding of cattle.
* Help to set up a layer hatchery unit and Goat Breeding Centre at the Draft Animal and Dairy Development Project.
* These units will provide the breeding materials to the farmers.

* Encourage private organizations to set up an animal feed processing plant at System B, which will help to solve the animal feed problem in System B.
* In addition, encourage and convince the government farms to set up a few stud bull centres from where the farmers can service their cows.
* Carry out intensive castration programmes to eliminate the unnecessary breeding by local male animals.
* Milk production of cows can be improved by upgrading of cattle and buffalo.
* Upgrading of cattle and buffalo will help to reduce the stocking rate (number of animals per hectare) which will help to solve the overgrazing of pasture land.
* Review of the progress of the livestock production activities regularly by the Coordinator or Consultant.

Table 1: Livestock Population of System B - 1992

(Cedric Notts, 1993)

Species	Animal Numbers					
	Cows	Bulls	Heifers	Heifer Calves	Bull Calves	Total
Neat Cattle	1404	1888	549	167	110	4118
Buffalo	2732	2699	948	290	208	6877
					Grand Total	10995

Table 2: Livestock Population of System B

(Source: VS - Welikande)

Species	Animal Number
Cattle and Buffalo	30,000
Goat	8,000
Pigs	2,000

Table 3: Livestock Population of System B

(Mahaweli Development Authority, 1989)

Species	Animal Numbers	
Neat Cattle		
Cows	4100	
Meat Cattle	100	
Draft Cattle	1000	
Bulls	517	
Sub Total		5717
Poultry - layers	9756	
Pigs	27	
Goats	624	
Total		16124

Table 4: Percentage of Farmers who owned Improved or Cross breeds of Livestock

Species	Percentage of Farmers
Neat Cattle	27.0
Buffalo	3.3
Goat	32.0
Chicken	40.0
Pigs	100.0

Table 5: Purpose of Raising Livestock

Species	Purpose (as % of Livestock Farmers			
	Milk	Meat	Draft	Egg
Neat Cattle	70.0	--	30.0	--
Buffalo	8.0	--	92.0	--
Goat	4.0	96.0	--	--
Chicken	--	15.0	--	85.0
Pigs	--	100.0	--	--

Table 6: Number of Tractors Available in System B

Type of tractor	Number of Tractors	
	1987	1992
Two wheel tractors	77	309
Four wheel tractors	56	97

Table 7: Present Average Production Levels of Milk and Egg Per Family Per Month

Product	Production Level
Milk	18 litres
Buffalo Milk	5 litres
Eggs	50

Table 8: Farm Size (Number of Animals per Farmer)

Species	% Farmers in Different Farm Sizes		
	< 5 animals	5 - 5 animals	> 25 animals
Neat Cattle	61.4	27.2	11.4
Buffalo	64.4	30.0	5.5
Goat	53.5	34.0	15.1
Chicken	35.0	41.3	23.8
Pig	72.7	18.2	9.0

Table 9: Ownership of Cattle and Buffalo

Type of Ownership	% Farmers
Owned by Farmer	87.0
Jointly Owned	4.0
Ande (Tenant Farmer)	9.0

Table 10: Methods of Livestock Production

Species	Methods (as % of Total Farmers		
	Intensive	Semi-intensive	Extensive
Neat Cattle	--	--	100.0
Buffalo	--	--	100.0
Goat	--	--	100.0
Chicken	8.0	82.0	60.0
Pig	--	100.0	--

Table 11: Number of Farmers who Keep Different Livestock

Species	% Farmers
Neat Cattle	35.0
Buffalo	27.0
Goat	16.0
Sheep	--
Chicken	24.0
Rabbit	--
Duck	--
Pig	3.0

Table 12: Possible Land Area Available for Livestock Production in System B
(Source: MAH-Land.WKI, PMU/MASL)

Description		Area (Ha)
a) Below Command Area		
Infrastructure, Tanks, Reservoirs and other extents		16,984.0
b) Above Command Area		
I.	Settlement Area	16,290.0
II.	Area for Pasture, Forest and Fuel wood	31,826.0
III.	Livestock and Draft animal	2,518.0

Table 13: Percentage of Farmers owning land in System B

Description	% Farmers
Owned	81.0
Not Owned	19.0

Table 14: Extent of Land Owned by Farmers

Extent (Ac)	% Farmers
3½	8.3
3	71.6
½	4.3
Illegal	18.6

Table 15: Size of Families in System B

No. of members/family	as % of total families
3 members only	28.3
3 - 3 members	43.0
More than 5 members	28.6

Table 16: Occupations of the people in System B

Occupation	as % of total people
Farming	76.0
Labour	5.5
Business	6.5
Government Service	1.5
Other	7.3
Unemployed	5.5

Table 17: Number of Rice Mills in System B

Block	No. of Rice Mills
Vijayabapura	36
Sevanapitiya	23
Aselapura	5
Bakamuna	145
Senapura	20
Dimbulagala	25
Damminna	20
Allewewa	36
Sinhapura	-
Total	310

Table 18: Number of Vaccinations Carried out in 1992

Type of Vaccination	Number
DA & DDP	
Foot and Mouth (FMD)	4252
HS/Rinderpest	4252
DAPH	
HS	13929
FMD	20904
Rinderpest	7351
Japanese Encephalitis	570
RAniket	22905
Fowl pox	3302

Table 19: No. of animals issued to farmers by DAPH and DA & DDP for breeding

Type of Livestock	Number (1972)	
	DAPH	DA & DDP
Day old chicks	7000	--
Cockerels	1400	--
One month old chicks	2690	
Layers	--	2999
Bull calves (crossed)	18	--
Heifers	--	--
Cattle	--	72
Buffalo (male and female)	19	--
Goats (male)	31	
Goats (female)	56	10
Pigs (male)	36	
Pigs (female)	68	10
Pigs (fatteners)	5	
Total	11,323	3,091

Table 20: Resources Available at Farms of DA & DDP

Species	Number
Neat Cattle	400
Buffalo	386
Pigs	92
Broiler Chicks	10,000
Layers	2,000

Table 21: Number of Milk Collecting Centres in System B

Organization	Milk Collecting Centres	Member Farmers
Dairy Producers Co-operative Societies	11	239
DA and DDP	6	193
Total	17	432

Table 22: Amount of Milk Collected in 1992

Organization	Collection (lt/yr)
Co-op Societies	583705.0
DA and DDP	141800.0
Total	725505.0

Table 23: Number of Places Selling Animal Products in System B

Type of Product	No, of Selling Points
Fresh Milk	30
Yoghurt	30
Cheese	10
Beef	2
Chicken	4
Eggs	50
Mutton	2
Sausages	11
Game meat	3

Table 24: Reasons For Not Selling Animal Products at Sales Points

Products	Reasons			
	No refrigeration facilities	Religious	Lack of demand	Lack of Profit
Milk	80.9%	--	4.8%	14.3%
Yoghurt	95.0	--	--	5.0
Cheese	17.1	--	80.5	2.4
Beef	77.6	22.4	--	--
Chicken	83.2	15.0	--	1.8
Mutton	75.5	20.4	4.0	--
Sausages	39.5	--	60.5	--
Game meat	74.5	19.1	2.0	4.3

Table 25: Reasons of Farmers For Not Keeping Livestock

Reasons	% Farmers
Lack of animals	41
Lack of land	24
Lack of labour	17
Lack of Capital	17
Lack of knowledge	8