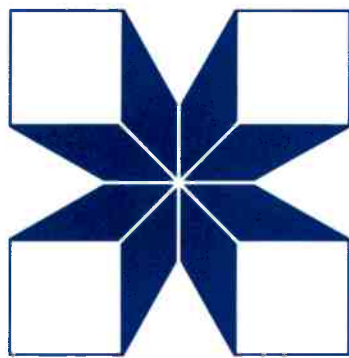


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C A N A D A

SMALL RUMINANT PRODUCTION SYSTEMS NETWORK FOR ASIA

PROCEEDINGS OF THE INAUGURAL
MEETING AND LAUNCHING OF
THE ASIAN SMALL RUMINANT
INFORMATION CENTRE,
KUALA LUMPUR, MALAYSIA,
21-23 AUGUST 1989

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Esta serie incluye ponencias de reuniones, informes internos y documentos técnicos que pueden posteriormente conformar la base de una publicación formal. El informe recibe distribución limitada entre una audiencia altamente especializada.

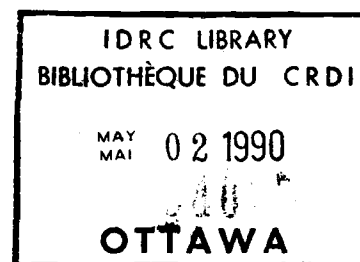
SMALL RUMINANT PRODUCTION SYSTEMS NETWORK FOR ASIA

Proceedings of the inaugural meeting and launching of
the Asian Small Ruminant Information Centre,
Kuala Lumpur, Malaysia, 21-23 August 1989

Editor:

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Agriculture, Food and Nutrition Sciences Division
International Development Research Centre

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no. 47



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ABSTRACT

This publication presents the results of a meeting held in Kuala Lumpur, Malaysia, 21-23 August 1989, whose primary objective was to examine the formation of a network to support research and development activities for small ruminants in national agricultural systems and collaborative research programmes in Asia. There was consensus that a single network should be established for small ruminants in Asia whose name should be Small Ruminant Production Systems Network for Asia (SRUPNA). It was also agreed to establish a centralised information facility called Asian Small Ruminant Information Centre (ASRIC) to be based in the Central Sheep and Wool Research Institute (CSWRI) in Avikanagar, India. A three man Steering Committee was appointed to determine the location of the coordination unit to pursue the objectives, as well as future activities of SRUPNA and ASRIC.

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RESEARCH AND DEVELOPMENT ON SMALL RUMINANTS IN PAKISTAN

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ABSTRACT

Pakistan has 27 million sheep and 31 million goats, and the numbers are increasing. Productivity is low due to deterioration of the feed resource base. The country has an impressive array of indigenous breeds - 28 for sheep and 25 for goats. In many of the sheep breeds, wool is a very important commodity. First priority is to improve nutrition of the sheep and goats by pasture improvement and increased fodder production and utilisation. Other important research and development areas are breeding and crossbreeding to improve quality and productivity, animal health disease prevention and internal parasite control, improvement of infrastructures for trained personnel, marketing and industry organisation.

INTRODUCTION

Amongst Pakistan's endowment are several high quality breeds of sheep and goats. These small ruminants play an important role in the lives of tens of thousands of small farming families, most of whom are either landless or migratory/transhumant in the province of Baluchistan. They move their flocks for foraging wherever they find some vegetation, and thus cover long distances in search of feed and water. Stall feeding is practically unknown, except perhaps, with some livestock owners in the irrigated plains. The result is that animals are generally lean and in many situations half-starved. The ranges are over-grazed, and the animals are slaughtered in conditions that are close to emaciation. If, however, these animals are fed and fattened properly before slaughter, the genetic potential of breeds is such that the country can almost double its mutton production and there can be considerable improvement in the quality of various products/by-products obtained from these small ruminants. A certain amount of adaptive research on some selected research stations has been underway for the past two decades, but a greater thrust is required on prioritisation of research on these animals - be it in the field of breeding or nutrition or disease control or even the marketing of various products.

CURRENT POPULATIONS

According to preliminary data released by Pakistan's Agricultural Census Organisation for the livestock census carried out in 1986, the following is the tabulated population figure for the total country, as well as its scatter in various provinces :

TABLE 1 : SHEEP AND GOAT POPULATION

	(Million Heads)	
	Sheep	Goats
Pakistan	23.28	29.95
N.W.F.P.	2.24	4.20
Punjab	6.69	10.76
Sind	2.62	6.76
Baluchistan	11.11	7.30
Northern Areas	0.64	0.94

From this table, it would be clear that the major provinces where the bulk of sheep and goat are raised are the provinces of Balushitan and the Punjab. The provinces of Sind and N.W.F.P. have also sizeable populations of goat.

Besides this population, small ruminants are also being maintained in and around the camps of Afghan refugees.

TABLE 2. LIVESTOCK WITH AFGHAN REFUGEES

	(Million Heads)	
	Sheep	Goats
Afghan Refugee Camps		
N.W.F.P.	1.49	0.48
Baluchistan	2.50	0.79

Source : Afghan Refugee Operations
Directorate Report 1987

TRENDS IN POPULATION GROWTH

There has been a steady increase in the inventory of Pakistan's small ruminants. The goat population has kept pace with the growth of human population (around 3% per annum), but the sheep population has grown at a rate of about 2% per annum. The data on population dynamics are complicated by the fact that there is considerable "disappearance" of livestock, including small ruminants at the borders with neighbouring countries.

Sheep and goats are generally reared under mixed farming system. Besides household raising and sedentary stock, the norm in Baluchistan and parts of N.W.F.P. and Sind is through nomadic/transhumant system.

TABLE 3. TRENDS OF POPULATION GROWTH

Year	(Million Heads)	
	Sheep	Goats
1973	14.83	16.93
1976	19.53	22.47
1982	22.12	25.84
1986	23.28	29.95

Source : Livestock Division.
Ministry of Food and Agriculture,
Government of Pakistan

PRODUCTS

Meat

The main purpose for which sheep and goat raised is to get mutton. Goat mutton is the preferred meat in large parts of the country, except in Baluchistan and N.W.F.P. where sheep mutton is the meat of choice. Another important feature is that consumers prefer to buy lean goat meat i.e. meat almost free from fat. Accordingly in the Punjab and Sind, breeds of sheep and goat with less body fat are being promoted for selection. This is not true in Baluchistan and N.W.F.P. where fat-tailed sheep are bred to meet the consumer preference. In parts of Sind, very young lambs are slaughtered because people like what could be called "lamb-veal". In some larger cities like Rawalpindi-Islamabad, Lahore, Faisalabad, Multan etc smaller-sized carcasses weighing about 7 to 8 kg from young goat are preferred, and this trend is increasing. The concept of a "broiler goat" or a "broiler lamb" may be pursued in future to cater for such a taste. This is probably dictated by large mushrooming of a type of dish served in way-side restaurants that is called "Karahi" meat - tender mutton, cooked on open fire that is ready to be served in about 30 minutes. "Teddy" goats come in handy for this purpose in parts of Punjab.

The production of mutton has progressed as follows :

TABLE 4. MUTTON PRODUCTION TREND

	(Thousand Tonnes)			
	1973	1976	1982	1986
Mutton, sheep and goat	245	303	370	500

The per capitum consumption of mutton (both urban and rural) is assessed at 3.3 kg per year. This contribution comes significantly from goats. As stated elsewhere, mutton production in Pakistan can almost be double if suitable measures are taken for improved feeding and disease prevention.

Milk

Although sheep and goat are raised principally for mutton production, their milk is of considerable importance to owners of migratory flocks where large ruminants, particularly milk producing animals are not available. Some breeds of goat have excellent milk-producing capability (Beetal, Kamori, Dara Din Panah) and are popularly known as poor-man's-cow, but because of shortages of feed, they also produce much below their genetic potential. Tabulated below is the data on milk production.

TABLE 5. MILK PRODUCTION FROM SHEEP AND GOAT

	(Thousand Tonnes)			
	<u>1973</u>	<u>1976</u>	<u>1982</u>	<u>1986</u>
Sheep	22	28	32	42
Goat	228	303	348	464

Wool and Hair

The share of foreign exchange earnings from the overall livestock sector comes to around 12% - the most important exports being leather and leather products, followed by export of hand-knotted carpets (Rs. 3 billion). Raw wool export (9 million kg) is offset by importation of fine quality wool. Tabulated below is the data for production of wool and hair and export of hides, skins, wool and wool-related products from Pakistan.

TABLE 6. WOOL AND HAIR PRODUCTION

	<u>1978-79</u>	<u>1979-80</u>	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>
Wool	35.4	37.1	38.9	40.7	42.7	45.1	47.7	50.3
Hair	4.8	5.0	5.3	5.5	5.8	6.1	6.6	7.0

TABLE 7. EXPORTS OF PRODUCTS FROM SMALL RUMINANTS

	<u>Exports</u>	<u>Imports</u>	<u>Surplus</u>
Skin and hides and related products			
Raw skin	1,420	-	1,420
Leather products	1,072	-	1,072
Footwear	105	-	105
Sub-total	2,597	-	2,597
Wool and related products			
Raw wool	274	240	34
Woolen garments	50	-	50
Rugs and carpets	2,683	-	2,683
Sub-total	3,007	240	2,767
TOTAL	5,604	240	5,364

BREEDS OF SHEEP AND GOAT**Sheep**

In Pakistan, there are 14 fat-tailed and an equal number of thin-tailed, well defined and recognisable breeds of sheep. (Akhtar and Haider 1974; Hasnain 1985). These are listed below :

<u>Province</u>	<u>Fat tail</u>	<u>Thin tail</u>
Baluchistan	Harnai, Baluchi, Bibrik, Rakhshani	-
N.W.F.P.	Hashtnagri, Balkhi, Michni, Tirahi (Afridi)	Damani, Kaghani
Punjab	Salt Range (Latti)	Buchi, Cholistani, Kajli, Lohi, Sipli, Thalli
Sind	Dumbi	Kachhi, Kooka
Northern Area	Gojal, Kohai Ghizer	Baltistani
Azad Kashmir	Pahari	Kail, Kali, Poonchi

Besides these breeds, exotic breeds were also introduced and crossbreeding was done with local sheep. Following exotic breeds were imported :

SHEEP - Rambouillet
 - Karakul
 - Awassi

GOATS - Angora

For crossbreeding, local Kaghani, Lohi and Kacchi sheep have been used. Significant improvement in birth weight, weaning weight, daily growth rate, pre-weaning survival rate and wool production was achieved.

Goats

There are 25 well-recognised breeds of goat in Pakistan. Besides these, many other strains have been recorded. Listed below are the main breeds of goat in Pakistan.

Baluchistan	Kajli, Khurasani, Lehri
N.W.F.P.	Damani, Gaddi, Kaghani
Punjab	Beetal, Nachi, Dera Din Panah, Teddy
Sind	Barbari, Chappar, Kamori, Desi
Northern Area	Baltistani, Jararkheil, Kohai Ghizer, Piamiri
Azad Kashmir	Beiari, Buchi, Desi, Kooti, Labri, Pothohari, Shurri

RESEARCH PRIORITIES AND DIRECTION

Looking at the sheep and goat inventory and its trend, it is not difficult to comprehend that in Pakistan, there has been a steady deterioration of resource base for livestock (including small ruminants) production. Listed below are some of the significant factors :

- 1) Seriously disturbed land : livestock ratio because of large inventory on reduced areas.
- 2) Over-grazing and reduced carrying capacity causing severe nutritional stress.
- 3) Reduction in fodder area by about 1.0 million acres without concomitant increase in per acre yield of forage crops.
- 4) lack of suitable institutional structure, paucity of funds, inadequate research support and insufficient professionally trained manpower.

The above summarises the national scenario. At the farmers level, the problems are further complicated by the following factors :

- 1) Serious feed shortages.
- 2) High mortality from diseases and parasites.
- 3) Absence of producers' organisation.
- 4) Unorganised marketing.
- 5) Artificially depressed product prices.
- 6) Lack of policy support.

Realising the importance of livestock sector in general, the 7th Five Year Plan (1988-93) has set certain targets for production, and outlined certain measures for the realisation of these goals. The direction is towards :

- 1) Encouragement of private entrepreneurs to establish feedlot units.
- 2) Utilisation of agro-industrial by-products and animal wastes for feeding of livestock including small ruminants.
- 3) Leasing of marginal state land on long lease for sheep and goat farming.
- 4) Improved animal health.
- 5) Improved marketing and credit facilities.
- 6) Better organised research and development on various livestock species including sheep and goat.

In order to boost livestock production in the country, and with a view to meeting rising demand on livestock products, the following strategy has been adopted in respect of research priority planning up to year 2000.

- 1) Research on high yielding varieties of fodders, and large-scale use of processed feed based on by-products.
- 2) Breed improvement through selection and crossbreeding.
- 3) Development and maintenance of herd immunity through preventive vaccination against major epidemic diseases.
- 4) Dipping, drenching and de-worming of small ruminants against important parasites both internal and external.
- 5) Adoption of scientific land-use cropping patterns and farming systems through research on farmers stock.
- 6) High quality research on animal production, health, marketing and use of computers.
- 7) Large-scale exploitation of rangelands.
- 8) Establishment of by-product processing units.

HIGHLIGHTS OF RESULTS

Reproduction

Research on small ruminants in the past has been fragmentary and non-sustained. Some work has been done on reproductive traits, cross-breeding, fattening and control of diseases. A few institutes are now developing long-term and systematic research programs that will pay increased attention to twinning percentages, feedlot systems, cross-breeding, blocks for stall-feeding and rapid diagnosis of diseases.

Tabulated below is some data on fertility twinning rate, growth rate in some selected breeds such as Lohi, Awassi, Kacchi and crossbreds. There was some improvement in crosses with Awassi :

TABLE 8. PRODUCTIVE AND REPRODUCTIVE PERFORMANCE OF SHEEP

Breed	Birth weight (Kg)		Weaning weight (Kg)		Prewaning daily gain (Kg)		Adult weight (Kg)		Fertility (%)	Twinning (%)
	M	F	M	F	M	F	M	F		
Awassi	4.3	4.1	28.0	26.0	0.20	0.18	73.6	73.7	79	16
Lohi	3.8	3.6	27.8	26.2	0.19	0.17	75.0	48.0	79	32
Awassi x Lahi	4.2	3.9	28.6	26.6	0.21	0.18	71.0	43.0	68	11
Kachhi	3.2	3.1	24.0	19.0	0.17	0.13	55.7	35.9	91	6
Awassi x Kachhi	4.1	3.9	30.0	26.0	0.21	0.18	63.2	42.1	91	5

Source : Annual Reports, Livestock Production Research Institute, Bahadurnagar (Okara)

Saleem and Shah (1983) made a study on twice a year lambing system of Lohi sheep in order to have more meat from sheep. The authors concluded that early weaning and removal of suckling stimulus helps early resumption of cyclic activity of sheep. It was reported that under twice a year lambing system, 12.66 kg more live weight could be produced per ewe per year and that each ewe gave net extra income of Rs. 104.31 per year in the form of meat, skin and wool from lambs, as compared to once a year lambing system.

Crossbreeding in sheep yielded significant results. Some of salient points are summarised as under :

(Rambouillet x Kaghani)

- 1) The F_1 crossbreds were 35 to 73% heavier than the native Kaghani breed in birth weight and 18 to 33% in weaning weight.

TABLE 9. STUDY ON TWICE A YEAR LAMBING

Frequency of lambing	Average number of lambs produced/ewe	Average birth weight (kg)	Average weaning at 30 (kg)	Average final weight at 120 days age (kg)	Average weight at 120 days/ewe(kg)
Twice a year	1.89	3.67	8.99	20.88	39.46
Once a year	1.06	3.38	9.22	25.22	26.80

- 2) Preweaning daily growth rate of F_2 and F_3 lambs were about 20% better than Kaghani lambs.
- 3) Wool production : crossbred adult females produced up to 50% more wool than native Kaghani breeds, with lower fibre diameter, staple length and less kemp.

Nutrition

Many research experiments on sheep and goat nutrition have been successfully completed. The use of urea-molasses blocks has become popular amongst the farmers, as a result of gains demonstrated by experiments conducted on owners' stock. Mizra *et al.* (1988) have demonstrated substantial economies from the use of these blocks in controlled experiments.

Health

Ovine and caprine pleuropneumonia has taken heavy toll of sheep and goat in certain mountainous parts of the country. Special research projects were sanctioned and effective vaccine is being prepared to control killer diseases.

INSTITUTIONS AND PERSONNEL INVOLVED

<u>Federal</u>	<u>Institute</u>	<u>Number of scientists involved</u>
----------------	------------------	--------------------------------------

	National Agricultural Research Centre (Animal Sciences Institute) Islamabad	4
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Provincial Punjab

Livestock Production Research Institute, Bahadurnagar	2
---	---

Livestock Experiment Station, Kheriwala	1
---	---

INSTITUTIONS AND PERSONNEL INVOLVED

<u>Federal</u>	<u>Institute</u>	<u>Number of scientists involved</u>
	Livestock Experiment Station, Kheri Murat	1
<u>N.W.F.P.</u>		
	Livestock Experiment Station, Jaba	1
<u>Baluchistan</u>		
	Usta Mohammad Farm, Loralai, Maslakh	2
<u>Sind</u>		
	Nabisar	2
	TM Khan	2

DOCUMENTATION AND INFORMATION EXCHANGE

Published literature on sheep and goat is scattered in journals and proceedings of various Conferences/Symposia etc. Listed below are a few of these documents :

<u>Title</u>	<u>Authors</u>
Livestock Wealth Haider	Dr A S Akhtar and Mr S M Naqi
Documentation of Goat Breeds in Sind	Dr G B Isani (Final Report)
Sheep and Goats in Pakistan	Dr H U Hasnain, FAO Animal Production and Health Paper 56, Rome
Final Reports on Investigation and Research on Pakistani Wool and Hair	Mr S M H Abidi
Proceedings of International Seminar on Sheep and Wool	PARC - Islamabad (1982)
Goat Production in Pakistan	M Ishaq Shah 1986
Livestock Resources of Pakistan	Abdul Wahid (University of Karachi)
<u>Title</u>	<u>Authors</u>
Sheep Production in Pakistan	Editors : J B McIntash (In press) A S Akhtar

CURRICULA AND TRAINING

Following institutions impart training for DVM/B.Sc AH/M.Sc/Ph.D students :

- a) College of Veterinary Sciences, Lahore

- b) Faculty of Veterinary Sciences, Faisalabad
- c) Faculty of Animal Husbandry, Faisalabad
- d) Faculty of Animal Husbandry and Veterinary Sciences, Tandojam
- e) Faculty of Animal Sciences, Peshawar

In Animal Husbandry Faculties, separate curricula for under-graduate and post-graduate level have been developed for sheep and goats. Master's degree and Doctorate degree are also offered based upon research titles pertaining to sheep and goats.

The curricula for specific subjects pertaining to sheep and goats being taught in various institutes in the country.

Training

All faculties, departments, institutes and livestock experiment station in the country arrange short term training on different aspects pertaining to sheep and goats. Occasionally some international donor agencies also offer budgets for such training. In this connection, Pakistan Agricultural Research Council has played a leading role in providing funds and other infrastructure for short term trainings. Consultants from abroad are also invited as trainees.

FUTURE RESEARCH DIRECTION

Keeping in view the rising demands for livestock products including mutton, the following strategies have been developed :

Animals

- a) Organisational and institutional structure.
- b) Manpower training.
- c) Breeding, nutrition, diseases and marketing.
- d) Producer's co-operatives.

Food Crops

- a) Introduction of high yielding varieties.
- b) Agronomy.
- c) Resource improvement and conservation.
- d) Seed farms for fodder crops.

The following research thrusts have been worked out :

- 1) Improvement of feed resources and establishment of demonstration centres.
- 2) Production of exotic germplasm for crossbreeding.
- 3) Development of high quality sheep and goat breeds.
- 4) Improved productivity of sheep and goats through Nationally Coordinated Research Projects under different farming systems.

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