

Livestock Production, Management and Development

General

200 Amir, P.; Knipscheer, H. C. 1989. **Conducting on-farm animal research: procedures and economic analysis.** Morrilton, AR: Winrock International Inst. for Agricultural Development / Ottawa, Ont: International Development Research Centre. 244p.

Keyword(s): *Animal production / Farming systems*

Call No: 636.072 AMC

Lang: En

There is an increased awareness of the important role of livestock in Asian economics. Different livestock species are used to cultivate land, transport goods and people in rural areas, provide manure for fuel and crop production, utilise marginal lands and crop residues, and provide a form of insurance for farm households. It is this livestock which makes many important contributions to the welfare of the people. Therefore, more research needs to be done on livestock. Farming Systems Research (FSR) is an approach towards on-farm animal research (OFAR) which makes modern production techniques applicable to the complex but poorly endowed mixed farms that are predominant in the developing world. This book presents elementary tools used by animal scientists to conduct on-farm livestock analysis and also provides methods to carry out or participate in animal research. The materials in the book have been arranged in 10 chapters. Each chapter begins with a statement of purpose and list of objectives and ends with a summary of the chapter material. Chapter One describes FSR as one approach to OFAR. Chapter Two outlines some important animal-production concepts for nonscientists. Chapter Three covers the economic concepts that are essential for technology evaluation and analysis. Chapter Five presents a model for screening animal technologies at the research station before on-farm testing is conducted. General guidelines for conducting on-farm research while identifying some common shortcuts and pitfalls are provided in Chapter Six. The tools needed to carry out simple economic analysis is presented in Chapter Seven. Chapter Eight covers basic marketing concepts that are relevant to on-farm research. The risk and uncertainty inherently related to a new technology is focused in Chapter Nine and Chapter Ten covers topics such as obtaining support for on-farm research, the roles of different levels of management in supporting research, and the incentives needed to promote on-farm animal development. It also identifies sources of further information.

201 Bayer, W. 1990. **Animals that make little demand.** International agricultural development 10(3): 12-13

Keyword(s): *Animal breeding / Animal husbandry / Animal products*

Call No: 630.5 INA

Lang: En

Within the various systems of livestock-keeping practised by smallholders in the third world, the function of animals are complex, but fulfils different functions by different species. Indigenous breeds of livestock are often the most suitable and appropriate but are usually under-estimated by scientific breeders. This article presents brief information on the breeding, performance and research carried out regarding different species of livestock in different countries of the world.

202 Bayer, W.; Waters-Bayer, A. 1989. **Crop-livestock interactions for sustainable agriculture.** London: International Inst. for Environment and Development. 16p.

Keyword(s): *Agricultural production / Livestock*

Call No: 633 BAC P

Lang: En

Crop-livestock interactions are essential for intensive use of local resources and for the social, economic, and ecological sustainability of small holder farming systems. It is, therefore, important that their functions be appreciated in the planning and implementation of agricultural development. This paper focuses on the crop-livestock interactions for sustainable development in agriculture by increasing subsistence security and by practising both crop and livestock production. Crop-livestock interactions are discussed as a key to ecological sustainability by intensifying nutrient and energy cycles. This paper thus, reviews the crop-livestock interactions for sustainable agriculture as contemporary importance and draws preliminary conclusions of relevance to development activities by providing various recommendations for its future development.

203 Bayer, W.; Waters-Bayer, A. 1992. **Livestock sustaining livelihoods.** ILEIA [Informationcentre for Low External-Input and Sustainable Agriculture] newsletter 8(3):4-5

Keyword(s): *Livestock management / Animal production / Sustainable development*

Call No: 631.8 ILN

Lang: En

In almost two-thirds of the world, domestic animals compete very little with humans for food or for land to grow it. Instead, they complement cropping when non-arable land is used to produce their food. Animals are also an insurance against low yields and crop failure, when they can be eaten or sold to buy food. Livestock are particularly important for human use of the drylands. Importance and role of livestock in sustaining livelihoods of a far larger number of

people than many modern, specialised systems could, is discussed in this paper.

204 Bernsten, R. H. 1982. **Analytical approaches to farming systems research with an emphasis on animal production.** In Time, J. E.; Lattimore, R. G. (eds.) *Livestock in Asia: Issues and policies.* Ottawa, Ont: International Development Research Centre. 180-185p.

Keyword(s): *Livestock / Farming systems / Animal production*

Call No: 636 FIL

Lang: En

Farming systems approaches have become increasingly popular strategies for structuring agricultural research programmes. Yet, most programmes focus on the crop component and overlook the livestock and mixed livestock/crop systems. Although there are several possible reasons for the emphasis, it seems that much of the methodology developed for crop analysis can be modified for livestock analysis. This paper reviews the major characteristics of farming systems research, constraints regarding livestock systems research and attempt has been made to draw upon the cropping systems experience to suggest how this methodology could be extended and utilised by livestock scientists. Several recommendations are made regarding the implementation of livestock systems research.

205 Bijman, J. 1992. **Can biotechnology help to livestock productivity?** *Biotechnology and development monitor* (11):3-5

Keyword(s): *Biotechnology / Livestock management / Animal production*

Call No: 620.805 BID

Lang: En

One of the greatest challenges for livestock production in developing countries is to meet the growing demand for animal products. Population growth and shortages of foreign exchange require an increase in domestic livestock production. Moreover, a rise in per capita income particularly in certain Asian countries, leads to a shift in diet towards more animal products. This article focuses on applications of biotechnology in reproduction and breeding, and in livestock feeding. The latest development in animal biotechnology are discussed, while examples are taken from experiences in the developing countries.

206 Devendra, C.; Burns, M. 1983. **Goat production in the tropics.** Slough: Common Wealth Agricultural Bureaux. 183p.

Keyword(s): *Goats / Animal husbandry / Animal production*

Call No: 636.39 DEG

Lang: En

Although goats have served man from birth of history and are numerous in the widely scattered areas of the tropics, they have received limited scientific attention. In comparison with other domestic animals, goats are often victims of prejudice and neglect, but they have, nevertheless, fulfilled a most useful task in supplying a part of the human population with milk, meat, hair, leather and other products. Nearly all aspects of goat production are splendidly reviewed, much of it is summarised and particular attention and emphasis have been given to two considerations important for promoting goat production. Firstly, clearer understanding of the extent of the usefulness of goats are given and, secondly, attention is focussed on the real possibilities of increasing their productivity through greater exploitation. This book is indeed a source book of very valuable information on individual characteristics of a bewildering variety of breeds and types of goats, on the comparative performance of introduced breeds and also on pertinent aspects of their management. In addition, interesting comparisons are made with buffaloes and cattle, which demonstrate the ability of the goat to compete successfully with these animals.

207 Durning, A. B.; Brough, H. B. 1991. **Taking stock: animal farming and the environment.** (Worldwatch paper, 103). Washington, DC: Worldwatch Inst. 62p.

Keyword(s): *Livestock management / Animal husbandry / Environmental impact*

Call No: 636 DUT

Lang: En

Traditionally, farm animals have played an indispensable role in keeping agriculture on a sound ecological footing by returning nutrient to soil in different forms. This book discusses the prominent role of animal farming to the environment and the importance of livestock in economy, ecology, as food for human being. The constraints in each field are also discussed. Finally, the future prospects of livestock and its importance in solving the environmental problems are discussed.

208 Fagard, P. 1980. **Guideline for dairy accounting.** (FAO Animal Production and Health paper, 21). Rome: FAO. 37p.

Keyword(s): *Accounting / Manuals / Dairy industry*

Call No: 658.863 FAG P

Lang: En

This publication provides a basis for the establishment of a quantity control system for the dairy industry. The main aim of quantity control is to improve the efficiency of all sections of the dairy organisation or at least to maintain it at a high level.

Chapter One of this publication gives a description of the quantity control systems in the various sections of the dairy industry. The documents to be used with this system are presented in Chapter Two.

209 FAO. 1979. **Buffalo reproduction and artificial insemination: proceedings of the seminar on Reproduction and Artificial Insemination of Buffaloes held on 4-15 Dec 1978 at Karnal, India.** (FAO Animal production and health paper, 13). Rome: FAO. 363p.

Keyword(s): *Animal breeding / Artificial insemination / Livestock / Buffaloes*

Call No: 636.293 FOB

Lang: En

Over a considerable number of years, FAO has emphasised the actual and potential value of the water buffalo and has endeavoured to stimulate interest in this neglected domestic animal while focussing attention on the need for investigation, detailed trails, observations and research in many disciplines in order to close the gaps in knowledge. The proceedings includes the text of the working papers presented at the seminar, which mainly focus on the reproduction and artificial insemination of buffaloes.

210 FAO. 1993. **Global outlook on milk and milk products.** Asian livestock 18(2):16-19 Rome: FAO.

Keyword(s): *Dairy products / Milk production / Milk products*

Call No: 636 ASL

Lang: En

This article discusses the production, consumption and trade of milk from cows and other livestock from a global point of view.

211 Ford, J. R. D.; Munoz, H. 1990. **Lessons learned.** Ceres: the FAO review 22((1)125):36-40

Keyword(s): *Manuals / Animal husbandry / Dairy industry*

Call No: 630.05 CEF

Lang: En

Different types of milk production system carried in different years are discussed, in this paper along with its management, production, and transportation system. Finally, the policy regarding the prices for import and the lesson learned during the milk production system is also discussed.

212 Geering, W. A. 1984. **Emergency disease of livestock.** Rome: FAO. 2v(251 + 104)p.

Keyword(s): *Animal diseases / Livestock*

Call No: 636.089616 GEE

Lang: En

This publication consists of two volumes. In the first volume, the author has covered the disease found in the livestock and their diagnosis. The book aims to assist veterinary administration and field staff in the recognition and diagnosis of the more important emergency disease of animals. It describes the silent features of each disease, and describes how to recur a diagnosis. The laboratory tests that are employed are briefly described, but not in a form to make it a laboratory diagnostic manual. The tests are only described in sufficient detail to give field officers an appreciation of how to collect the best specimens and what they should expect of the laboratory. Second volume deals with the equally important subject of preplanning for a disease emergency and management of a major disease control programme.

213 Gryseels, G.; Anderson, F. M. 1983. **Research on farm and livestock productivity in the central Ethiopian highlands: initials results 1977-1980.** Addis Ababa: International Livestock Centre for Africa. 52p.

Keyword(s): *Livestock management / Animal production / Agricultural research / Ethiopia*

Call No: 636 GRR

Lang: En

In this paper, the Ethiopian highlands are briefly described and their potential for improved agricultural production is assessed. ILCA's (International Livestock Centre for Africa) studies on the traditional smallholder production system of the highlands are then reported in detail, and productivity aspects of the system's crop and livestock components are analysed. The results of research on innovations, including an improved forage/dairy cow package, improved animal traction and the cultivation of bottomland, are given. The approach to Farming System Research (FSR) with special reference to livestock is discussed together with the implications for adoption of the approach and its results by a national agency, some research experiences, and the outlook for future research.

214 Haffmann, D.; Nari, J.; Petheram, R. J. (eds.) 1989 **Draught animals in rural development: proceedings of an International Research Symposium held on 3-7 Jul 1989 at Cipanas, Indonesia.** (ACIAR [Australian Centre for International Agricultural Research] proceedings, 27). Canberra, ACT: Australian Centre for International Agricultural Research. 347p.

Keyword(s): *Draught animals / Animal power / Rural development / Livestock management*

Call No: 307.72 HOD

Lang: En

Collaborative international research implies endeavours, not only in the sphere of science, but in communication and crosscultural exchange. This is particularly valid in the case of draught animal production, where the wide variation in the history and utilisation of animals for power across the world gives rise to a valuable range of knowledge, skills and resources that could be brought to bear on this important field of livestock research. The proceedings include papers, which reflect something of the balance of disciplines involved in draught animal power (DAP) research, perhaps with some notable omissions, such as that of crop and soil scientists. The volume includes papers presented at the symposium, which is placed in eight different sections. Introductory papers have been included in the first section. Regional emphasis and progress in DAP research and farming systems research relating to DAP is included in the second and third section. Papers on nutrition and physiology, reproduction, breeding and selection, and health, training and management of draught animal production have been included in fourth, fifth, and sixth sections. Engineering aspects of DAP is included in the seventh section and economics of draught animal power is in section eight. In addition, recommendations presented at the workshop have also been presented for future research on different topics.

215 Hart, R. D. 1987. **Research and development strategies to improve integrated crop, livestock and tree systems.** In Consultative Group on International Agricultural Research. International Agricultural Research Centres. Proceedings of the workshop of Farming Systems Research held on 17-21 Feb 1986 at Patancheru, India. Paris: Consultative Group on International Agricultural Research. International Agricultural Research Centres. Andhra Pradesh: International Crop Research Institute for the Semi-Arid Tropics. 92-95p.

Keyword(s): *Feed crops / Livestock / Fodder plants*

Call No: 631.072 COP

Lang: En

The goal of agricultural research and development is to produce large-scale development changes. This can be achieved by identifying small changes that can be made at critical points, to trigger a series of changes that will lead to a desired developmental goal. It is difficult to identify these small-scale technological changes without an understanding of the systems that link the target research phenomenon with the target development phenomena. The central

theme of this paper is that the characteristics of the agricultural systems that are targeted for agricultural research and development should determine the selection of an appropriate research and development strategy. On this basis, five types of research and development strategies are discussed and summarised graphically in this paper. Of the five research and development strategies discussed in this paper, the optional-system-emphasis strategy is determined as probably the most appropriate research and development strategy for national institutions.

216 Hatcher, G. 1984. **A planning guide for small scale livestock projects.** Arkansas, AR: Heifer Project International. 80p.

Keyword(s): *Livestock management / Project design*

Call No: 636.06 HAP

Lang: En

This book presents a planning guide for small-scale livestock projects. The book is based upon years of field experiences of the authors in animal agriculture, community, development, and extension programme with the rural poor. It does not present new information, but rather attempts to gather useful materials in one place, to make it easily accessible. The topics dealt in this book are: the care for animal agriculture; preliminary consideration in planning a project; genetic improved in livestock; looking at various species; project monitoring; farmer education; and what is a Heifer Project.

217 Indian Council of Agricultural Research. 1985. **Nutrient requirements of livestock and poultry.** New Delhi: Indian Council of Agricultural Research. 13p.

Keyword(s): *Poultry / Animal nutrition / Livestock management*

Call No: 636.089123 INN P

Lang: En

India is very rich in livestock wealth in the form of almost all important species of domesticated animals. A large genetic diversity exists of breeds and strains which are well adapted to different agro-ecological conditions and economic functions. Unfortunately, their genetic potential has not been fully exploited mainly due to various physical, environmental, nutritional, and health constraints. This publication provides information arising from experimental work carried out in India over the past several years on nutrient requirements of livestock and poultry. The nutrient needs of livestock and poultry breeds developed under tropical environment are different from those developed in temperate climate, which have been described in this paper. An urgent need for evolving a feeding standard for

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different livestock species is required, which is emphasised in this publication.

218 *International Development Research Centre*. 1988. **Crop and Animal Production Systems Program**. Ottawa, Ont: International Development Research Centre. 45p.

Keyword(s): *Developing countries / Agricultural research / Agricultural production / Crop yield / Animal husbandry*

Call No: 630.72 INC P

Lang: En

This booklet is intended to familiarise researchers and research-funding agencies with the scope of research supported by the Agriculture, Food and Nutrition Sciences Division of the International Development Research Centre (IDRC). It also provides information on how IDRC works with scientists in identifying research priorities and on the kind of support provided to researchers for developing and executing projects in the field of crop and animal production research. The booklet describes the objectives, strategies and main research areas of the Crop and Animal Production Systems (CAPS) programme of the Agriculture, Food and Nutrition Sciences Division. It provides an overview of the philosophy and activities of the programme for those scientists, policymakers, and students throughout the world with whom CAPS interacts.

219 *International Inst. of Rural Reconstruction / Philippines. Dep. of Environment and Natural Resources*. 1992. **Livestock and poultry production**. In *International Inst. of Rural Reconstruction / Philippines. Dep. of Environment and Natural Resources. Agroforestry technology information kit (ATIK)*. International Inst. of Rural Reconstruction / Diliman: Philippines. Dep. of Environment and Natural Resources. v.4(105p)p. International Inst. of Rural Reconstruction / Diliman: Philippines. Dep. of Environment and Natural Resources.

Keyword(s): *Poultry farming / Livestock management / Meat production*

Call No: 634.999 INA

Lang: En

Agroforestry, the land management system of incorporating crop production with tree and livestock production, evolved to become one of the most widely promoted tools for sustaining development in the uplands. This book is an updated kit with full illustration on livestock and poultry production using indigenous technologies. The focussed topics are simple agro-livestock technology; intensive feed garden; characteristics of forage grasses; plant based

livestock medication; small-scale cattle production; forced-feeding technology; native pig production; improving the native chicken; family backyard poultry project; native bee production; and on-farm and off-farm fodder sources in agroforestry.

220 *Itty, P.* 1993. **Information systems for livestock programs in developing countries**. In Maru, A.; Itty, P.; de Groot, B. (eds.) *Information systems for livestock research and development in India: proceedings of a Workshop held on 1-3 Feb 1993 at Avikanagar, India. Ajmer: Indo-Swiss Goat Development and Fodder Production Project / Jaipur: Institute of Development Studies*. 21-30p.

Keyword(s): *Animal husbandry / Information systems / Developing countries / Livestock management*

Call No: 636.3 MAI

Lang: En

Growing complexity in livestock development and research calls for information systems. This paper presents an overview of the main steps involved and the points to be defined. The data itself, their sources and the processing of information on animal health, nutrition, natural resources, animal production and socioeconomics are discussed. These categories of data cannot be considered in isolation as they are, in reality linked. Although an information system which focuses on one category can be adequate, the data collected should cover also other disciplines. The use of computers appears as appropriate to deal with the increasing complexity and volume of data, in recording, analysing, presenting and disseminating information. Descriptions are provided for LIMS (Livestock Information Management Systems), IBIEHM (ILCA Bio-Economic Herd Model) and the application of GIS (Geographic Information Systems).

221 *Kasali, U. B.; Njau, B. C.; Bekele, T.* 1988. **Controlling livestock diseases in the tropics by breeding: a perspective**. In Thomson, E. F.; Thomson, F. S. *Increasing small ruminant productivity in semiarid areas*. Dordrecht: Kluwer Academic Publishers. 237-242p.

Keyword(s): *Disease control / Animal diseases / Animal breeding*

Call No: 636.2 THI

Lang: En

The production of small ruminants in the tropics is largely constrained by gastrointestinal parasites. These parasites are a potential cause of reduced production, which has very important economic implications. Although many species of parasites are involved, only a few are of major economic

importance due to their greater pathogenicity and relative abundance. A breeding programme to produce livestock with improved disease resistance could play a particularly important and valuable role in the control of livestock diseases because useful genes, once established in target populations, do not require sophisticated management or other disease control measures to continue functioning. This paper describes the ways of controlling livestock diseases in the tropics through the breeding programme. A brief information on trypanosomiasis and gastrointestinal parasites is also presented.

222 Krishnamurti, C. R.; Vera, A. J. 1988. **The significance of nutrient balance in diets for farm animals.** In Devendra, C. (ed.) *Non-conventional Feed Resources and Fibrous Agricultural Residues: Strategies for Expanded Utilization* - proceedings of a consultation held on 21-29 Mar 1983 at Hisar. Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research. 33-49p.

Keyword(s): *Agricultural wastes / Feed crops / Animal nutrition*

Call No: 636.085 DEN

Lang: En

Although physical, chemical and microbiological methods have been studied to improve the nutritional quality of crop residues, the majority of studies are involved only *in-vitro* and *in-vivo* digestibility to test the efficacy of these procedures. Inadequate work has been done on nutrient balance and utilisation when crop residue are the major sources of nutrients. In several regions of Asia and Africa, fibrous crop residues (FCR) have been used as the major source of roughages for livestock. The paper reviews the current technology for improving the quality of roughages, since the bio-availability of nutrients is dependent upon nutrient balance and interactions. The methodology for the assessment of nutrient utilisation by animals consuming fibrous crop residues is discussed with particular reference to macro and micro minerals.

223 Nordblom, T. L.; Ahmed, A. K. H.; Potts, G. R. (ed.) 1985 **Research Methodology for Livestock On-farm Trials: proceedings held on 25-28 Mar 1985 at Syria.** Ottawa: International Development Research Centre. 313p.

Keyword(s): *Farm management / Agricultural research / Feed crops / Case studies / Livestock*

Call No: 636.0072 NOR

Lang: En

This document is intended to facilitate the sharing of ideas and experiences of scientists interested in livestock on-farm trials (LOFTs) in direct cooperation

with farmers and are working with national programmes in the Middle East, Africa, or elsewhere. It comprises twelve case studies on particular research and five methodological summaries. Although a number of the studies addressed livestock on-farm trials in the context of this definition, others implied much broader definitions: demonstration of a livestock technology, a complete package of component livestock research focused on a particular livestock system, and the extension approach in which a technology is transferred to as many beneficiaries as possible. In general, all twelve papers demonstrate the wide scope of research problems and livestock production systems that may be approached with LOFTs. Two papers deal with feeding trials in commercial cattle fattening lots. Two papers focus on new irrigated forage crops for cattle. Another two papers look at rainfed forage production and use. While three papers deal with innovations in livestock uses, management, and experimental control: crossbreed dairy cows for draft power in Ethiopia; dual-purpose goats in western Kenya; and in-herd/on-range trials with sentinel herds of cattle in Sudan. Finally, three papers report on the testing of new inputs to the farming system; alley farming with leguminous forage trees for goats feed in Nigeria; mineral supplementation of goats in western Java, Indonesia; and the ammoniation of straw for cattle in Egypt.

224 Nygaard, D. F.; Amir, P. 1988. **Research strategies for development: improving sheep and goat production in developing countries.** In Thomson, E. F.; Thomson, F. S. *Increasing small ruminant productivity in semiarid areas.* Dordrecht: Kluwer Academic Publishers. 37-50p.

Keyword(s): *Goats / Developing countries / Animal husbandry / Sheep*

Call No: 636.2 THI

Lang: En

The importance of animals to people and the role of small ruminants in farm families in developing countries is very important. The livestock can obtain their nourishment from grasses and other fibrous forage which people cannot directly utilise. In turn, they provide humans with an adequate supply and proper balance of energy, minerals, vitamins and essential amino acids which human metabolism cannot do without. Therefore, it is the premise of this paper that animals contribute to agricultural systems and farm family incomes in developing countries in unique, numerous and complicated ways which make it difficult for researchers to capture research funds. The paper focuses on the role of small ruminants in agricultural systems in the first part. The second part of the paper explicitly explores the new research and development agenda of developing countries and of

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the donor community in search of the linkages and opportunities that exist for collaborative research and development programmes.

225 Perdok, H. B.; Leng, R. A.; Bird, S. H. 1988. **Improving livestock production from straw-based diets.** In Thomson, E. F.; Thomson, F. S. Increasing small ruminant productivity in semiarid areas. Dordrecht: Kluwer Academic Publishers. 81-91p.

Keyword(s): *Straw / Animal nutrition / Animal production / Animal feeding*

Call No: 636.2 THI

Lang: En

Straw alone is a poor quality feed. But it cannot be regarded as a poor quality forage since with correct supplementation, moderate levels of production can be achieved. It is better therefore, to refer to straw as an unbalanced forage, as this has been emphasised in this paper as the primary constraint to production of animals consuming straw-based diets. This paper thus, discusses the improvement of livestock production by providing them with treated straw that is supplemented with a variety of specific nutrients. There are a number of manipulations that can be used to improve straw utilisation by ruminants which has also been described in this paper.

226 Shia, Y. 1994. **Applications of biotechnology to livestock production.** In Asian Productivity Organisation. Biotechnology applications in agriculture in Asia and the Pacific Report of an APO study meeting on 18-28 Jan 1994 at Tokyo, Japan. Tokyo: Asian Productivity Organisation. 40-59p.

Keyword(s): *Biotechnology / Livestock / Animal production / Technology transfer*

Call No: 630 ASB

Lang: En

There has been remarkable improvement in reproduction technologies to improve or to change animal production by germ cell engineering. The present paper discusses reproduction technology used for livestock especially for cattle, in relation to individual technical details, current technological advances, their advantages and disadvantages, and future prospects.

227 Shillhorn Van Veen, T. W. 1981. **Livestock systems and animal health.** In Axinn, G. H. Farming Systems Research Group: working papers. Michigan, MI: Michigan State University. Farming Systems Research Group. (9)p.

Keyword(s): *Livestock management / Animal health*

Call No: 631.072 AXF

Lang: En

The biological process involved in crop and livestock production are well known and do not, in their basic manifestations, appear to differ insignificantly in developed or developing countries. But basically they do not differ when comparing a subsistent production system with a surplus production system. This paper represents the author's personal perspectives on livestock system and the constraints that are seen in research systems regarding livestock system. Brief review on the animal health is also illustrated.

228 Sukmana, S.; Abdurachman, A.; Syarafuddin Karama, A. 1994. **Strategies to develop sustainable livestock on marginal land.** In Copland, J. W.; Dijajanegra, A.; Sabrani, M. (eds.) Agroforestry and animal production for human welfare: proceedings of an International Symposium held in association with the 7th AAAP Animal Science Congress on 11-16 Jul 1994 at Bali, Indonesia. (ACIAR [Australian Centre for International Agricultural Research] proceedings, 55). Canberra, ACT: Australian Centre for International Agricultural Research. 55-61p.

Keyword(s): *Livestock management / Animal husbandry / Land use*

Call No: 634.9 COA

Lang: En

Marginal land may be formed either naturally or by human activities. Human activities have created millions of hectares of degraded land in many watersheds. This paper refers mainly to research results obtained from farming systems research activities conducted in the Upland Agriculture and Conservation Project (UACP) target areas. The Upland Agriculture and Conservation Project (UACP) implemented in the upper watersheds of the Jratuneseluna (central Java) and the Brantas (east Java) from 1984 to 1993 was a government attempt to rehabilitate the degraded watersheds. The goal of the UACP as mentioned in this paper was to increase farm production and income while minimising soil erosion and promoting soil conservation. Additionally, strategies for livestock development on marginal, critical land, particularly in the upper watershed areas have been suggested.

229 Thomson, E. F.; Thomson, F. S. 1988. **Increasing small ruminant productivity in semiarid areas.** Dordrecht: Kluwer Academic Publishers. 296p.

Keyword(s): *Ruminants / Animal husbandry / Livestock management*

Call No: 636.2 THI

Lang: En

The proceedings include 24 overviewing papers presented at the workshop. The papers in the volume provides the background of the workshop, under three broad categories: livestock systems and nutrition, breeding and health. Recommendations formulated during the workshop for future research have also been included in the proceedings.

230 *United States. National Research Council. 1984. The water buffalo: new prospects for an under-utilized animal.* Washington, DC: United States. National Research Council. Washington, DC: National Academy Press. 118p.

Keyword(s): *Buffaloes / Animal husbandry*

Call No: 636.293 NAW

Lang: En

This report describes the water buffalo's attributes as perceived by several scientists. The book is designed to present the apparent strengths of buffaloes compared with those of cattle, to introduce researchers and administrators to the animal's potential and to identify priorities for buffalo research and testing. This report is an introduction to the water buffalo and its potential. The report includes much empirical observation, largely from the panel members. The panel reports serve to draw attention to neglected, but promising, technologies and resources for the development of water buffaloes.

231 *Van Soest, P. J. 1988. A comparison of grazing and browsing ruminants in the use of feed resources.* In Thomson, E. F.; Thomson, F. S. Increasing small ruminant productivity in semiarid areas. Dordrecht: Kluwer Academic Publishers. 67-79p.

Keyword(s): *Animal breeding / Animal feeding*

Call No: 636.2 THI

Lang: En

Differences in digestive ability and feeding behaviour are among the various possible evolutionary adaptations by which herbivores obtain their dietary needs and maintains some control or assurance of feed supply. The differences are integrated to give the nutritional strategy of each species. This paper presents a report on the comparison made for grazing and browsing ruminants in the use of feed resources. The focussed topics are digestive physiology and feeding behaviour, buffering and volatile fatty acids (VEA) absorption, rumen microbial adaptation, rumination, retention and digestive capacity, faecal metabolic output, selection and morphology of forages, shrubs and other browses and selection of feeding.

232 *Vandeplassche, M. 1982. Reproductive efficiency in cattle: a guideline for projects in developing countries.* (FAO Animal Production and Health Paper, 5). Rome: FAO. 118p.

Keyword(s): *Reproductivity / Developing countries / Livestock*

Call No: 636.082 VAR

Lang: En

This book is specifically intended for tropical and sub-tropical countries, taking into account the wide variation of cattle reproductive problems. Cattle play the dominant role in animal production -- their dominance largely depending on normal reproduction. It aims to provide veterinarians and animal production specialists with a useful "vade mecum" for the daily problems of fertility and infertility in cattle. The guide intends to cover all phases of the whole reproductive process, beginning with the physiology in the male and female, it also covers natural and artificial breeding, pregnancy, parturition, and the post-parturient period of the dam and calf, up to the point when normal fertility for renewed breeding is regained. All aspects are not considered academically, but emphasis has been laid on those practical problems of greatest economic importance which field workers are regularly confronted with in practice. To facilitate improvement in reproduction in developing countries, the guideline indicates a curriculum of veterinary study in which emphasis is placed on the essentials of the subject designed to meet most effectively the needs of the different regions, and also stresses on the importance of intensive clinical training in order to convince young graduates of the great potentialities of the subject.

Hindu Kush-Himalayan Region

233 *Yadav, Y. 1990. Farming - forestry - livestock linkages in mountain regions.* (MFS [Mountain Farming Systems] discussion paper, 14). Kathmandu: International Centre for Integrated Mountain Development. 16p.

Keyword(s): *Agroforestry / Livestock / Mountain farming systems*

Call No: 634.999 YAF P

Lang: En

This paper provides a brief account of the physical, socioeconomic and agricultural characteristics of the study sites; describes the linkages among the various components of mountain farming systems; and finally puts forward some important policy implications based on the findings of the study.

Afghanistan

234 Leyland, T. 1993. **Animal health care in Afghanistan.** *Appropriate technology* 19(4):29-32

Keyword(s): *Animal health / Animal husbandry / Afghanistan*

Call No: 604 P

Lang: En

Afghanistan is a land-locked country, where livestock is the major component in its agricultural system. A participatory rapid appraisal carried out by an NGO with the aid of the community, into agricultural production systems in the Daye Chopan area, one of the least developed area in Afghanistan is presented in this paper. The paper explores the indigenous knowledge possessed and the agricultural problems perceived by the community and has brought into light a severe animal health problem, affecting the poorest members of the community most seriously. The methodology used to find out the problems and the solution for the improvement of animal health care in Afghanistan is also presented and discussed.

Bangladesh

235 Huque, Q. M. E. 1993. **Indigenous animal species: conservation versus intensive production in Bangladesh.** *Asian livestock* 18(10):132-137

Keyword(s): *Traditional technology / Species / Animal production / Bangladesh*

Call No: 636 ASL

Lang: En

This paper briefly highlights the indigenous livestock and poultry species found in Bangladesh. Production and conservation of these indigenous genetic resources is also briefly discussed with various examples.

236 Jackson, M. G.; Dolberg, F.; Davis, C. H. (ed.) 1981 **Maximum Livestock Production from Minimum Land: proceedings of the seminar on Maximum Livestock Production from Minimum Land held on 2-5 Feb 1981 at Mymensingh, Bangladesh.** Dhaka: Bangladesh Agricultural University. 557p.

Keyword(s): *Livestock / Animal products / Bangladesh*

Call No: 636 JAM

Lang: En

The proceedings of the seminar on 'Maximum Livestock Production from Minimum Land' held on 2-5 February 1981 at Mymensingh, Bangladesh

includes 34 papers dealing with the challenges of maximum livestock production from minimum land presented at the seminar and two keynote addresses focussing on the theme. The papers have been included under seven broad headings as: straw as a livestock feed; supplementary feeds and feeding; animal power; ponds; farmer's view and experience; extension of new livestock technology to farmers; and livestock development policy. The conclusion and the recommendation obtained from the discussion made during the seminar have also been included.

237 Khan, N.; Lewis, D. J.; Sabri, A. A. 1993. **Proshika's livestock and social forestry programmes.** In Farrington, J.; Lewis, D. J.; Satish, S. (eds.) *Non-governmental organisations and the state in Asia: rethinking roles in sustainable agricultural development.* London: Routledge. 59-65p.

Keyword(s): *Livestock management / Community forestry / Community development / Development projects / Bangladesh*

Call No: 307.72 FAN

Lang: En

Results and relevant experiences from livestock and social forestry programmes carried by the second largest NGO (Proshika) in Bangladesh is presented in this paper. Additional, livestock situation in Bangladesh and the main aim of the NGO with special reference to livestock and social forestry programme is briefly highlighted.

238 Tareque, A. M. N.; Saadullah, M. 1988. **Feed availability requirements for animals and current patterns of utilization in Bangladesh.** In Devendra, C. (ed.) *Non-conventional Feed Resources and Fibrous Agricultural Residues: Strategies for Expanded Utilisation - proceedings of a consultation held on 21-29 Mar 1983 at Hisar, Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research.* 116-130p.

Keyword(s): *Agricultural wastes / Waste utilization / Animal feeding / Bangladesh*

Call No: 636.085 DEN

Lang: En

This paper discusses the land use patterns by different crops, feed availability, feed balance and patterns of utilisation of feedstuffs in Bangladesh. The paper also discusses possibilities of improving the feeding value of crop-residues for evolving appropriate technology, as well as making more use of the non-conventional feeds to increase feed supplies in order to maximise productivity from animals. The importance of

development of a feeding standard for different species of animals is emphasised. In general, the paper highlights the feed resources, their availability and nutritive values, the requirement of nutrients for the livestock, present patterns of utilisation and current approaches to large-scale utilisation.

Bhutan

239 Bennett, P. R. 1980. **Bhutan: National Sheep Breeding Programme.** Rome: FAO. 23p.

Keyword(s): *Breeding methods / Livestock / Sheep / Bhutan*

Call No: 636.311 BEB P

Lang: En

This is a review report for 'National sheep breeding programme'. The report is based on the breeding trials being conducted at the project sites. The first part mainly focuses the future breeding policy and recommendations, while the second part highlights the information on 'National sheep population projection 1981-85'.

240 Bhutan. Animal Husbandry Department. 1984. **Project report on farmer's training in animal husbandry.** Thimphu: Bhutan. Animal Husbandry Department. 17p.

Keyword(s): *Training / Animal husbandry / Farmers / Bhutan*

Call No: 636 ANP P

Lang: En

This report presents in brief the information on farmers training in animal husbandry. The report briefly reviews the main points of the course aimed, followed by questions and answers and the evaluation of the course conducted.

241 Bhutan. Ministry of Development. Animal Husbandry Department. 1981. **Comprehensive policies and programmes of animal husbandry for Fifth Plan (1981-87).** Thimphu: Bhutan. Ministry of Development. Animal Husbandry Department. 83p.

Keyword(s): *Animal husbandry / Development plans / Project design / Bhutan*

Call No: 636 BHC

Lang: En

Comprehensive policies and programmes of animal husbandry for the Fifth Year Plan (1981-87) of Bhutan is presented in this document. Policies and programmes have been discussed for the development of cattle, pig, poultry, sheep and yak in different chapters. Policies and programmes for pasture, fodder and feed development is discussed and collection, processing and marketing of milk and

milk product is explained. Extension services and training programmes for animal health is also discussed.

242 FAO. 1981. **Bhutan: National Sheep and Yak Development Project - project findings and recommendations.** (Terminal report). Rome: FAO. 34p.

Keyword(s): *Yaks / Animal breeding / Wool / Grassland management / Livestock / Sheep / Bhutan*

Call No: 636.3 FOB P

Lang: En

Livestock husbandry is the mainstay of the people of Bhutan. Beside providing employment, it helps them in meeting their various requirements. Sheep and yaks are mostly reared in high altitude pastoral areas including the alpine pastures of Bhutan and their production problems are, therefore, closely interrelated. To support the national effort for achieving its goal of balanced and integrated development of sheep and yak husbandry, a project was launched in Bhutan to improve livestock husbandry through better feeding, management, and disease control. This document reviews the findings of the project and provides recommendations for the improvement of the livestock and pasture in terms of marketing and potential for the expansion of livestock husbandry.

243 FAO. 1981. **FAO/UNDP Agricultural Planning Mission to Bhutan: annex III - animal husbandry.** Rome: FAO. 67p.

Keyword(s): *Surveys / Animal husbandry / Agricultural planning / Bhutan*

Call No: 636 FOF

Lang: En

Animal husbandry is an integral part of farming in Bhutan. But, existing levels of consumption of animal products are low. This has been attributed to low animal productivity and development of animal husbandry have been constrained by a combination of factors including poor genetic quality of the animals, overgrazing of pastures, and a lack of adequate diagnostic and veterinary facilities to treat diseases. To overcome these problems and constraints several animal husbandry development programmes are planned, which are discussed in this paper. These programmes are directed at cattle, pigs, poultry, sheep, yaks, horses and fisheries activities. The main thrust of the majority of these projects as discussed in this document to improve productivity through improved genetic strains by crossbreeding animals with appropriate exotic breeds. In addition, the programmes aimed at improving productivity through improved health and nutritional levels is also illustrated. These projects

include pasture, fodder, and feed development activities; an animal health coverage programme emphasising vaccination and deworming procedures; and extension and training programmes to promote livestock development.

244 Hancoch, J. 1979. **National sheep and yak development project.** (Bhutan/72/010). Rome: FAO. 19p.

Keyword(s): *Yaks / Sheep / Wool / Technical cooperation / Land development / Animal breeding / Bhutan*

Call No: 636.3 HAN P

Lang: En

This document reviews the achievement obtained through the project 'National sheep and yak development'. The document briefly outlines the activities and requirements of the project in order to fulfil the programme and the follow-up action for the implementation of the project.

245 Miller, D. J. 1986. **Forest industries complex: equipment training and advisory services-consultancy in grazing control.** Rome: FAO. 49p.

Keyword(s): *Forestry/Grazing/Training / Bhutan*

Call No: 634.9 MIB P

Lang: En

Forests in Bhutan cover 64 per cent of the total land area and are an important resource for a growing wood-based industrial development, provide fuel, house-building timber for the people, watershed protection to Bhutan's rugged terrain and grazing areas for livestock. Livestock, particularly grazing animals, have traditionally been a very important part of the agricultural production system and the economy of Bhutan. This document reviews the problems caused by uncontrolled grazing on forest lands, in the Gedu Concession areas and in conifer forests in the Chelela area of the Paro Valley, particularly the effect on tree seedling survival and growth. This is followed by recommendations on ways and means that are socially and technically feasible to control grazing in forest lands, in general and in the Gedu Concession area in particular.

246 Tamang, D. B. 1988. **Feed availability, requirements for animals and current patterns of utilization in Bhutan.** In Devendra, C. (ed.) *Non-conventional Feed Resources and Fibrous Agricultural Residues: Strategies for Expanded Utilisation - proceedings of a consultation held on 21-29 Mar 1983 at Hisar.* Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research. 131-138p.

Keyword(s): *Agricultural wastes / Waste utilisation / Animal feeding / Bhutan*

Call No: 636.085 DEN

Lang: En

Bhutan is a predominantly agricultural country, with 95 per cent of the labour force engaged in agricultural producing most of the cereals and other crops. Livestock are an integral part of agriculture in the country. Ruminants are traditionally raised by seasonal migration from alpine meadows to lower pastures. Pigs and poultry are maintained on free-range systems and are sometimes hand-fed with rejected grains, grain by-products or kitchen waste only. Ruminants are generally more important than non-ruminants. The country has a deficit of feeds and fodders. The main crop residue available are maize stovers, rice straws, and wheat straws. Agro-industrial by-products including milling by-products like rice bran, wheat bran, mustard oil cakes and by-products from apples, pineapple, and citrus. This paper deals mainly with the feed resources available, current pattern of utilisation of feed resources and future development policy of the government, through bilateral and multilateral assistance, the government has formulated firm plans and policies to improve and develop pastures.

China and the Tibetan Plateau

247 **A research on exploiting and utilizing the resources of feeds for livestock and poultry in Jaoyuan county, [China].** Research of agricultural modernization (4):42-46

Keyword(s): *Poultry / Feed crops / Livestock management / China*

Call No: 630.72 REA

Lang: Ch

248 Anderson, N.; Peter, D. W.; Masters, D. G. 1995. **Production of fine wool in northern China: effect of nutrition and helminth infections.** (ACIAR [Australian Centre for International Agricultural Research] technical reports). Canberra, ACT: Australian Centre for International Agricultural Research. 80p.

Keyword(s): *Wool / Nutrition / Animal diseases / Animal nutrition / Animal products / China*

Call No: 636.08845 ANP

Lang: En

This edited volume is the compilation of the papers on the topic 'production of fine wool in northern China: effect of nutrition and helminth infections'. The volume includes 14 technical papers on different aspects of the above.

Livestock Production, Management and Development

249 Cheng Xin. 1985. **Assessment and utilization of climatic condition for animal husbandry in north area around the lake of Qinghai province - taking Ganzi river as an example.** *Natural resources* (2):65-70

Keyword(s): *Grazing land / Animal husbandry / Climatic influence / China, Tibet*

Call No: 333.7 NAR

Lang: Ch

250 Huang Wenxiu. 1986. **Animal husbandry and watershed management in Himalaya-Hungdwan regions.** In Li Wenhua; Pandey, K. K. (ed.) *Watershed management: proceedings of the International Workshop on Watershed Management in the Hindu Kush-Himalayan Region held on 14-19 Oct 1985 at Chengdu.* Kathmandu: International Centre for Integrated Mountain Development / Beijing: Chinese Academy of Sciences. Commission for Integrated Survey of Natural Resources. 39-43p.

Keyword(s): *Mountains / Animal husbandry / Watershed management / China*

Call No: 333.716 LIW

Lang: En

The Himalayas-Hengdwan region situated in the southwestern part of China is the largest mountain region in the world. At the source of the Himalayas-Hengdwan Valley, topography is gentle with good vegetation and light erosion. Tibetan sheep and yak find excellent pasture on the plateaus, mountains, and lacustrine flats. The region is rich in agricultural by-products, for example fodder. Therefore, the characteristics of animal husbandry in context to rangelands found in the Himalayas-Hengdwan Valley are discussed in this paper. The direction of the development of animal husbandry and watershed management of the valley by decreasing free range animal grazing and increasing stall feeding to animals is also discussed. Growing artificial grasses and fodder crops in places where possible is also suggested.

251 Huang Wenxiu; Meng Youda; Cai Quanlin. 1981. **Domestic animals of Xizang (Tibet).** (The series of the scientific expedition to the Qinghai-Xizang Plateau). Beijing: Science Press. Commission for Integrated Survey of Natural Resources. 198pp.

Keyword(s): *Livestock / Pastures / Feed crops / Breeding / Domestic animals / China, Tibet Plateau*

Call No: 636 HUD

Lang: Ch

This paper offers the summary of field survey on livestock and animal husbandry along with routes

representing different physical and economic units of Xizang. The paper also covers ecological conditions for overall development of animals based on their spatial distribution; characteristics and types of animal husbandry; characteristics of various livestock resources; adaptability of animals that migrate from low altitudes to the Tibetan Plateau. The results of crossbreeding with local species; determination of normal physiological targets; and priorities for animal husbandry development have also been discussed.

252 *International Bank for Reconstruction and Development/World Bank.* 1987. **China: the livestock sector.** (A World Bank country study). Washington, DC: International Bank for Reconstruction and Development/World Bank. 196p.

Keyword(s): *Livestock/Animal husbandry/China*

Call No: 636 INC

Lang: En

The major policy issues hampering the development of the livestock sector are discussed in this paper, which include difficulties in making the transition from an administered to a market system; price distortion due largely to the scope of consumer and producer subsidies; insufficient reliance on interregional and international trade to solve problems of feed and livestock product supply; lack of functional specialisation within the industry; and various weaknesses of support services and the sectoral management structure. But the main report reviews the recent developments in China's livestock production the organisation of the sector, the emergence of Agricultural Trade Markets (ATMs) in large cities as a result of 1985 policy reforms, and influences determining future growth of urban demand for livestock products. Each component of the industry is examined in detail, including feed supply and processing, livestock and poultry breeding, animal health, and veterinary services, alternative production system, and product processing. The major findings of relevance to government policy is given in a summarised form.

253 Lin Yuanwen. 1992. **Current and potential development of agricultural and animal husbandry enterprises in Zhejiang province [China].** In Horne, P. M.; MacLeod, D. A.; Scott, J. M. (eds.) *Forages on red soils in China: proceedings of a Workshop held on 22-25 Apr 1991 at Hunan Province, China.* (ACIAR proceedings, 38). Canberra, ACT: Australian Centre for International Agricultural Research. 121-124p.

Keyword(s): *Agricultural development / Animal husbandry / China*

Call No: 633.2 HOF

Lang: En

Zhejiang Province is located on the southeast coast of China. The climate is sub-tropical with a strong monsoonal influence. Of the total soil area, 40 per cent is classed as red and 11 per cent as yellow soils. The red soil area is generally located in a transition zone between the cropping and forestry zones. Following clearing of forest, the soil has been reclaimed to support cropping and forestry plantations. This paper focuses and highlights the current cropping enterprises, productivity of Zhejiang red soils and potential for increased production with reference to animal husbandry.

254 Zhang Yiguang. 1985. **The climate for animal husbandry in Qinghai-Xizang plateau.** Natural resources (3):60-67

Keyword(s): *Climate / Livestock management / China, Tibet*

Call No: 333.7 NAR

Lang: Ch

India

255 Agricultural Finance Corporation Limited. 1986. **Report of the Integrated Sheep Development Project in U. P. hills.** Bombay: Agricultural Finance Corporation Limited. 2v(380+271)p.

Keyword(s): *Animal husbandry / Kumaun Himalayas / Garhwal Himalayas / Project management / Sheep / Integrated planning / India, UP*

Call No: 636.3 AGR

Lang: En

Sheep rearing in the hill region has been identified as a major subsidiary occupation particularly for the traditional sheep breeders of tribal origins in Uttarkashi, Chamoli and Pithoragarh districts. Due to inadequate infrastructural support and changing socioeconomic conditions, the sheep rearing activities are on the decline. Many constraints hampering sheep development are inadequate breeding facilities, limited fodder and grazing land, inadequate health cover and extension services, lack of marketing facilities and credit. To remove the aforesaid constraints an integrated sheep development project has been formulated. The project report has been prepared in two volumes. The first volume consists of the main report including the background, project area, description of the project, its implementation, justification and suggestions regarding the development of sheep and the second volume includes all annexes.

256 Agriculture Finance Corporation Limited. 1986. **Report of the Integrated Cattle Development Project in U. P. hills.** Bombay: Agriculture Finance Corporation Limited. 2v(336+219)p.

Keyword(s): *Cattle/ Integrated planning/ Animal husbandry/ Kumaun Himalayas/ Garhwal Himalayas/ Project management/ India, UP*

Call No: 636.2 AGR

Lang: En

The hill region of Uttar Pradesh is one of the economically backward and underdeveloped areas of the State. Economy of hill region is basically agricultural and 80 per cent of the population is reported to live in the villages and are engaged in agriculture and other subsidiary occupations. Livestock rearing is the second important occupation of the people. The rearing of cattle and buffalo in the hill areas is not remunerative due to low genetic potential as well as lack of proper health cover, management and low maintenance level and is carried out in the traditional manner. To boost the productivity of these animals, a scientific approach should be adopted so that all the prerequisites for its development are assured. In order to meet this long felt requirement, a project was assigned to prepare feasibility report of Integrated Cattle Development Project for the hill region. This volume provides the project report prepared in two volumes, the first volume embodies the main report regarding the background, project area, involvement of women in cattle rearing, the objectives and scope of the project, its implementation, justification and suggestion for livestock rearing and development and the second volume includes the annexes.

257 Ahuja, K.; Rathore, M. S. 1987. **Goats and goat keepers.** Jaipur: Institute of Development Studies / Jaipur: Printwell Publishers. 100p.

Keyword(s): *Goats / Animal husbandry / India*

Call No: 636.39 AHG

Lang: En

This book provides baseline information about goats and the goat rearing households from the socioeconomic perspective in the Ajmer Sirohi areas so as to help in the design of the future programme and the extension strategies of the Goat Project. The detailed findings with supporting data obtained in the survey is contained in six chapters of the main text which provides detailed quantitative information along with extensive cross tabulations. The summary of findings are included in Chapter Seven. The concluding chapter discusses the general policy implications arising out of the study as well as specific problems which may be stressed in the Goat Development Project being implemented in Rajasthan. All the factual data has been included in the main text or in the Annex tables.

258 Arya, S. L.; Agnihotri, Y.; Samra, J. S. 1994. **Watershed-management: changes in animal population structure, income, and cattle migration, Shiwaliks, India.** *Ambio: a journal of the human environment* 23(7):446-450

Keyword(s): *Watershed management / Animal husbandry / Cattle / India*

Call No: 304.2 AMB

Lang: En

The denudation of grasslands, low productivity of animal resources, general poverty, and resources starvation are some of the problems associated with environmental degradation in many foothill regions. The situation in India is reported to be acute due to excessive depletion of vegetation in the adjoining Himalayan ranges, which represent a quarter of India's forest reserves. This article presents the report which evaluates the effects of one watershed management programme on the animal husbandry sector including composition of cattle population, cattle migration, feed availability and fodder production in Bunga village in the Shiwalik region. The impact of cattle migration on village economy has also been discussed.

259 Bhadula, S. K. 1990. **Animal husbandry in the Himalayas: an appraisal of its present status and future prospects.** In Biswas, S. K. (ed.) *Strategy of development in the Himalayas: a profile of socio-economic change.* Calcutta: Institute of Social Research and Applied Anthropology. 210-235p.

Keyword(s): *Animal husbandry / Himalayas / Development policy*

Call No: 330.9 BIS

Lang: En

The Himalayan region is a large complex ecosystem. The entire region which is comprised of the northern and the northeastern belt has good livestock resources. The livestock raising systems in this region have been different for different hill areas as influenced by local social organisations and locally available cropping patterns and land use systems. This paper thus, describes the present social-crop-livestock systems and their future prospects in the Himalayas. The paper mainly focusses on the problems and recommendations under different headings.

260 Bhagwan, P. S. K.; Maru, A.; Lonkar, P. S. 1993. **Studies on goat production and fodder production management in Rajasthan - management of small ruminant diseases: proceedings of a Workshop held on 15-16 Jan 1993 at Jaipur, India.** Ajmer: Indo-Swiss Goat Development and Fodder Production Project / Jaipur: Institute of Development Studies. 100p.

Keyword(s): *Animal husbandry / Animal diseases / Ruminants / India*

Call No: 636.3 BHM

Lang: En

Small ruminants, comprising of sheep and goats are a predominant species in the livestock production systems of Rajasthan and western India. Disease is a major cause of economic wastage and inefficient production in livestock. It is also a major constraint in development of livestock and farming systems which provide livelihood to millions of rural families in the region. The risk of endemic disease contributes significantly to increase populations of these species and as a consequence, results in various degrees of overutilisation of resources. The proceedings include 13 technical papers presented at the workshop. The papers mainly focus on the diseases and their effects on small ruminant production in India, in general, and in Rajasthan in particular. Some papers evaluate their economic effect on the production system, while some evaluate the economic implications of disease and some identify the most important conditions and syndromes, and sustainable interventions to manage the diseases.

261 Bhat, P. N. 1993. **Management of information for livestock research development in India.** In Maru, A.; Itty, P.; de Groot, B. (eds.) *Information systems for livestock research and development in India: proceedings of a Workshop held on 1-3 Feb 1993 at Avikanagar, India.* Ajmer: Indo-Swiss Goat Development and Fodder Production Project / Jaipur: Institute of Development Studies. 17-20p.

Keyword(s): *Animal husbandry / Animal production / Information systems / Livestock management / India*

Call No: 636.3 MAI

Lang: En

The main achievement in animal and veterinary research, development and extension is the realisation of the importance information technology in livestock production. The adoption of information technology in the livestock sector in India has been slow but when applied it is bound to bring changes in a manner in which research, education, development and extension are carried out in livestock production. The most important change envisaged is in education, and development of human resource capable of applying and using this new technology is the biggest priority. Thus, there is a need to develop indigenous applications base in informatics for livestock research and development. The areas where this new technology can be applied is in education, resource conservation, disaster management and transfer of rural technologies. In this paper, the author has presented in brief the management of

information for livestock research and development in India.

262 Biswas, J. C.; Ranga Rao, G. S. C. 1991. **Problem of livestock development in the Himalayan regions.** In Society for Himalayan Environmental Rehabilitation & Peoples' Action. Livestock development in the Himalayan regions of India. Lucknow: Society for Himalayan Environmental Rehabilitation & Peoples' Action. v.2(16-20)p.

Keyword(s): Livestock management / Himalayas

Call No: 636 SHL

Lang: En

India is one of the most important livestock rearing countries of the world. It ranks first in goat and sixth in sheep production. Economically, India is predominantly agrarian in nature and livestock plays a vital role in national income. Livestock farming combined with horticulture, agriculture and forestry remain the major occupations for the rural people. But the environmental factors affect livestock production through change in altitude, mean annual temperature, its seasonal and diurnal variation, rainfall, humidity and atmospheric pressure. The climatic factors coupled with poor grazing, traditional system of stock management, unimproved genotypes and morbidity and mortality, appear to be the major constraints in livestock development and these factors account for low productivity of animals in the region, which is briefly described in this paper.

263 de Groot, B.; Hoeggel, F. U.; Soni, R. L. 1993. **Information management in a goat development program experience from Rajasthan.** In Maru, A.; Itty, P.; de Groot, B. (eds.) Information systems for livestock research and development in India: proceedings of a Workshop held on 1-3 Feb 1993 at Avikanagar, India. Ajmer: Indo-Swiss Goat Development and Fodder Production Project / Jaipur: Institute of Development Studies. 35-45p.

Keyword(s): Animal husbandry / Goats / Information systems / Livestock management / India

Call No: 636.3 MAI

Lang: En

In this paper an overview is given of the experiences from the Indo-Swiss Goat Development and Fodder Production Project (ISGP) on collection and processing of data from its field performance recording scheme, base farm, extension programme, and action research. The set up of the performance recording scheme the BAKRI is also described.

Constraints encountered in improvement of data handling in the project are discussed and suggestions are made for a systematic set up of information management for a goat development programme.

264 Dhar, T. N. 1991. **Livestock problems of the Himalayan region.** In Society for Himalayan Environmental Rehabilitation & Peoples' Action. Livestock development in the Himalayan regions of India. Lucknow: Society for Himalayan Environmental Rehabilitation & Peoples' Action. v.2(1-10)p.

Keyword(s): Livestock management / Himalayas

Call No: 636 SHL

Lang: En

Livestock problems of the Himalayan region are presented in this paper. The paper starts with brief information on the natural resources, sources for economic condition and relationship among various factors. Then different livestock zones in the Himalayas are summarised followed by the main problem in livestock production, development and management. Additionally, problem areas and some of the suggested areas which need attention is also briefly listed.

265 India. Ministry of Agriculture. Dep. of Agriculture and Cooperation. Directorate of Economics and Statistics. 1984. **Indian livestock census 1977 - Bharatiya Pashu Ganana.** New Delhi: India. Ministry of Agriculture. Dep. of Agriculture and Cooperation. Directorate of Economics and Statistics. v.1221p.

Keyword(s): Livestock / Agricultural statistics / Statistical data / India

Call No: R 636.00212 INI

Lang: EnHi

This document presents data regarding the number of livestock, poultry, agricultural implements and machinery and fishing crafts in India based on the final returns of the '12th Livestock Census' held in 1977 in India. The present volume furnishes all Indian figures of the three census periods viz. 1966, 1972 and 1977 and the State-wise figures for two census periods with rural and urban break-up. The introductory part of the census draws data from a variety of sources. This is followed by statistical tables on number of livestock, poultry, agricultural implement and machinery and fishing crafts in India and then statistical tables on the same items are provided State-wise.

266 Indian Council of Agricultural Research. Publication and Information Division. 1985.

Livestock Production, Management and Development

Handbook of animal husbandry. New Delhi: Indian Council of Agricultural Research. Publication and Information Division. 788p.

Keyword(s): Cattle / Livestock / Animal husbandry / India

Call No: R 636.0202 INH

Lang: En

This is the revised volume for the first edition of the 'Handbook of Animal Husbandry', where besides the chapters on the breeding on livestock, animal nutrition, management, housing and hygiene; diseases caused by virus, bacteria and fungi and miscellaneous pathological conditions and disease; artificial insemination; dairying; beekeeping, and new chapters on pigs, meat and fisheries have been included. This book, thus, presents all the sources of information available to all involved in farming and many problems facing the animal husbandry work.

267 Indian Council of Agricultural Research. 1982. **Research in animal production.** New Delhi: Indian Council of Agricultural Research. 697p.

Keyword(s): Fisheries / Livestock / Dairy products / Animal production / India

Call No: 636.072 INR

Lang: En

This volume presents the significant results of research done in different fields of animal science and fisheries. The book has 26 chapters. Some of the important aspects dealt in the book are: the improvement of cattle and buffaloes through breeding; feeding and managing artificial insemination and fertility problems; sheep, goat, pigs and poultry production; dairy technology; marine and internal fishery resources; and pond culture techniques and fishery technology.

268 Indian Society of Agricultural Economics. 1989. **Livestock economy of India.** Bombay: Indian Society of Agricultural Economics. New Delhi: Oxford and IBH Pub. 245p.

Keyword(s): Livestock / Animal power / Animal products / Animal breeding / India

Call No: 636 INL

Lang: En

Livestock constitutes an important sector of the rural economy of India. Its role in diversifying rural economy, in augmenting income and employment, especially of the weaker sections and in improving the diet and nutrition of the rural population needs to be assessed and promoted. This book is the compilation of papers presented at the seminar on 'Livestock economy of India'. The volume embodies the keynote address delivered by Prof. A Vaidyanathan and twelve selected papers covering the various aspects of the main theme. The

proceedings of the seminar critically examine the important issues contained in the papers presented at the seminar and offer suggestions for the future development of the livestock economy in India.

269 Jackson, M. G. 1985. **A strategy for improving the productivity of livestock in the hills of Uttar Pradesh.** In Singh, J. H. (ed.) *Environmental Regeneration in Himalaya: concept and strategies - reports from the seminar on Environmental Regeneration in Himalaya: concept and strategies held on 24-26 Oct 1983 at Nainital.* Nainital: The Central Himalayan Environment Association / Nainital: Gyanodaya Prakashan. 130-154p.

Keyword(s): Farming systems / Hills / Livestock management / Animal production / India, UP

Call No: 304.2 SIR

Lang: En

Hill farming is largely a self-contained system in which land, livestock and people are tightly integrated. It would be inadequate to treat strategies regarding livestock as a separate subject from strategies regarding of agricultural and social institutions. This paper, therefore, attempts to describe the farming systems of Uttar Pradesh hills using an energy flow model and data that are available with a view to formulate appropriate strategies for the future. Additionally, the paper also identifies unwarranted current assumptions about the system, assumptions deriving for the most part from the economic theory built to describe agriculture in the industrialised, temperate countries of the world. Similarly, the elements of an appropriate strategy to improve the productivity of livestock are discussed. Finally, a new and more appropriate livestock development strategy for the future in the U.P. hills have been formulated.

270 Joshi, B. P. 1990. **Animal agriculture in the central Himalaya.** In Sah, N. K.; Bhatt, S. D.; Pandey, R. K. *Himalaya: environment, resources and development.* Almora: Shree Almora Book Depot. 477-481p.

Keyword(s): Agriculture / Grazing lands / Livestock / Himalayas

Call No: 551.431 SAH

Lang: En

High altitude animal production technology is thronged with different kinds of problems due to temperature, climate, low barometric pressure rarefaction of atmosphere, rugged terrain, etc. However, green forests, rich underwood vegetation, excellent alpine meadows and temperate climate offer favourable conditions for livestock raising. This paper focuses on animal agriculture as the source for the survival of the people in the Central Himalayas.

Livestock Production, Management and Development

The constraints, potential and the solution for the development of animal agriculture is also discussed in brief.

271 Kala, P. 1991. **Problems of animal husbandry in Kumaon Mandal.** In Society for Himalayan Environmental Rehabilitation & Peoples' Action. Livestock development in the Himalayan regions of India. Lucknow: Society for Himalayan Environmental Rehabilitation & Peoples' Action. v.2(48-53)p.

Keyword(s): *Animal husbandry / India*

Call No: 636 SHL

Lang: En

Kumaon Mandal (Nainital) consists of three districts viz. Nainital, Almora and Pithoragarh. The livestock plays an important role in the occupation of the villagers residing in these districts as livestock production is directly related to the economic conditions of the people. Their prosperity is linked with agriculture, animal husbandry, forestry and horticultural practices. Agriculture and animal husbandry is thus, the backbone of their livelihoods and is a laborious occupation. The poor production in agriculture and livestock rearing is due to many factors namely geographical terrain, climatic factors, poor quality of land and livestock and many other conditions, which have all been discussed in this paper.

272 Kamath, M. V. 1989. **Management Kurien-style: the story of the white revolution.** New Delhi: Konark Publishers. 422p.

Keyword(s): *Dairy industry / Milk production*

Call No: 637 KAM

Lang: En

This book gives the detail on the milk revolution which was brought by Dr. Kurien ushering in the White Revolution in India. This gives detail information on the Gujarat cooperative in India.

273 Kaul, P. N. 1988. **Role of rural women in goat rearing.** In Indian Council of Agricultural Research. Abstracts [of papers presented at] International Conference on Appropriate Agricultural Technologies for Farm Women: Future Research Strategy held on 30 Nov - 6 Dec 1988 at New Delhi. New Delhi: Indian Council of Agricultural Research. 72-72p.

Keyword(s): *Animal husbandry / Women's role / Goats*

Call No: 631 INI

Lang: En

Women in this part of the country are mostly illiterate and tradition-bound. The usual day-to-day routine of

rural women is described as goat-rearers, bringing out their specific role in goat-rearing. The customs and traditions in semi-arid regions of Uttar Pradesh are also given. Two case-studies are also briefly described. The observations of other workers in this area are also extracted. The importance of gender based division of labour and communication among rural females has also been emphasised.

274 Khanna, N. D.; Rai, A. K. 1993. **Milk production potential of Indian camel.** Asian livestock 18(2):19-20

Keyword(s): *Dairy products / Milk products / India*

Call No: 636 ASL

Lang: En

Camel is considered as the king of the desert and its milk can be an important supplementary to milk resources in India, thus benefiting the ever-increasing human population. This article discusses the potential of camel milk, its chemical and physical characteristics and nutritive value and suggestions for its improvement.

275 Mahanta, K. C. 1987. **Handbook of animal husbandry.** Guwahati: Omsons Publications. 612p.

Keyword(s): *Dairy cattle / Swine / Goats / Sheep / Horses / Domestic animals / India*

Call No: R 636.0202 MAH

Lang: En

Animal husbandry is a business and, therefore, economic consideration of the value and availability of materials loom larger in it than they do in the investigation of a purely scientific problem. Most animal husbandry problems, thus, arise from practical and economic considerations. Hence, animal husbandry practices must be changed and so do the books on animal husbandry. This book provides a clear understanding of the available information for improving livestock farming. The book has 40 chapters comprising six parts. All chapters dealing with dairy cattle are covered in the first part. Chapters on draught and dual purposes for cattle, swine, goats, sheep, horse and mules are covered in the second section of the first part, and in second, third, fourth and fifth parts. Chapters on housing of farm animals are included in the sixth part.

276 Maru, A. 1993. **Information systems for livestock research and development- an overview.** In Maru, A.; Itty, P.; de Groot, B. (eds.) Information systems for livestock research and development in India: proceedings of a Workshop held on 1-3 Feb 1993 at Avikanagar, India. Ajmer: Indo-Swiss Goat Development and

Fodder Production Project / Jaipur: Institute of Development Studies. 31-34p.

Keyword(s): *Animal husbandry / Information systems / Research and development / India*

Call No: 636.3 MAI

Lang: En

Information is an important development tool. It can accelerate and reinforce development of major resources: human, natural and financial. Information makes adaptation of technology easier, efficient and timely. The paper discusses the problems of data and information availability and processing in the livestock sector in India. It describes the areas of application of informatics and the impact of new information technologies.

277 Maru, A.; Itty, P.; de Groot, B. (eds.) 1993 **Information systems for livestock research and development in India: proceedings of a Workshop held on 1-3 Feb 1993 at Avikanagar, India.** Ajmer: Indo-Swiss Goat Development and Fodder Production Project / Jaipur: Institute of Development Studies. 144p.

Keyword(s): *Animal husbandry / Animal production / Information systems / Livestock management / India*

Call No: 636.3 MAI

Lang: En

Information is a critical resource in any research or development activity. Its appropriate management is vital to sustain a system. Livestock production in India is being rapidly organised from a subsistence mode to market orientation. The challenge before animal scientists is to improve the productivity of livestock and sustain it without causing ecological degradation. The present success of improving livestock productivity under semi-intensive and intensive systems has to spread to other areas in the rainfed regions of the country. This involves complex issues of conserving natural resource and their efficient use, breeding of better animals, their appropriate upkeep including prevention of disease, social and economic aspects of farmers raising the livestock, economics and marketing of the products, and more. The problems associated with these challenges can be resolved by more efficient use of information. The application of new information technology, which includes computers, appropriate software and telecommunications, will be required to bring about better and systematic use of information in the livestock sector. The proceedings include papers which mainly highlight the various facets involved in the management of information in livestock research and development. The recommendations made at the workshop is also included which is expected to pave the way for the future development of information systems for livestock research and development in India and elsewhere.

278 Moorti, T. V.; Vashist, G. D.; Oberoi, R. C. 1984. **Economics of sheep enterprise (a study of tribal area of Bharmaur Tehsil, District Chamba, H. P.).** (Agricultural economics publication, 14). Palampur: Himachal Pradesh Krishi Vishva Vidyalaya. Department of Agricultural Economics. 20p.

Keyword(s): *Animal husbandry / Sheep / Economic aspects / India, HP, Chamba*

Call No: 636.3 MOE P

Lang: En

The socioeconomic condition of sheep farmers, net returns from sheep farming and other crops, input-output relationship for wool production, and the impact of sheep enterprise on farm income, the study conducted in the tribal areas of Bharmaur Tehsil and Chamba district, Himachal Pradesh have been highlighted in this paper.

279 Mudgal, V. D.; Pradhan, K. 1988. **Animal feed resources and current patterns of utilization in India.** In Devendra, C. (ed.) *Non-conventional Feed Resources and Fibrous Agricultural Residues: Strategies for Expanded Utilization - proceedings of a Consultation held on 21-29 Mar 1988 at Hisar.* Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research. 139-146p.

Keyword(s): *Agricultural wastes / Animal husbandry / Animal feeding / Feed crops / India*

Call No: 636.085 DEN

Lang: En

This paper addresses the animal feed resource situation and current patterns of utilisation in India. It lays emphasis on the shortfall of 44 per cent concentrates and 36 per cent green fodder for ruminants. Cereal straws have been found to be the most important feeds. It is well known that the improved breeds of livestock and poultry, unless fed properly, will not express acquired genetic potential under excellent health and environment. Improved breeding and health care are, therefore, no substitute for proper feeding. The organisation of research, involving the Indian Council of Agricultural Research, various Agricultural Universities, State Department of Animal husbandry, public and private organisations, as well as research and development programmes involving national and international agencies are also presented.

280 Negi, G. C. (1986). **Livestock development in Himachal Pradesh in retrospect and prospect.** Palampur: Himachal Pradesh Krishi Vishva Vidyalaya. 59p.

Livestock Production, Management and Development

Keyword(s): *Livestock management / India, HP*

Call No: 636 NEL

Lang: En

Himachal Pradesh is burdened with a very large population of livestock with inefficient and uneconomical production potentials. The area available for fodder and grasslands is already under pressure and is likely to further shrink in size as the human population is still showing a trend towards expansion. Increased production has to be managed from the shrinking resources. In this context, this document presents the past and future prospect regarding the livestock, grassland and fodder development in Himachal Pradesh, with brief information on the present status of livestock in the region.

281 Negi, C. C. 1990. **Livestock development in Himachal Pradesh: retrospect and prospect.** (MFS [Mountain Farming Systems] discussion paper, 7). Kathmandu: International Centre for Integrated Mountain Development. 31p.

Keyword(s): *Livestock management / Animal husbandry / India, HP*

Call No: 636 NEL P

Lang: En

This paper is a comprehensive overview of the status of animal husbandry in Himachal Pradesh. The paper highlights the importance of livestock to Himachal Pradesh, and discusses livestock development by subsectors providing different examples of livestock. Feed and fodder development is discussed through its present situation, prospects, its improvement, conservation, utilisation and silvipasture analysis. Finally, strategies recommended for the future and different programmes for the development of livestock is discussed and are presented. Grasses and legume species available in different zones and list of fodder trees given under different agro-climatic conditions of Himachal Pradesh are given in Annex I and II.

282 Nivasarkar, A. E.; Lata, S.; Sahai, R. 1993. **Information management system for conservation and development of livestock genetic resources.** In Maru, A.; Itty, P.; de Groot, B. (eds.) *Information systems for livestock research and development in India: proceedings of a Workshop held on 1-3 Feb 1993 at Avikanagar, India.* Ajmer: Indo-Swiss Goat Development and Fodder Production Project / Jaipur: Institute of Development Studies. 53-61p.

Keyword(s): *Animal husbandry / Genetic resources / Information systems / Genetic improvement / India*

Call No: 636.3 MAI

Lang: En

The National Bureau of Animal Genetic Resources and National Institute of Animal Genetics have been entrusted with the responsibility of characterising and evaluating the livestock and poultry genetic resources of the country and develop appropriate liaison with global agencies in a similar endeavor. This paper provides details of a computer data bank management software prepared at the National Bureau of Animal Genetic Resources for the management of livestock data. The user friendly software as mentioned in the paper, is considered as capable of running on small computers, is interactive with the user and is compatible with the main frame systems.

283 Parveen, S.; Himayatullah. 1990. **Livestock feeding in the Barani farming system of Punjab: an estimate of feed supply and demand.** *Sarhad journal of agriculture* 6(2):131-136

Keyword(s): *Animal feeding / Feed industry / Livestock / India, Punjab*

Call No: 630.05 SAJ

Lang: En

Livestock feed is the most important input in the livestock industry. Feed quality and its availability can be regarded as some of the prime most constraints affecting livestock production and productivity. The principal cause of poor animal performance is malnutrition. Thus, to sustain rapid growth in livestock production, large increase in livestock feed supplies will be essential. This paper deals with an accounting system which expresses feed requirements and availabilities on the same basis. Evaluation and analysis of the balance of feed requirements and demand is carried out and presented in this paper.

284 Patel, R. K.; Mehta, R. K. 1988. **Appropriate livestock production technologies for farm women.** In Indian Council of Agricultural Research. *Abstracts [of papers presented at] International Conference on Appropriate Agricultural Technologies for Farm Women: Future Research Strategy held on 30 Nov - 6 Dec 1988 at New Delhi.* New Delhi: Indian Council of Agricultural Research. 69-69p.

Keyword(s): *Livestock management / Appropriate technology / Women's participation*

Call No: 631 INI

Lang: En

Under the mixed farming system, women's contribution in generating family income through animal husbandry is very significant even though variable from zone to zone. Landless women work a

greater number of hours in dairying than men and their per hour earning from dairying is four times that from agriculture. Landless women spend 40 per cent of their time in the dairying profession whereas women from small farmers' category spend 33 per cent of their time. Women work for most of the dairy operations from fodder harvesting to its feeding, milking of cows and buffaloes, processing of milk for curd, butter, lassi and ghee as traditional practices. In certain zones, women work for both dairying and poultry. To improve their efficiency and generate more income for the family, a number of new proven technologies are possible in the dairy and poultry sectors. In the goat sector too, due to high involvement, almost the same type of technologies are required. In the poultry sector, training of women for availability of superior germplasm and balanced poultry feed would increase their family income. This paper, thus, presents in brief the appropriate livestock production technologies for farm women.

285 Pradhan, K. 1993. **Contribution of livestock as providers of high-quality protein food in India.** Asian livestock 18(4):40-45

Keyword(s): Livestock / Protein rich food / India

Call No: 636 ASL

Lang: En

This paper presents the contribution of livestock as the source of high quality protein food for the population in India. Foods from animal origin occupy a high place on the nutrition scale and is considered most essential for human health and survival. Also, compared to cereals and pulses, availability of foods from animal sources are widely variable, which have been highlighted in this paper. Suggestion to improve livestock production is also briefly discussed.

286 Rao, C. H. H. 1990. **Some interrelationships between agricultural technology, livestock economy, rural poverty and environment: an interstate analysis for India.** In Indian Society of Agricultural Economics. Agricultural development policy: adjustments and reorientation. Bombay: Indian Society of Agricultural Economics. New Delhi: Oxford & IBH Publishing Co. 155-194p.

Keyword(s): Agricultural technology / Livestock management / Rural poor / India

Call No: 630 INA

Lang: En

There is no commensurate effort to understand the interrelationships between agricultural technology, livestock economy, rural poverty and environment. These aspects are highly interrelated and it is difficult to understand the problems and prospects in any one sector without understanding the developments in the

other sectors. Similarly, the patterns of crop production and livestock growth have an impact on rural environment directly through the pressure they exert for expansion of area under cultivation and grazing and indirectly through the effect they have on the livelihood of the rural poor. Therefore, in the analysis of the impact of agricultural development on rural ecology, the environmentalists have focussed, in general, on the negative impact of agricultural development on rural ecology, therefore, their solutions for the regeneration of environment often come in conflict with the measures for raising farm productivity. There is, thus, a need to understand the causes of environmental degradation in the perspective of technological change in agriculture, the impact of livestock economy and rural poverty. The present paper represents a modest effort in this direction. An attempt has been made in this paper to study the interrelationships between the various sectors mentioned above, particularly insofar as they have a bearing on deforestation or environmental degradation.

287 Rathore, M. S. 1993. **Studies on goat production and fodder resource management in Rajasthan - marketing of goats in Rajasthan.** Ajmer: Indo-Swiss Goat Development and Fodder Production Project / Jaipur: Institute of Development Studies. 74p.

Keyword(s): Animal husbandry / Animal production / Marketing / Marketing policies / India

Call No: 636.3 RAM

Lang: En

In the difficult physical environment of arid and semi-arid area animal husbandry plays a critical role. However, the efforts needed to maximise the contribution of animal husbandry to the producers welfare, without deteriorating the already precarious environment, have not received adequate attention by the scientists, policy-makers, and bureaucrats. The social science researchers are no exceptions to this. In this volume, the author has presented the critical and marketing aspects of the goat enterprises. In this context, the author has assessed the domestic demand for goat meat as well as its export potential and has related these findings to the potential marketable surplus. Important parameters that have been identified and used in estimation have been discussed. The document then provides the report on the survey done for the structure and organisation of the marketing institutions, from village level to the metropolitan centres and beyond. Finally, the document indicates the areas where both these objectives, of enriching the small and marginal goat breeders, as well as contributing to the state finances, can be carried out without any major trade off.

Livestock Production, Management and Development

288 Sagar, V.; Ahuja, K. 1993. **Studies on goat production and fodder resource management in Rajasthan - economics of goat keeping in Rajasthan.** Ajmer: Indo-Swiss Goat Development and Fodder Production Project / Jaipur: Institute of Development Studies. 58p.

Keyword(s): *Animal husbandry / Ruminants / Animal production / India*

Call No: 636.3 SAM

Lang: En

Animal husbandry has been a very important component of the farming systems practiced in Rajasthan. It provides both inter- and intra-year stability in the levels of income and employment, besides adding to the nutritional value of food. This paper examines some important issues related to goats. These include sustainability of the goat numbers in the state, optimal herd size, importance of goat enterprise in rural economy, and the relationship between goat keeping and the environment. The conditions which could make goat keeping in arid and semi-arid parts of Rajasthan a profitable proposition have been delineated. The paper also indicates the condition in which goats would not damage the environment, but instead could compliment the environment of the region in a productive manner.

289 Sankhala, K. 1985. **Livestock grazing in India's national parks.** In McNeely, J. A.; Thorsell, J. W.; Chalise, S. R. (eds.) *People and protected areas in the Hindu Kush-Himalaya: proceedings of the International Workshop on the Management of National Parks and Protected Areas in the Hindu Kush-Himalaya* held on 6-11 May 1985 at Kathmandu, Nepal. Kathmandu: King Mahendra Trust for Nature Conservation / Kathmandu: International Centre for Integrated Mountain Development. 55-58p.

Keyword(s): *National parks / Grazing / Livestock management / India*

Call No: 333.783 MCP

Lang: En

A major management problem in India's national parks is livestock grazing. In the early years, grazing was tacitly permitted, but as it became clear that livestock were having a detrimental impact on the natural habitats, the national park authorities began to take steps to exclude domestic animals from at least some of the country's protected areas. Project tiger was an essential step, providing both focus and support at the highest level. Case studies from Ranthambhore and Desert National Park are provided in this paper.

290 Satish, S.; Farrington, J. 1993. **Bharatiya Agro-Industrial Foundation (BAIF): research programmes in livestock production, health and nutrition.** In Farrington, J.; Lewis, D. J.; Satish, S. (eds.) *Non-governmental organisations and the state in Asia: rethinking roles in sustainable agricultural development.* London: Routledge. 136-144p.

Keyword(s): *Animal health / Animal nutrition / Livestock management / Research / Nongovernmental organisations*

Call No: 307.72 FAN

Lang: En

Bharatiya agro-industries foundation (BAIF), a non-profit development research foundation, has been working on different aspects for cattle production programmes. It seeks to raise income and employment among the rural poor through the application of science and technology in the field of livestock production, health and nutrition. This paper reviews BAIF experience and its links with public sector research and extension institutes in three related areas of research and development: cross-breeding for dairy improvement, vaccine production, and animal nutrition.

291 Shah, C. H. 1986. **Animal husbandry.** In Dantwala, M. L. and others. *Indian agricultural development since independence: A collection of essays.* New Delhi: Oxford & IBH Publishing Co. 162-198p.

Keyword(s): *Animal husbandry / Livestock management / India*

Call No: 630.9 DAI

Lang: En

The livestock economy of India has several outstanding features and has gathered momentum only during the past decade. Its performance is based mainly on the changing composition of animals in favour of milk-yielding bovines. There is a widespread belief that preference for vegetarian food and a religious taboo against cow slaughter are the roots of the livestock problems of India. This paper discusses the nature and basis of the change and the problems faced in realising and raising the production potential.

292 Singh, R. 1992. **Production and marketing of wool and mutton in India: a case study of Himachal Pradesh.** New Delhi: Mittal Publications. 284p.

Keyword(s): *Animal husbandry / Animal products / Meat production / Wool producing animals / India, HP*

Call No: 636.31 SIP

Lang: En

Livestock Production, Management and Development

Animal husbandry plays an important role in rural economy in general and figures very prominently in the agro-pastoral farming systems. The nomadic pastoral farming systems are generally restricted to marginal climatic zones. The type of animals reared depends on the socioeconomic and agro-climatic conditions prevailing in the region concerned. This book examines, in considerable detail the complex and important issues of sheep and goats rearing practices, and the production and marketing patterns of wool and mutton by the migratory shepherds in the western Himalayan region, and suggest policy measures for this improvement. The socioeconomic condition has also been analysed. The book has been divided into eleven chapters. The first chapter highlights the importance of the study and the methodology adopted in the study. A brief review of the related studies conducted earlier is given in the second chapter. The third chapter gives an overall view of the region under study. The fourth chapter provides information on various sheep and goat development programmes in India. In the fifth chapter, a discussion on the socioeconomic characteristics of shepherd households is presented. Sheep and goat rearing practices in the study area are discussed in Chapter Six. The seventh chapter deals with economic analysis of sheep and wool production. The costs of and returns from goat-rearing and mutton production are discussed in Chapter Eight. The marketing patterns of wool and mutton are discussed in the ninth chapter. The estimates of employment and income of the sheep and goat rearing households are discussed in the tenth chapter. The last chapter provides the summary and the conclusion.

293 Singh, R. V.; Bhati, J. P. 1989. **A study of farming systems in high hills temperate dry zone of Himachal Pradesh: an analysis of pastoral farming system.** Kathmandu: International Centre for Integrated Mountain Development. 123p.

Keyword(s): *Farming systems / Mountain farming systems / Pastures / India, HP*

Call No: 631 SIS

Lang: En

Variation in the agro-climatic conditions have resulted into different farming situations in different zones of Himachal Pradesh. The present report describes the farming systems, farming-forestry-livestock linkages and the socioeconomic conditions prevailing in the high hills temperate dry zone of Himachal Pradesh.

294 Singh, R.; Swarup, R. 1985. **Economics of sheep rearing in Himachal Pradesh.** Shimla: Himachal Pradesh University. Agro-Economic Research Centre. 156p.

Keyword(s): *Animal husbandry / Sheep / Economic aspects / India, HP, Kinnaur*

Call No: 636.3 SIE

Lang: En

This document mainly analyses the economics of sheep rearing in the Himachal Pradesh. It includes information on the change in the number of livestock particularly sheep and their relationship with land resources in Himachal Pradesh. It describes the types of fodder available in that region as well as in the neighbouring areas. Evaluation of sheep development programmes is also discussed. The economics of sheep-rearing and its impact on income and employment of the people is detailed. Finally, some suggestions and recommendations are provided for making sheep-rearing a more attractive occupation.

295 Society for Himalayan Environmental Rehabilitation & Peoples' Action. 1991. **Livestock development in the Himalayan regions of India.** Lucknow: Society for Himalayan Environmental Rehabilitation & Peoples' Action. 2v(193+199)p.

Keyword(s): *Livestock management / Animal products / Himalayas / India*

Call No: 636 SHL

Lang: En

The issues related to agricultural development, including livestock development in hills is intimately associated with the effective communication of the technology to farm women, which have been briefly described in this paper. The paper also reveals the level of involvement in marketing, medical care, livestock breeding, and fodder collection. Personal and communicational characteristics of hill women is mainly focused and discussed in this paper to help plan for effective communication and extension strategies for rearing animals.

296 Soni, B. K. 1991. **Sustainable livestock production in the Himalayan region.** In Society for Himalayan Environmental Rehabilitation & Peoples' Action. Livestock development in the Himalayan regions of India. Lucknow: Society for Himalayan Environmental Rehabilitation & Peoples' Action. v.2(43-47)p.

Keyword(s): *Livestock management / Himalayas / Animal production*

Call No: 636 SHL

Lang: En

Sustainable development is the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present

and future generations. Such sustainable developed conserved land, water, plant and animal genetic resources, is environmentally nondegrading, technically appropriate, economically viable, and socially acceptable. Applying these definitions, sustainable livestock production in the Malayan region is discussed in this paper.

297 Varma, A.; Sampath, K. T.; Yadav, B. P.; Roy, D. J. 1982. **Livestock feeds and feeding habits in North Eastern hills of India.** (ICAR research bulletin, 17). Shillong: Indian Council of Agricultural Research. Research Complex for N.E.H. Region. Animal Nutrition Division. 2v.(153)p.

Keyword(s): *Livestock management / Feed crops / Animal feeding / India*

Call No: 636.084 VAL

Lang: En

Nature is the primary source of human requirements. Human race has domesticated crops and livestock for its benefit. Wild form of these domesticated species are still found in different regions. There should be a balance between natural resources utilisation and regeneration. This balance is now upset due to population expansion and natural pollution. Many schemes have been launched to check further deterioration in India. The present dissertation on livestock feeds and feeding habits in north eastern hill of India is presented in two volumes. The first volume deals with an approach for livestock development in the northeastern hill region and includes information on all natural products consumed by the local livestock. Productivity of indigenous feeds and local feeding practices are also evaluated. The second volume presents a brief outline of some basic aspects of animal nutrition and includes information on the prospects of fodder production, conservation and utilisation in different agro-climatic zones of the northeastern hill region. The volume also provides immediate solutions to the problems of soil conservation, fertility built-up, fodder production, conservation, and animal nutrition.

298 Vashist, G. D. 1984. **A comparative economic evaluation of the government Cattle Breeding Farm Kamand(Mandi) and Indo-New Zealand Livestock Improvement Project (INLIP), Palampur (Kangra).** (Agricultural economics publication, 24). Palampur: Himachal Pradesh Krishi Vishva Vidyalaya. Department of Agricultural Economics. 20p.

Keyword(s): *Economic evaluation / Animal breeding / India, HP, Mandi / India, HP, Kangra*

Call No: 636.082 VAC P

Lang: En

Based on the constraint felt at the Government Cattle Feeding Farm, Kamand (Modi) and the Indo-New Zealand Livestock Improvement Project, Palampur (Kangra), a comparative report on the economic evaluation of both cattle breeding farms is presented in this document. A brief review of the history, objectives, resources and achievement of both cattle breeding farms is also given. Finally, it is pledged that the findings and suggestions will be adopted.

Myanmar

299 Than, Timt. 1993. **Livestock as a source of high-quality food in Myanmar.** Asian livestock 18(2):22-24

Keyword(s): *Livestock / Protein rich food / Dairy products / Myanmar*

Call No: 636 ASL

Lang: En

This article highlights the importance of livestock as a source of high quality food in Myanmar emphasising mainly the available livestock industry. Short descriptions of common livestock population found in Myanmar are also given.

300 Tint, L. 1993. **Utilization of indigenous animal species in Myanmar.** Asian livestock 18(10):115-119

Keyword(s): *Animals / Traditional technology / Species / Myanmar*

Call No: 636 ASL

Lang: En

Nature has provided Myanmar with diverse species of animals. Most of these species are known to be utilised as a gift of nature, by hunting at will. Several species are maintained in captivity, tamed and some of these have become the established breeds of livestock today. In this context, the paper focusses on the utilisation of indigenous animal species (elephant, buffalo, cattle, sheep, goats, poultry, and pig) in Myanmar.

Nepal

301 Agricultural Projects Services Centre. 1980. **Feasibility study of livestock development project Tanahu and Lamjung.** Kathmandu: Agricultural Projects Services Centre.

Keyword(s): *Livestock management / Development projects / Nepal, WDR*

Call No: 636 LID 19

Lang: En

This document presents the results of the 'Feasibility study of livestock development project in Tanahu and

Lamjung'. Background, objectives, and the methodology are presented in the first half of the paper. The second half outlines the recommendations focussed on introducing improved breeds, upgrading of economically-low productivity animals, and the development of necessary marketing infrastructure based on the survey and findings. Benefits and the justification of the project are provided in the last chapter.

302 *Agricultural Projects Services Centre. 1985. Integration of population with agriculture, livestock and forest; case study and action plan design for terai and hill panchayats.* Kathmandu: Agricultural Projects Services Centre. 202p.

Keyword(s): *Population / Livestock management / Agriculture / Forestry / Nepal*

Call No: 304.6 AGI

Lang: En

Development programmes are meant to enhance living standards of the population, yet explicit concern over population is lacking in development programmes in Nepal. Recently, population, the missing link, is being explicitly incorporated into the development programmes such that a harmonious relationship between population and development efforts can be affected. Present report attempts to show the relationship of population with agriculture, livestock and forest. A case study of Aurahi and Harichaur village panchayat is provided with prepared participatory and replicable action plans for the above two village panchayat.

303 *Agricultural Projects Services Centre. 1980. Livestock component.* In *Agricultural Projects Services Centre. Feasibility study of Rapti Zone Integrated Rural Development Project.* Kathmandu: Agricultural Projects Services Centre. v3, annex 3, 123p. Kathmandu: Agricultural Projects Services Centre.

Keyword(s): *Livestock / Development projects*

Call No: 307.72 RAI 5

Lang: En

This document presents a project report for livestock in the Rapti zone. The document focusses on the characteristics of livestock in the project area; its products, pastures and fodder situation; animal health, animal disease, and animal health services; along with the major constraints to livestock development and current feeding practices. The objectives of the project regarding livestock are outlined and the project proposals are also discussed in terms of various aspects required for livestock development.

304 *Agricultural Projects Services Centre. 1979. Livestock production.* In *Agricultural Projects Services Centre / South-East Consortium for International Development. Resource Conservation and Utilization Project.* Kathmandu: Agricultural Projects Services Centre / Chapel Hill, NC: South-East Consortium for International Development. 3v, annex 1ap. Kathmandu: Agricultural Projects Services Centre.

Keyword(s): *Animal husbandry / Livestock management / Nepal*

Call No: 333.7 REC 4

Livestock rearing is an integral part of agricultural farming and has become one of the main sources of food and income for rural hill people. Therefore, animal husbandry is regarded as an indispensable element of the resource conservation and utilisation project. This document focusses on the present situation of livestock and animal husbandry system in the project area. The characteristics and the performances of local breeds of animal are described, followed by detailed information on livestock production, marketing and the disease situation which is considered the major constraint. A summary of livestock development proposed programme for different catchment areas is also given.

305 *Agricultural Projects Services Centre. 1985. A study on livestock development activities: Bhaktapur, Kabhrepalanchowk and Sarlahi district.* Kathmandu: Agricultural Projects Services Centre. 91p.

Keyword(s): *Animal husbandry / Livestock management / Development policy / Nepal, CDR, Bhaktapur / Nepal, CDR, Kabhrepalanchok*

Call No: 636 AGS

Lang: En

Livestock development activities undertaken by the government in four areas: achievement of physical targets; accessibility to services; ratio of local and improved animals; and total livestock production and productivity at Bhaktapur, Kabhrepalanchowk and Sarlahi Districts have been discussed. Growth rate of the livestock production and impact of artificial and natural breeding programmes in livestock productivity, its achievements and impact on socioeconomic conditions of the participating districts are discussed. Additionally, the profile of all three study areas and recommendations regarding the livestock development is also included in this document.

306 Alirol, P. 1979. **Transhuming animal husbandry systems in the Kalingchowk region, central Nepal: a comprehensive study of animal husbandry on the southern slopes of the Himalayas.** Kathmandu: Swiss Association for Technical Assistance. 279p.

Keyword(s): *Feed crops / Grazing lands / Pastures / Livestock / Nepal*

Call No: 636 ALT

Lang: En

The Kalingchowk region is one of the most important regions in Nepal in terms of animal husbandry and having a big animal production potential. This document points out the transhuming animal husbandry systems in the Kalingchowk region. The report is divided into six parts. The first two parts deal with the environment and the general economic role of animal husbandry in the region. The environment is not described for itself but only in order to settle the frame where the animal husbandry practices take place. Only the factors which are related to the pastoral system are considered. The general economic role of animal husbandry is described through seven short monographs. The analysis of these systems have been carried out by the means of a model. The components of the system are inventoried and described in the third part. The network of the interrelations between different factors are also dealt with in this part. The fourth part concerns the functioning of the system, which concentrates on the production functions and the production process. In the fifth part the products of animal husbandry are described and the sixth part attempts to identify and classify the main constraints and proposes some of the improvements in terms of animal husbandry.

307 Asian Development Bank / Agricultural Projects Services Centre. 1993. **Livestock master plan.** Manila: Asian Development Bank / Kathmandu: Agricultural Projects Services Centre. 3v. (33+585+537)p.

Keyword(s): *Livestock / Livestock management / Dairy products / Meat production / Development planning / Development plans / Nepal*

Call No: 636 ASL

Lang: En

The Livestock Master Plan is presented as a set of three volumes. First volume provides an overview on 'A Strategy for Livestock Development'. The second volume contains the plan itself, which has been prepared using a systems approach. The plan provides the framework within which livestock development is to be managed during the next twenty years. The plan, therefore, reflects not only the information, experience and considered opinion

contributed by a broad range of national and community leaders, professionals, farmers and other individuals involved with livestock development in Nepal, but also the spirit of change occurring in the country. It is consistent with the political and development philosophies of the current administration, and with the planning undertaken by the National Planning Commission to document these changes. Volume II is extensively cross referenced to Volume III, which contains the most comprehensive set of data assembled on livestock in Nepal, and provides a database for planning, monitoring and evaluation of livestock development in the future.

308 Asian Development Bank. 1985. **Appraisal report of the proposed second Livestock Development Project in Nepal.** Manila: Asian Development Bank. 124p.

Keyword(s): *Animal husbandry / Livestock management / Economic aid / Nepal*

Call No: 636 ASA

Lang: En

Livestock are an indispensable part of the agricultural production system in Nepal. They provide almost all the draft power for cultivation, their dung is extensively used as manure, and they provide most of the power for rural transportation. Livestock products are essential subsistence food items for the farming community as well as a source of cash income generation through trading. This document presents an appraisal report of the proposed Second Livestock Development Project in Nepal. The report mainly focusses on the programme of the project on the improvement of disease control, livestock extension, and support services reaching down to the village level to improve the health and productivity of livestock in Nepal. Details of the project design, its implementation arrangement programme, and financial and economic evaluation of the project cost are also detailed here.

309 Ayre-Smith, R.; Kossila, V.; Servoz, H. 1984. **Report on livestock development and animal feed resource strategies in Nepal.** Rome: FAO. 43p.

Keyword(s): *Animal husbandry / Livestock / Feeds / Nepal*

Call No: 636 AYR P

Lang: En

This is a report presented by an FAO Livestock Development and Feed Resource Mission. In this report, background data about the country that is relevant to the livestock industry have been assembled and presented in Annex I. A number of observations and findings, together with recommendations for short, medium, and long term

projects that are aimed both at strengthening the institutional capacity of the Department of Livestock Development and Animal Health to perform efficiently and effectively, apart from providing new technologies in areas where there is a serious lack of reliable information. Feed resource development and problems in livestock in Nepal are described with its lack in monitoring, evaluation, and planning. The mission has also described an emergency situation and an emergency project that dealt with it. Recommendations on the basis of its observations have also been provided, mainly for the institutional strengthening and development in the areas of animal nutrition and range management, extension and livestock technician training, and monitoring, evaluation and livestock development planning.

310 Bhattarai, P. P.; Katuwal, S. R.; Gatenby, R. M. 1990. **Women's work with livestock.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 102-102p.

Keyword(s): *Livestock / Women workers / Women's participation*

Call No: 630.72636 GAL 45 **Lang:** En

This paper puts forward the role of women in livestock production in brief.

311 Brower, B. 1990. **Range conservation and Sherpa livestock management in Khumbu, Nepal.** *Mountain research and development* 10(1):34-42

Keyword(s): *Pasture management / Livestock management / Nepal*

Call No: 551.432 MOD **Lang:** En

This paper describes the animal husbandry practices in a Sherpa community in the broader context of Khumbu's natural environment, economy, and society and also explores both reasons behind, and also responses to the erosion of a traditional range conservation system.

312 Chaffey, P.; Grose, C. 1990. **A discussion on the role of livestock in sustainable agricultural systems in Nepal.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre,*

Dhankuta, Nepal. Dhankuta: Pakhribas Agricultural Centre. 100-100p.

Keyword(s): *Farming systems / Livestock / Agricultural development / Nepal*

Call No: 630.72636 GAL 45 **Lang:** En

This paper presents the abstract for the paper on the role of livestock in sustainable agricultural systems in Nepal, which puts forward ideas and points for discussion on why and how the above objectives should be achieved.

313 Chand, S. P. 1990. **Crop livestock interactions: practices and prospects in the hills of Nepal.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 99-99p.

Keyword(s): *Livestock / Feed crops / Hills / Nepal*

Call No: 630.72636 GAL 45 **Lang:** En

This paper briefly reviews work on crop research in relation to livestock development in Nepal, with particular reference to hill agriculture. Findings, of crop research at Pakhribas Agricultural Centre and other hill research stations which relate to livestock production are discussed. Finally, the paper deals with future prospects of crop-livestock interactions, concentrating mainly on the area of joint research.

314 Chemjong, P. B.; Kshatri, B. B.; Shrestha, S. R. 1990. **Supplementation of straw-based diets for lactating buffaloes in the eastern hills of Nepal.** (PAC technical paper, 123). Dhankuta: Pakhribas Agricultural Centre. 9p.

Keyword(s): *Animal feeding / Animal husbandry / Buffaloes / Nepal, EDR*

Call No: 630.7263608 CHS 45 **Lang:** En

Rice straw is used for many purposes in Nepal. In this paper, use of rice straw as a feed for livestock is reported. Methods of supplementing rice straw to improve productivity of lactating buffaloes have been studied and the result obtained from the experiment is presented in this paper. Basically, four methods of supplementing rice straw have been compared in this report in terms of milk production and financial gains.

315 Development Research and Communication Group. 1982. **A case study on**

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livestock development component
Rasuwa/Nuwakot Rural Development Project.
 Kathmandu: Development Research and
 Communication Group.

Keyword(s): *Livestock management /
 Development projects / Nepal, CDR*

Call No: 307.72636 RAN 3 **Lang:** En

Animal husbandry practices constitute a major share of the total farming operations. This document presents the report for a case study done for livestock development component by Rasuwa and Nuwakot Rural Development Project. The main approaches outlined in this report regarding the livestock programme are disease control, improved nutrition especially during winter and upgrading the genetic quality. Three major types of livestock development activities identified are extension and education activities, research activities and productivities. Three main production programmes outlined with illustration are animal health service programme, breed improvement programme, and pasture and fodder improvement programme. Conclusion and recommendations based on these three programmes are also given.

316 Dhakal, I. P.; Kharel, M. 1988. **Common diseases of livestock in Chitwan district of Nepal.** Journal of the Institute of Agriculture and Animal Science 9:69-74

Keyword(s): *Livestock / Animal diseases / Nepal, CDR, Chitwan*

Call No: 630.5 JOI **Lang:** En

Observations on the most prevalent diseases of farm animals in the Chitwan District have been made in this paper by analysing the records of three years (1981, 1982, and 1983) from the Veterinary Hospital, located at Bharatpur and its subcentres in the Chitwan District. According to the paper, cattle, buffaloes, and goats were the most common animals brought into the hospital and its subcentres. The most common diseases diagnosed by the veterinarians and their assistants were liverfluke, foot and mouth-diseases, roundworm, pneumonia, haemorrhagic septicemia, and mastitis. Effect of season on the outbreak of disease has also been discussed.

317 Field, D. I.; Yadav, R. N. 1990. **Livestock in K-Bird project.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 123-123p.

Keyword(s): *Livestock / Development projects*

Call No: 630.72636 GAL 45 **Lang:** En

The abstract points out the livestock situation, value and problems in K-Bird project.

318 Fox, J. M. 1987. **Livestock ownership patterns in a Nepali village.** Mountain research and development 7(2):169-172

Keyword(s): *Livestock, / Livestock management / Nepal*

Call No: 551.432 MOD **Lang:** En

Reports indicate that the livestock populations of Nepal exceed available feed resources and that overgrazing causes severe land degradation. Knowledge of livestock ownership patterns and factors that influence livestock ownership is thus important to land management programmes, which have been explained and described in this paper. Attention has been given to the relative importance of the Hindu religion and economic incentives to cattle and buffalo ownership patterns among farmers. Finally, the paper concludes by stressing that the farm size and caste both affect livestock ownership.

319 Gatenby, R. M.; Chemjong, P. B.; Pakhrin, B. 1990. **Production of pigs in the Koshi hills.** (PAC technical paper, 125). Dhankuta: Pakhribas Agricultural Centre. 19p.

Keyword(s): *Animal production / Animal husbandry / Nepal, EDR*

Call No: 630.72636 GAP 45 **Lang:** En

This paper aims to describe the reproductive traits of the local and Pakhribas crossbreed pigs in the Koshi hills, and also identifies the most serious constraints and suggests ways in which pig production could be improved. The main recommendation provided in this paper is that the Pakhribas pigs should be introduced in the villages as their growth and reproductive performance is better than that of local pigs.

320 Gatenby, R. M.; Chemjong, P. B.; Kshatri, B. B. 1990. **Reproduction of goats and sheep in the Koshi hills.** (PAC technical paper, 136). Dhankuta: Pakhribas Agricultural Centre. 20p.

Keyword(s): *Goats / Sheep / Animal production / Nepal, EDR*

Call No: 630.726363 GAR 45 **Lang:** En

This report describes the major reproductive parameters of goats and sheep on farms, and compares the performance of local and introduced genotypes. The paper also describes the systems of reproductive management and identifies the key factors which could be improved upon.

321 Gatenby, R. M.; Neopane, S. P.; Shrestha, N. P. 1988. **Description of farm animals in the Koshi hills.** (PAC technical paper, 98). Dhankuta: Pakhribas Agricultural Centre. 22p.

Keyword(s): *Animal husbandry / Hills / Nepal, EDR*

Call No: 630.7236 PAA 45 **Lang:** En

A report based on the survey conducted in 11 panchayats of the Koshi Hills to describe the farm animals is given in this document. The survey described in this paper constitutes the first part of a study of production systems in the Koshi Hills. Basic information about the animals is provided as background knowledge. The data are summarised in tables.

322 Gatenby, R. M.; Pearson, R. A.; Limbu, T. B. 1990. **A survey of local and jersey crossbred draught oxen in the hills of east Nepal.** (PAC technical paper, 128). Dhankuta: Pakhribas Agricultural Centre. 18p.

Keyword(s): *Animal husbandry / Cross breeding / Hills / Nepal, EDR*

Call No: 630.726362 GAS 45 **Lang:** En

In the hills of East Nepal, fields are cultivated by pair of oxen, and Jersey bulls are used for crossing with local cows to obtain more milk. This report describes a better understanding of the use of draught oxen in the eastern hills of Nepal and also compares the Jersey crossbred with local oxen.

323 Gatenby, R. M.; Phemjong, P. B. 1990. **On-farm experiments with livestock: practical and statistical considerations.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 131-131p.

Keyword(s): *Livestock / Agricultural research*

Call No: 630.72636 GAL 45 **Lang:** En

The summary highlights the on-farm experiments with livestock obtaining statistically significant results.

324 Gatenby, R. M.; Thapa, B.; Shrestha, N. P. (eds.) 1990 **Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.** Dhankuta: Pakhribas Agricultural Centre. 131p.

Keyword(s): *Livestock / Animal production / Hills / Animal breeding / Nepal*

Call No: 630.72636 GAL 45 **Lang:** En

The proceedings includes eight papers each dealing with the improvement of livestock production, income generation through livestock, fodder production and various aspects in livestock management. Beside this, 33 papers presented at the workshop have also been included in this volume under six broad headings as: systems of production, fodder for ruminants, pig and poultry, animal health, development projects and training and research.

325 Gurung, H. B. 1987. **Agriculture, horticulture and livestock planning.** In Gurung, S. B.; Roy, P. (eds.) *Planning with people: decentralisation in Nepal.* New Delhi: Orient Longman. 82-99p.

Keyword(s): *Livestock / Agricultural production / Horticulture / Nepal*

Call No: 338.9 GUP **Lang:** En

Agriculture is the dominant economic sector in Nepal, in fact, it is the backbone of Nepal's economy. Keeping these fact in view, the agricultural sector has been given topmost priority since the Sixth Five-year Plan period. This paper provides different planning sectors for agriculture, horticulture, and livestock. Steps for agricultural development planning is based on the intensity of activities. Main guidelines for preparing the district level agriculture plan and guidelines for planning village panchayat agricultural development programme is provided. Finally, based on these guidelines a case study of Nuwakot district is presented.

326 Gurung, H. B. 1989. **A study on growth rate of local, crossbred and exotic breeds of pigs and carcass evaluation of local pigs.** (PAC technical paper, 116). Dhankuta: Pakhribas Agricultural Centre. 6p.

Keyword(s): *Animal husbandry / Cross breeding / Animal breeding / Nepal*

Call No: 630.7263608 GUS 45 **Lang:** En

This paper attempts to examine the carcass yield of local pigs reared in villages in the area. In order to compare the growth rate of pigs, nine castrated local male piglets were used. The feeding management and weight gain measurements were studied under farmer's management conditions for a period of 48 weeks and finally their carcasses were evaluated.

327 Jodha, N. S.; Shrestha, S. 1990. **Some conceptual issues of livestock farming in the**

mountains. (MFS [Mountain Farming Systems] discussion paper, 4). Kathmandu: International Centre for Integrated Mountain Development. 11p.

Keyword(s): *Animal husbandry / Livestock*

Call No: 636 JOS P

Lang: En

This paper, based on the work at ICIMOD on strategies for sustainable mountain agriculture, illustrates the situation with reference to livestock farming in the mountain areas of Nepal. It first introduces the major characteristics of mountain areas and their operational implications. These characteristics called mountain specificities here, include inaccessibility, fragility, marginality, diversity, niche, and people's adaptation mechanisms in their habitat. The implication of mountain specificities can be seen as development imperatives as well as the prospective attributes of the development interventions. This is indicated with reference to policies and programmes for livestock in mountain areas. This paper examines the coverages between imperatives of mountain conditions and attributes of livestock farming in the hills/mountains.

328 Joshi, B. R. 1989. **Research needs in parasitic diseases of livestock.** In Yazman, J. A.; Oli, K. P. Proceedings of the Workshop on Research Needs in Livestock Production and Animal Health in Nepal held on 1-7 Jan 1989 at Kathmandu. Lalitpur: Nepal. National Agricultural Research and Services Centre. Central Livestock Development Centre. 106-115p.

Keyword(s): *Animal diseases / Livestock / Nepal*

Call No: 636 YAP

Lang: En

Parasitic diseases of livestock constitute a major limiting factor of animal productivity on small farms in Nepal. The state of knowledge regarding various parasitic diseases is very limited due to lack of research on animal health and production in Nepal. This situation is due to many factors, but primarily due to the lack of research institutions which have a commitment to animal health and production research and infrastructure for the proper diagnosis of animal diseases. As a result, animal health research is not progressing and the country depends upon traditional methods of disease control. The existing situation of parasitic diseases of farm livestock and the research to be conducted for each disease is presented in this paper. Parasitic diseases of other animals are not discussed.

329 Joshi, D. D. 1980. **Livestock survey and some development proposals for Karnali and**

Bheri zones. Kathmandu: Karnali-Bheri Integrated Rural Development Project. 62p.

Keyword(s): *Livestock / Animal production / Project design / Nepal, MWDR*

Call No: 307.72636 KAB 47

Lang: En

Livestock could be considered the missing link for increasing crop production in the hills and terai because it converts forage from land otherwise useless for crop production, into the basic soil nutrients for arable soils. In energy terms, livestock harvest solar energy inherent in forage and crop residue and convert it into a form usable by humans. In the Mahabharat hills, livestock are also a principle source of cash income. Livestock also constitute the only nonhuman source of draught power. This document presents the report on the livestock survey made in Karnali and Bheri zones, which point out the important role of livestock. The report also provides some development proposals which are required to bring the livestock sector forward.

330 Joshi, N. P. 1988. **Feed availability, requirements for animals and current patterns of utilization in Nepal.** In Devendra, C. (ed.) Non-conventional Feed Resources and Fibrous Agriculture Residues: Strategies for Expanded Utilization - proceedings of a Consultation held on 21-29 Mar 1988 at Hisar. Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research. 147-157p.

Keyword(s): *Agricultural wastes / Animal husbandry / Animal feeding / Feed crops / Nepal*

Call No: 636.085 DEN

Lang: En

Nepal has the densest livestock in terms of per unit of cultivated land. The major sources of feed are crop by-products, forest resources, and grazing lands. In general, there is adequate feed and fodder during the monsoon season but, for the rest of the year the animals are semi-starved. The main feed resources during the eight month long dry period are low-quality crop by-products like rice, wheat and millet straws. In the mountains, the transhumance system of animal keeping is predominant, in which people move with their herds in a systematic cycle, i.e., migration to mid-hills during winter, and to alpine pastures during summer. In the hills, people adopt a semi-stationary type of livestock keeping. During summer, the herds move higher to the hills and during winter, they are kept in and around settlements. In the terai, livestock are stall-fed, and have access to limited grazing on the fallow land. This paper deals with the ruminants with reference to feed availability, feed and fodder requirements and patterns of utilisation.

331 Joshi, Y. R.; Sharma, A. R.; Mitchelhill, B. K. 1990. **Farm models as research domains: their use for focussing on and prioritising livestock research issues within a farming systems context.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 130-130p.

Keyword(s): *Agricultural research / Livestock / Farming systems*

Call No: 630.72636 GAL 45 **Lang:** En

This paper summarises the use of farm models for focusing on and prioritising livestock research issues within a farming systems context.

332 Karki, M. S. 1993. **Livestock development activities in Kanchanpur district[Nepal].** *Veterinary review* 8(1):23-25

Keyword(s): *Livestock management / Animal husbandry / Nepal, FWDR, Kanchanpur*

Call No: 636.05 VER **Lang:** En

Nearly 50 per cent of the total area of Kanchanpur district is covered by forests comprised mainly of Sal, Sishaw and Khair trees along with a variety of native fodder trees which gives this district considerable potential for livestock development. The local tribes, the Tharus, are mostly marginal farmers who keep limited livestock. This paper highlights the overall livestock development activities conducted in Kanchanpur district, and their progress. The need for making of surplus livestock products and establishing better correlation between the rate of production and market demand are also discussed.

333 Katuwal, S. 1990. **The role of women in livestock production.** (PAC technical paper, 126). Dhankuta: Pakhribas Agricultural Centre. 7p.

Keyword(s): *Livestock / Animal production / Women's participation / Nepal*

Call No: 630.72636 PAA 45 **Lang:** En

The paper identifies the importance of the role of women in livestock production. Proportional distribution of work by gender is given. On a daily basis, women's involvement in different activities is quantified. Important livestock related works, such as milking and fodder collection are analysed according to gender input from which women's involvement comes to 40 per cent and 50 per cent respectively. Women are concerned that they should not be

excluded in development activities. A number of topics have been suggested for which women farmers should be trained.

334 Kilduff, J.; Dutta, P.; Jansen, W. 1990. **Improving routine management of ruminant livestock.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 24-31p.

Keyword(s): *Ruminants / Livestock management*

Call No: 630.72636 GAL 45 **Lang:** En

Routines of livestock management currently practised in the eastern hills of Nepal are detailed in this paper, and suggestions are made as to how they can be improved to up-grade productive performance. The condition of large ruminants have been focussed, because there is more management input with these animals, most particularly, with lactating stock. Feeding systems, water provision, milking practice, manure storage, shifting stall management, dry season feeding, improvement of digestibility of roughages, and estrus recognition are discussed as they affect basic husbandry routines.

335 Kohli Jackle, M. 1983. **Tinau Watershed Project: final report livestock.** Kathmandu: Nepal. Ministry of Forests. Department of Soil Conservation and Watershed Management. 20p.

Keyword(s): *Pastures / Animal husbandry / Feed crops / Livestock management / Nepal, WDR, Palpa*

Call No: 333.7635076 KOT 1 **Lang:** En

336 Kshatri, B. B. 1992. **Trends in the sheep population in the hills of eastern Nepal.** *Veterinary review* 7(2):58-61

Keyword(s): *Sheep / Population growth / Animal husbandry / Nepal, EDR*

Call No: 636.05 VER **Lang:** En

The hills and mountains, of Nepal contains highest sheep population in Nepal. Sheep are unique among domestic livestock because they can be maintained under diverse environmental conditions. Sheep-rearing is an important subsidiary occupation of the rural people in the eastern hills and mountains of Nepal. This paper presents the overall view regarding

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the transhumant system of sheep production in Okhaldhunga district between 1979 and 1989. During a ten-year period the number of shepherds fell by 55 per cent and the number of sheep fell by 38 per cent as given in the paper. The reasons for the decline in the transhumant systems is discussed, and several recommendations are made.

337 Kshatri, B. B. 1990. **Trends in the sheep population of hills of Eastern Nepal.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 105-105p.

Keyword(s): *Livestock/Hills/ Sheep / Nepal, EDR*

Call No: 630.72636 GAL 45 **Lang:** En

This paper presents only the abstract of the paper, that highlights the trends in the sheep population of the hills of eastern Nepal.

338 Manzardo, A. E. 1984. **High altitude animal husbandry and the Thakalis of Thak khola: biology and trade in the Himalayas.** *Contributions to Nepalese studies* 11(3):21-35

Keyword(s): *Himalayas / Animal husbandry / Ethnic groups / Nepal, WDR*

Call No: 306 CON **Lang:** En

A successful system of animal husbandry is critical for maintaining a successful trading system in an area with poor transportation, such as the Himalayas. Thakalis are the main inhabitants of the Himalayan region of Thak Khola. Due to access to pack animals and plentiful pasture land, the Thakalis have an advantage over neighbouring groups in establishing themselves as the major trading groups in central Nepal. In this article the author has emphasised and discussed some of the biological and biosocial elements of the Thakalis' adaptation to life as traders due to economic and structural factors. Some special features of the Thakali high altitudinal husbandry have also been mentioned.

339 Moktan, D.; Mitchelhill, B. K.; Joshi, Y. R. 1990. **Village animal health workers in the Koshi hills.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 126-126p.

Keyword(s): *Animal health / Veterinary services / Nepal, EDR, Koshi*

Call No: 630.72636 GAL 45 **Lang:** En

Summary of the papers presented at the workshop briefs out the activities and their evaluation conducted by the village animal health workers in the Koshi hills.

340 Moktan, D.; Mitchelhill, B. K.; Joshi, Y. R. 1990. **Village animal health workers in the Koshi hills: an evaluation report.** (PAC working paper, 4). Dhankuta: Pakhribas Agricultural Centre. 65p.

Keyword(s): *Animal husbandry / Animal health / Hills / Nepal, EDR*

Call No: 630.72636 MOV 45 **Lang:** En

This document presents the evaluation report on village animal health workers in the Koshi hills, which covers the background, objectives, methods, results, and recommendations.

341 Morel, A. M.; Oli, K. P. (eds.) 1985 **Livestock in the hills of Nepal: proceedings of the First Livestock Workshop held on 5-7 Feb 1985 at Pakhribas Agricultural Centre, Dhankuta, Nepal.** Dhankuta: Pakhribas Agricultural Centre. 172p.

Keyword(s): *Livestock / Animal production / Hills / Animal breeding / Nepal*

Call No: 630.72636 MOL 45 **Lang:** En

The proceedings includes the discussion papers presented at the workshop and the topics covered are comprehensive. Eleven papers have been included under four broad heading: animal husbandry, animal disease, animal nutrition and livestock marketing. Papers presented on draught animals, assessment of fodder resources in the hills, livestock production and disease problems, especially fascioliasis in eastern hills of Nepal are of special interest as they focus on the problems of livestock development in the hills. It also includes the recommendation passed at the workshop.

342 Munankami, R. B. 1989. **An analysis of selling of ruminant animals in Kathmandu during Desain and Tihar festivals.** Kathmandu: No-Frills Consultants. 16p.

Keyword(s): *Livestock management / Market studies / Ruminants / Nepal, CDR, Kathmandu*

Call No: 381.4136 MUA P **Lang:** En

Desain and Tihar are the main festivals in Nepal when a large number of ruminant animals are in

demand both for meat and sacrificial purposes. This demand is highly discernable in the urban areas especially in Kathmandu. The present document, focusses on the magnitude of the supply and demand, their marketing cost, selling price, the sources of supply, the nature of the seller, and finally studies its implications.

343 Nepal. Ministry of Agriculture. National Agricultural Research and Services Centre. 1989. **Lampatan Livestock Research Station: progress report 1988/89.** Kathmandu: Nepal. Ministry of Agriculture. National Agricultural Research and Services Centre. 400p.

Keyword(s): *Animal husbandry / Livestock / Progress reports / Nepal, WDR, Kaski*

Call No: 636 NEP

Lang: En

This volume presents the annual progress report for 'Livestock Research Station Lampatan'. The report is presented in twelve chapters including the Annex. The general description of the station with information regarding its ecological features and natural resources, description on technology, its contribution, target, achievements and overall cost/benefit ratio of the station is provided in the first chapter. Research and outreach activities, production, distribution and general description on pasture and forage section is presented in the second chapter. Research and outreach activities, production, distribution and general description on sheep, buffalo, poultry, and pig are presented in the third, fourth, fifth, and sixth chapter. In Chapter Seven general description and research activities for dispensary are presented. Publication and extra technical activities by the technicians of the station during the fiscal year 1987/88 is given in Chapter Eight. Evaluation of job performances of the staffs at the station, visitors' reports and directives are given in chapters nine, ten, and eleven.

344 Nepal. Ministry of Agriculture. Women Farmer Development Division. 1993. **Women farmers in livestock production programme: a case study of selected districts.** Kathmandu: Nepal. Ministry of Agriculture. Women Farmer Development Division. 44p.

Keyword(s): *Livestock / Women workers / Women's participation / Nepal*

Call No: 305.4 WOF P

Lang: En

For years, despite their substantial contribution, women have remained 'invisible' in the agricultural scene. As a result, agricultural and rural development plans and policies have tended to bypass them and efforts in improving rural living conditions and agricultural productivity. Therefore, women, have remained less than effective. Though recently the

important role of women in the agricultural sector has been recognised, but lack of adequate and reliable data about their role and contribution through various agricultural activities in the rural areas has constrained the formulation of appropriate strategies to promote gender-focussed programmes in the ministry. This report highlights the insight level of participation of the Nepalese women farmers in livestock production. Use of women labour in feeding management followed by fodder collection and animal shed management is reported to be the highest. Based on the findings of the study, it is recommended that development programmes should be gender-specific and woman farmers should be empowered so that they can be actively involved in socioeconomic activities, which need to be changed in the existing system of transfer of technology. In the case of livestock, it is suggested, that such changes should be based on detail study identifying the interest, priorities, and the technical needs of the women farmers.

345 Nepal. Ministry of Forests. Department of Soil Conservation and Watershed Management. 1983. **Tinau Watershed Project: livestock section.** Kathmandu: Nepal. Ministry of Forests. Department of Soil Conservation and Watershed Management. 8p.

Keyword(s): *Livestock management / Nepal, WDR, Palpa*

Call No: 333.716635 TIW 1

Lang: En

Report on the evaluation of faecal samples collected from healthy adult water buffaloes and cattle in the two panchayats of Madan Phokara and Humin in the area of the Tinau Watershed Project are presented in this paper.

346 Nepal. Ministry of Panchayat and Local Development. Rasuwa/Nuwakot Rural Development Project. 1979. **Marketing survey of farm produce, livestock, cloth and storage needs in Rasuwa/Nuwakot District.** Kathmandu: Nepal. Ministry of Panchayat and Local Development. Rasuwa/Nuwakot Rural Development Project. 116p.

Keyword(s): *Animal products / Market studies / Employment / Dairy products / Development projects / Nepal, CDR, Nuwakot / Nepal, CDR, Rasuwa*

Call No: 307.72635 RAN 3

Lang: En

This document deals with internal and external marketing of farm produce, livestock, cloth and storage needs based on the marketing survey done at Rasuwa, Nuwakot District. Recommendations and the

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format of the survey have also been included with brief information on general topics. Data on all above items are presented in tabulated form.

347 Nepal. Ministry of Panchayat and Local Development. 1978. **Rasuwa/Nuwakot Rural Development Project: milk production survey, Trisuli area.** Kathmandu: Nepal. Ministry of Panchayat and Local Development. 8p.

Keyword(s): Livestock / Milk products / Dairy products / Nepal, CDR, Nuwakot / Nepal, CDR, Rasuwa

Call No: 307.726371 RAN 3 **Lang:** En

The Dairy Development Corporation with a socioeconomic unit carried out a milk production survey of the Trisuli area. This report is given in this document.

348 Nepal. Ministry of Panchayat and Local Development. **Rasuwa/Nuwakot Rural Development Project: milk production survey-Yarsa, Dhaibung and Bhorle Panchayats.** Kathmandu: Nepal. Ministry of Panchayat and Local Development. 12p.

Keyword(s): Livestock / Development projects / Dairy products / Animal products / Nepal, CDR, Nuwakot / Nepal, CDR, Rasuwa

Call No: 307.726371 RAN 3 **Lang:** En

The Dairy Development Corporation with a socioeconomic unit carried out a milk production survey of Yarsa, Dhaibunj and Bhorle. The report is given in this document.

349 Oli, K. P. 1984. **Farming system a vital issue for livestock development.** ? 5p.

Keyword(s): Farming systems / Livestock management / Hills / Nepal

Call No: 636 OLF F **Lang:** En

Livestock enterprises are largely influenced by the existing family systems in the hills. Almost all power, fertilizer and animal protein is supplied by the animals. The degree varies depending on farm size, access to inputs' incentives to the workers and farmers, ethnic group distribution and environmental and managerial factors. This paper presents a brief overview on a wide range of farming systems, which play a vital role in livestock development.

350 Oli, K. P. 1989. **Research needs in crop-livestock interactions.** In Yazman, J. A.; Oli, K. P. Proceedings of the Workshop on Research

Needs in Livestock Production and Animal Health in Nepal held on 1-7 Jan 1989 at Kathmandu. Lalitpur: Nepal. National Agricultural Research and Services Centre. Central Livestock Development Centre. 54-58p.

Keyword(s): Farming systems / Crop protection / Livestock management / Nepal

Call No: 636 YAP **Lang:** En

Crop-livestock interaction studies in Nepal have been very limited. However, the majority of work has emphasised increased crop productivity due to the need to increase food grain production. Due to various reasons, insufficient attention has been paid to important crop-livestock interactions. Nepal's small farmers are ethnically diverse, are distributed across several agro-ecological zones, and have very complex farming systems. On-farm research activities is the most efficient way to develop new technology for the small farm. Only through multi-disciplinary research, which considers the complex relationships between the crop and livestock subsystems, will technologies that are appropriate and should be adopted by small farmers be identified. This paper deals with the crop-livestock research strategies required for the development of appropriate technologies for Nepalese small farmers.

351 Oli, K. P. 1986. **Work of the Livestock Section, Pakhribas Agricultural Centre.** In Robinson, P. J. Proceedings of the first Meeting of the Working Group on Fodder Trees, Forest Fodder and Leaf Litter held on 23 Jun 1986 at Kathmandu, Nepal. (FRIC occasional paper, 3/87). Kathmandu: Nepal. Department of Forest. Forest Research and Information Centre. 4-4p.

Keyword(s): Feed crops / Institutional framework / Nepal, EDR, Dhankuta

Call No: 636.08551 ROP P **Lang:** En

This note covers one particular experiment on tree fodder feeding practices carried out in 1985 in the local target area of Pakhribas Agricultural Centre.

352 Osullivan, G. 1980. **Tinau Watershed Project: livestock extension programme.** Kathmandu: Nepal. Ministry of Forests. Department of Soil Conservation and Watershed Management. 60p.

Keyword(s): Animal husbandry / Livestock management / Watershed management / Nepal, WDR, Palpa

Call No: 333.7161 TIW 1 **Lang:** En

353 Panday, K. K. 1991. A simple case of livestock management by the Bhardeo community. In Shah, P. B.; Schreier, H.; Brown, S. J. Soil fertility and erosion issues in middle mountains of Nepal: Workshop proceedings on Jhikhu Khola Watershed held on 22-25 Apr 1991 at Dhulikhel, Nepal. Kathmandu: Nepal. Topographical Survey Branch. Integrated Survey Section / Vancouver, BC: University of British Columbia. Dep. of Soil Science. 47-50p.

Keyword(s): Livestock management / Community development / Nepal

Call No: 631.4 SHS

Lang: En

People in the mountains try to minimise risks, by avoiding lactation when fodder availability is low and when milk conservation and milk product marketing is difficult. This paper attempts to highlight the indigenous techniques used in the management of natural resources such as livestock by a mountain community. The limitations included are high rate of deforestation, food deficit for over six months a year, damaged farming infrastructures such as terraces and irrigation systems, and most adult males being absent from the area over the dry period in search of incomes. The example quoted in this paper, is a simple case study of livestock management by the Bhardeo community located in the centre of Lalitpur district.

354 Pant, T. N. 1981. Seminar on Farm Resource Allocation for Efficient Crop and Livestock Systems in Nepal held on 28-30 Jan 1979 at Kathmandu, Nepal. In Pant, T. N. Seminar reports on Water Management and Control at the Farm Level held on 25-27 Oct 1978 at Kathmandu, Nepal. Kathmandu: Nepal. Ministry of Agriculture. 51-87p.

Keyword(s): Farming systems / Cropping patterns / Small-scale farming / Crop yield / Livestock / Nepal

Call No: 630.7 PAS

Lang: En

This seminar report includes seven papers presented at the seminar on 'Farm resources allocation for efficient crop and livestock system in Nepal'. The papers are on: farm systems and national development policies; studies on cropping systems in Nepal; farming systems in Nepal; small farmers, input supply, and integrated crop and livestock system; integration of crop and livestock system in Nepal; improving crop and livestock systems on small farms in Nepal; and research needs in integrated crop and livestock farming system in Nepal. A summary of the seminar is also provided at the end.

355 Paudyal, D. 1980. The potential of cropping systems research innovations in crop - livestock based farming systems in the hills of Kaski district, Nepal. Los Banos: University of Philippines. 185p.

Keyword(s): Farming systems / Agricultural research / Livestock management / Cropping systems / Nepal, WDR, Kaski

Call No: R 338.16 PAP

Lang: En

This thesis presents the results of the study carried out to examine the relevance of promising cropping pattern innovations within a whole farm framework with the main consideration for linkages involved in the crop-livestock based farming system. Background agricultural information, general comparison between geographical regions, hill agricultural development efforts as well as the objectives and hypothesis of the study are discussed in the introductory chapter. Chapter Two contains a brief discussion of the literature related to the analysis of the crop-livestock based farming systems. The third chapter describes the agroclimatology of the study area together with the farm resource base and principle features of the existing farming systems, existing and potential cropping patterns, as well as livestock development potential in relation to market, resources, feeds and fodder. The fourth chapter provides the conceptual framework, methodology, programming models, sources of data, resources and the types of farms studied. In Chapter Five analysis of the existing and optimal farm plans and the sensitivity analysis with respect to the criteria stated above in the objectives and hypothesis are included. Finally, in the last chapter, the summary, conclusion, and economic implications of the study are presented.

356 Pearson, R. A. 1990. A comparison of the work performance of Jersey crossbred and local oxen in the Koshi hills of east Nepal. (PAC technical paper, 130). Dhankuta: Pakhribas Agricultural Centre. 27p.

Keyword(s): Animal husbandry / Cross breeding / Hills / Nepal, EDR

Call No: 630.726362 PEC 45

Lang: En

In the eastern hills, the majority of male cattle are castrated and kept on farms for work. Apart from hand labour, these are the only means the farmer has for cultivating his land. They also provide manure which is valued as a fertilizer. But to obtain sufficient milk, Jersey bulls have been imported to cross with the local hill cows. This paper presents the report on the comparison of the work performance of Jersey crossbred and local oxen in the Koshi hills of eastern Nepal. Food intake and digestibility of feed have also been compared apart from work performance.

357 Pearson, R. A.; Lawrence, P. R. 1990. **Some observations on work output and feeding of draught animals in the Koshi Hills of Nepal.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 32-41p.

Keyword(s): *Draught animals / Animal feeding / Hills / Nepal, EDR, Koshi*

Call No: 630.72636 GAL 45

Lang: En

Research on draught animals has been based at the Centre for Tropical Veterinary Medicine in Edinburgh and funded by the Overseas Development Administration for over 10 years. The aim is to provide guidelines to help people decide on the type and number of draught animals which are best suited to their particular needs, and the most appropriate way of feeding and working them, given the available resources. Similar kinds of studies were carried out at Pakhribas and also for a short period at Tarahara, the objectives being, to look at the variation in work output between draught animal teams under similar conditions and to identify the main factors responsible for the variation. The results of the studies relevant to draught animals in the hills are also summarised.

358 Poudel, D. 1990. **Saanen goats as a possible income generator for small farmers in Nepal.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 16-23p.

Keyword(s): *Animal husbandry / Income / Small-scale farming / Nepal*

Call No: 630.72636 GAL 45

Lang: En

Goats are mostly kept by small farmers as an income generator. The demand for goat meat is high and always rising. There is however, no specific meat breed in Nepal. This paper summarises the information collected so far on age at first kidding, kidding interval, litter size, survival rate of kids to weaning, birth weight and weaning weight based on the breeding programme, which compares meat productivity of Saanens and their crossbreeds with local hill goats.

359 Rai, U. P.; Joshi, Y. R.; Sharma, A. R. 1990. **Long-term trends in market prices:**

implications for livestock research and development. In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 101-101p.

Keyword(s): *Livestock management / Agricultural markets / Agricultural research*

Call No: 630.72636 GAL 45

Lang: En

The abstract for the paper on long-term trends in market prices: implications for livestock research and development, focusses on the increase in the production levels of livestock that might benefit the smaller farmers.

360 Rajbhandary, H. B.; Pradhan, S. M. S. 1981. **Appropriate technology for livestock development to hill farming systems.** In Nepal. Ministry of Agriculture. Department of Agriculture / Agricultural Development Council. Seminar on Appropriate Technology for Hill Farming Systems held on 22-26 Jun 1981 at Kathmandu. Kathmandu: Nepal. Ministry of Agriculture. Department of Agriculture / Kathmandu: Agricultural Development Council. 258-296p.

Keyword(s): *Farming systems / Hills / Livestock / Appropriate technology / Nepal*

Call No: 631.09143 DES

Lang: En

The hard pressing need of present day Nepalese agriculture is to find out the appropriate technology for increasing production through the study of hill farming system. Cropping system constitutes only a part of this farming system. This paper intends to assemble the relevant scattered observations made by the authors from time to time to give information regarding appropriate technology for livestock development to the hill farming systems of the area, where the core of the subsistence economy is the integration of crop and livestock production. The authors further attempt to assess the magnitude of the problem in transferring the appropriate technology of the government livestock farms to the farming systems of the hills.

361 Rajbhandary, H. B.; Pradhan, S. L. 1991. **Livestock development and pasture management.** In World Conservation Union (IUCN) Nepal. Background papers to the national conservation strategies for Nepal. Kathmandu: World Conservation Union (IUCN) Nepal. V.1(259-331)p.

Keyword(s): *Livestock management / Pasture management / Nepal*

Call No: 333.715 WOB

Lang: En

This paper discusses the livestock development in terms of national economy and pasture management to support livestock development. The general description discusses the major programme of livestock development and pasture management and their importance in the objectives of the National Conservation Strategy (NCS). Major obstacles, conservation/ development interaction for the livestock development and pasture management is also discussed. Improved agropastoral practices and forest grazing is highlighted. Range management and massive fodder tree plantation in the hills and its effect in the livestock improvement is also discussed. Finally, the paper provides the priority required of livestock development and pasture management based on the NCS and pilot programme on livestock development and pasture management.

362 Robinson, P. 1993. **Indigenous knowledge in yak/cattle cross-breeding and management in high altitude Nepal.** In Tamang, D.; Gill, G. J.; Thapa, G. B. (eds.) *Indigenous management of natural resources in Nepal: proceedings of the Workshop on Indigenous Management of Agriculture held on 8-9 Jun 1992 at Dhulikhel, Nepal.* Kathmandu: Winrock International Inst. for Agricultural Development. 239-248p.

Keyword(s): *Animal breeding / Animal production / Animal husbandry / Traditional technology / Yaks / Nepal*

Call No: 333.7 TAI

Lang: En

The indigenous knowledge in yak/cattle cross breeding type and its management in the high altitude of Nepal, with broad characteristics and occurrences of livestock types is discussed and described in this paper.

363 Robinson, P. J. 1990. **Trends in livestock numbers and fodder and tree resources in Dolakha district.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 104-104p.

Keyword(s): *Livestock / Feed crops / Nepal, CDR, Dolakha*

Call No: 630.72636 GAL 45

Lang: En

The abstract focuses on the aspects of the livestock and cropping system management which contribute to differences in the dynamics of private tree resources.

364 Salman, A. A. 1977. **Feasibility study for an integrated dairy project in outer Kathmandu valley, Kingdom of Nepal.** Kuwait: Kuwait Dairy Company. 28p.

Keyword(s): *Animal husbandry / Dairy industry / Feasibility studies / Nepal*

Call No: 637 SAF P

Lang: En

The main objectives of this study, which aims at formulating an integrated dairy project in the outer Kathmandu Valley, is to produce in short, four million litres of milk for its population. This report describes the project along with a comprehensive technical, financial and economic analysis of the project.

365 Sapkota, M. R. 1991. **Cheese production in Nepal: lessons from the past, lessons for the future.** (Research report, 13). Kathmandu: Winrock International Inst. for Agricultural Development. 71p.

Keyword(s): *Animal products / Dairy products / Nepal*

Call No: 637.3 SAC

Lang: En

This paper describes the growth of the cheese industry in Nepal from its inception to the present day with a view to uncover the keys to its relatively high degree of success and assess its present situation and future prospects. Statistical analysis on cheese production is discussed to identify trends over time in such variables as: levels of output, prices, cost of production, composition of output, profitability and public/private participation in cheese production. Factors which led to the establishment and subsequent development of cheese production in the country are examined and considered as lessons that might be learnt for other agricultural sub-sectors and for other agro-based industries. The document also briefly introduces the cheese makers in both the public and private sectors. Marketing of cheese and its storage process and an assessment of existing demand for cheese in the Kathmandu and Pokhara valleys where a substantial proportion of cheese is consumed, are described. Finally, in the concluding chapter the role played by different participants in the development of the cheese industry is described. Existing problems and future prospects of cheese making are also included.

366 Sedhain, D. 1993. **A study of the transhumance system of management of**

sheep in Rasuwa and Nuwakot districts [Nepal]. In Tamang, D.; Gill, G. J.; Thapa, G. B. (eds.) *Indigenous management of natural resources in Nepal: proceedings of the Workshop on Indigenous Management of Agriculture and Natural Resources*, held on 8-9 Jun 1992 at Dhulikhel, Nepal. Kathmandu: Winrock International Inst. for Agricultural Development. 278-289p.

Keyword(s): *Animal husbandry / Transhumance / Traditional technology / Nepal, CDR, Nuwakot*

Call No: 333.7 TAI

Lang: En

Sheep-rearing is an important means of livelihood among the rural poor of Rasuwa and Nuwakot District. This paper discusses the traditional systems of sheep management and evaluates the production and management systems regarding its feeding practices, protections and shelter, diseases, pests, and poisoning. Finally, brief recommendations to improve the future status of sheep are given.

367 Sharma, R. P. 1982. *Invest in livestock in Nepal*. In Time, J. E.; Lattimore, R. G. (eds.) *Livestock in Asia: issues and policies*. Ottawa, Ont: International Development Research Centre. 60-64p.

Keyword(s): *Livestock / Investments / Nepal*

Call No: 636 FIL

Lang: En

This paper describes the inter-relationships between livestock and other components, which form the Nepalese farming system, and indicate the flow of specific resources from and to the livestock component. It also identifies the factors that influence the decision of Nepalese farm households to invest in livestock in relation to total livestock units and compositional structure of the total livestock population. Area for research on livestock economics is also suggested. The paper is based on secondary sources of information and includes six studies covering nine locations.

368 Shrestha, N. P. 1990. *Experiences of Pakhribas Agricultural Centre in livestock improvement in the hills of Eastern Nepal*. In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal*. Dhankuta: Pakhribas Agricultural Centre. 124-124p.

Keyword(s): *Agricultural research / Livestock / Genetic improvement/Hills/ Nepal, EDR, Koshi*

Call No: 630.72636 GAL 45

Lang: En

This paper presents only the abstract of the paper which briefly describes the experience of Pakhribas Agricultural Centre in livestock production in the eastern hills of Nepal with its potential improvement particularly in that area.

369 Shrestha, N. P. [1988]. *Livestock production and marketing needs of the farmers*. In Nepal. Ministry of Agriculture. Department of Food and Agriculture Marketing Services. *Proceeding of Small Farmer Marketing Extension Training Workshop held on 8-10 Sep 1987 at Pokhara, Nepal*. Kathmandu: Nepal. Ministry of Agriculture. Department of Food and Agriculture Marketing Services. 50-68p.

Keyword(s): *Animal products / Livestock / Marketing*

Call No: 658.80963 FOP

Lang: En

Ninety-one per cent of the Nepalese people obtain their livelihoods from agricultural sector and most of them in the rural areas maintain some livestock. This paper discusses the role of farmers in livestock production and the importance of marketing required to fulfil the needs of the farmers. Problems and constraints of livestock management and suggestion of the improvement of marketing are also listed out.

370 Shrestha, N. P.; Sherchand, L. 1988. *Role of livestock in Nepalese farming system*. Helsinki: World Association for Animal Production. 81p.

Keyword(s): *Livestock / Farming systems / Nepal*

Call No: 636 SHR

Lang: En

Agriculture in Nepal is a mixed farming system, the integration of the crops with livestock, forestry and marketing is an old practice of Nepalese farmers. All the cultivated land of the higher hills, and mid hills are ploughed by animal power. The animal power of Nepal is being used for transportation, land preparation, threshing and harvesting of crops. This documents highlights the role of livestock in the Nepalese farming system with special reference to gross agriculture and livestock contribution. To raise the livestock production, animal feed resources, improved breed introduction and animal health improvement have been given greater emphasis. System of animal rearing, constraints of livestock development and recommendation for its development for the future are also provided.

371 Shrestha, R. L. J. 1982. **The relationship between the forest and the farming system in Chautara, Nepal with special reference to livestock production.** Canberra, ACT: Australian National Univ. 106p.

Keyword(s): *Farming systems / Forest management / Livestock management / Nepal*

Call No: R 636 SHR

Lang: En

Livestock raising is an important activity in the hill farming systems of Nepal. The high dependency of farmers on the forest, for raising livestock and meeting domestic needs, is considered to be one of the major reasons for deforestation and soil erosion. The relationship between the forest and the farming system in Chautara, Nepal, with special reference to livestock production has been focused in this thesis. In this context, an attempt has been made to discover the reasons why the Nepalese farmers attach with great importance to livestock. This involves examining the role of livestock in the farming system. The interaction of the farming system with the forest then is examined to discover the contributions made by the rural people significantly to deforestation. Data provided in the thesis show that households spend a considerable portion of their time looking after livestock. The data also reveal that families depend heavily on the forest, but collect greater quantities of fodder for their animals than firewood. Policies to alleviate the problems are suggested, which involves trying either to reduce animal numbers or to provide more fodder. This possibility is examined in the second part of the thesis. For this, regression analysis is conducted in order to determine the effect on livestock units of the number of privately owned fodder trees and the time taken by a family member to collect a load of fodder, factors likely to be affected by reforestation.

372 Singh, D. B. 1983. **Annual report of Pansayakhola Sheep Farm: 1982-83.** Kathmandu: Nepal. Ministry of Agriculture. Department of Livestock Development and Animal Health. 54p.

Keyword(s): *Sheep / Animal production / Nepal, CDR, Nuwakot*

Call No: 636.3 SIA

Lang: Ne/En

This documents present the annual report of Pansayakhola sheep farm, which illustrates its results for breeding and production for sheep in various tables and graphs.

373 Starkey, P. H.; Aperofia, K. V. 1986. **Integrated livestock systems in Nepal and Indonesia: implications for animal traction programme in west Africa.** (FSSP network

report, 3). Florida, FL: Farming System Support Project. Univ. of Florida. 64p.

Keyword(s): *Livestock / Farming systems / Animal products / Nepal / Africa / Indonesia*

Call No: 636 STI

Lang: En

Integrated livestock systems in Nepal and Indonesia with references to animal traction is highlighted in this report. Animal traction is commonly used in both Nepal and Indonesia, even in areas of steep, terraced hillsides and high population densities. The report is solely based on the authors participation in the Second Crop-Livestock Systems Research and Monitoring Tour of Nepal and Indonesia. First, crop-livestock systems in Nepal and Indonesia are described followed by the information on technical lessons learned from the tour. Discussions during plenary sessions and field visits are highlighted as important multi-disciplinary approach to research. Finally, animal traction networking activities in Africa and Asia is illustrated and recommended that further exchanges between the Asian Rice Farming Systems Network and the West African Integrated Livestock Systems Network be undertaken. Some background information of these organisation is also provided in this report.

374 Stoufer, K.; Ojha, N. 1993. **An animal health programme in Nepal.** *Appropriate technology* 19(4):13-15

Keyword(s): *Animal health / Animal husbandry / Nepal*

Call No: 604 P

Lang: En

Formal training courses in animal health have been running continuously since 1981 by staff of both expatriate and Nepali animal husbandry specialists, veterinarians, livestock educators and animal health technicians. Training methods and course content have continued to evolve over the years in response to trainee requests, the growth of development work in Nepal, and programme experience. The components of the basic and refreshers courses for a new training programme run to help the villagers to meet their needs in Nepal is explained in this paper. Additionally, the plan for its future regarding the training courses is also briefly discussed.

375 Trapp, H. **Assessment of the livestock carrying capacity and development strategy (Kabhrepalanchowk district).** In International Centre for Integrated Mountain Development. Applications of GIS to rural development planning in Nepal. (MENRIS [Mountain Environment and Natural Resources' Information System] case study, 2). Kathmandu: International Centre for Integrated

Mountain Development. 1-18p.

Keyword(s): *Geographical information systems / Livestock management / Carrying capacity / Development strategy*

Call No: 621.3679 INA

Lang: En

This paper focusses on the livestock and feed situation in the middle mountain regions of Nepal in Kabhrepalanchok district. The problem areas of specific terrestrial units is highlighted. An overview on population, natural resources and infrastructure of the district is presented along with the situation of feed supply, feed requirements, and livestock carrying capacity.

376 Tulachan, P. M. 1985. **Socio-economic characteristics of livestock raising in Nepal.** (Research report, 1). Morilton, AR: Winrock International Institute for Agricultural Development. 27p.

Keyword(s): *Livestock / Economic aspects / Nepal*

Call No: 636 TUS P

Lang: En

This paper attempts to describe existing village livestock production systems, emphasising the socioeconomic aspects affecting livestock holdings and shows how livestock production is related to other farming tasks. The paper also describes the links between crop and livestock production systems and determines the importance of livestock to farmers incomes. Costs and returns of livestock production systems is analysed and socioeconomic and institutional constraints to increase village livestock production is assessed. Finally, policy recommendations are listed.

377 Upadhyay, R. M. 1982. **Livestock development projects: the Nepalese experience.** In Time, J. E.; Lattimore, R. G. (eds.) *Livestock in Asia: issues and policies.* Ottawa, Ont: International Development Research Centre. 157-160p.

Keyword(s): *Livestock / Animal products / Nepal*

Call No: 636 FIL

Lang: En

Nepal has one of the highest livestock populations per household in the developing countries of the world. The productivity of livestock, however, is very poor because of poor nutrition, inadequate health services, poor genetic potential, inadequate extension services, and the lack of proper marketing channels. The Department of Livestock Development and Animal Health is the main institution responsible for livestock development, and the Dairy Development Corporation is responsible for collecting, processing,

and marketing milk and milk products. The main objectives of livestock development projects in Nepal are to improve animal health and production to increase rural income and employment, improve human nutrition, and reduce imports. The main strategy for livestock development is to encourage better utilisation of existing and improved feed resources, improve genetic makeup of livestock, provide better animal health services, and provide better marketing channels. This paper focusses on long-term policies, labour training programmes along with livestock production constraints, national livestock development plans and factors affecting returns from livestock development projects.

378 Wyatt-Smith, J. 1982. **The agricultural system in the hill of Nepal: the ratio of agricultural to forest land and the problem of animal fodder.** (APROSC Occasional Paper, 1). Kathmandu: Agricultural Projects Services Centre. 17p.

Keyword(s): *Hills / Feed crops / Land use / Farming systems / Nepal*

Call No: 630 WYA P

Lang: En

The problem of environmental degradation in the hills of Nepal are discussed briefly. They are attributed to the adoption of a single sectoral approach. There is a lack of attention being paid to the agricultural system as a whole and to the relationship between farm holdings and neighbouring forest land. The latter is essential both for conservation and for provision of such essential farm products as fodder, fuel, and timber. The relationship of agricultural land to forest land in the mixed farming system of the hills is quantified by area. The ratio given in this paper is approximately 1:2.8, 1:0.24 to 0.48 and 1:0.32 respectively for fodder, fuel and timber in the area of Pokhara and Tansen under the present very low level of management.

379 Yadav, Y. 1992. **Farming-forestry-livestock linkages: a component of mountain farmers' strategies (Nepal).** In Jodha, J. S.; Banskota, M.; Partap, T. (eds.) *Sustainable mountain agriculture.* Kathmandu: International Centre for Integrated Mountain Development. v.1(141-161)p.

Keyword(s): *Agricultural development / Forestry / Development strategy / Livestock / Nepal*

Call No: 630 JOS

Lang: En

Mountain farming systems have acquired a number of features to manage problems and opportunities created by mountain characteristics such as inaccessibility, fragility, and diversity. These farming

systems are highly labour-intensive and depend to a large extent on the available forests and rangelands. Forests on the other hand are as integral a part of the farming system as arable land and livestock. Thus, crop production, animal husbandry and forestry constitute the three main closely and inseparably integrated components of the mountain farming system. Furthermore, these linkages manifest the nature and degree of regenerative processes that are central to the sustainability of farming systems in the mountains. This paper presents some of the findings of that study. The paper introduces the study areas and focusses on their physical, socioeconomic, and agricultural characteristics as a background to understanding the strength and weaknesses of the linkages. This is followed by a discussion on the linkages among the various components of mountain farming systems and then by some important policy implications based on the findings of the study.

380 Yazman, J. A.; Oli, K. P. 1990. **Improvement of livestock production in Nepal through animal breeding.** In Gatenby, R. N.; Thapa, B.; Shrestha, N. P. (eds.) *Livestock in the hills of Nepal-2: proceedings of the Second Livestock Workshop held on 11-16 Mar 1990 at Pakhribas Agricultural Centre, Dhankuta, Nepal.* Dhankuta: Pakhribas Agricultural Centre. 1-15p.

Keyword(s): *Animal breeding / Animal production / Genetic improvement / Nepal*

Call No: 630.72636 GAL 45 **Lang:** En

Breed improvement in Nepal, where small farmers and herders have multiple objectives in keeping livestock, is a more complex process than in developed countries where livestock are selected for their efficiency in producing single products. Achievement of success in breed improvement programmes in Nepal, therefore, requires socioeconomic and marketing studies to be carried out in initial stages long before exotic breeds are imported and crossbreeds are distributed to farmers. This paper examines current programmes to improve livestock production through breeding in Nepal, including the substantial efforts by His Majesty's Government (HMG) to provide improved livestock for farmers through importation of exotic breeds, crossbreeding and artificial insemination. A National Livestock Breed Improvement Programme (NLBIP) is proposed to link together farmers and HMG agencies. The mandate of the NLBIP is reported to develop livestock breeds which are appropriate to the objectives and resources of Nepalese farmers.

381 Yazman, J. A.; Oli, K. P. (eds.) 1989 **Proceedings of the Workshop on Research**

Needs in Livestock Production and Animal Health in Nepal held on 1-7 Jan 1989 at Kathmandu. Lalitpur: Nepal. National Agricultural Research and Services Centre. Central Livestock Development Centre. 136p.

Keyword(s): *Livestock management / Animal health / Nepal*

Call No: 636 YAP

Lang: En

The proceedings illustrate the emphasis for livestock and animal health research, which should not only be on lab for the sake of the publication, but rather on adaptive research suggested for the real situation of livestock on small farms and in migratory herds and flocks. The volume includes 12 research papers presented at the workshop under four sections: animal breeding, animal nutrition, pasture and fodder, and animal health. Reports of the working groups on these four topics have also been provided in this proceedings.

Pakistan

382 Begum Sajida Nayyar Abidi. 1988. **Women in livestock management in Punjab [Pakistan].** In Pakistan Agricultural Research Council. *Rural women in Pakistan farming systems research: proceedings of the Workshop on Role on Rural Women in Farming Systems Research, held on 12-14 Jan 1988 at Islamabad, Pakistan.* Islamabad: Pakistan Agricultural Research Council. 13-14p.

Keyword(s): *Livestock management / Women's participation / Women's role / Pakistan*

Call No: 305.42 PAR

Lang: En

Women play a significant role in crop production, livestock management, and poultry farming in spite of many religious and social barriers and constraints. These are in addition to their seasonal work, child-rearing, and household duties. The role of women in small-scale and family subsistence farming is featured in this summarised paper. Livestock rearing with suggestions about the introduction of appropriate interventions for women and by women in rural Punjab are given. Suggestions to improve the production-oriented development in livestock and poultry are also presented.

383 M. Y. Malik. 1988. **Feed availability, requirements for animals and current patterns of utilization in Pakistan.** In Devendra, C. (ed.) *Non-conventional Feed Resources and Fibrous Agriculture Residues: Strategies for Expanded*

Livestock Production, Management and Development

Utilization - proceedings of a Consultation held on 21-29 Mar 1988 at Hisar. Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research. 158-170p.

Keyword(s): *Animal husbandry / Animal feeding / Feed crops / Pakistan*

Call No: 636.085 DEN

Lang: En

Livestock production in Pakistan depends heavily on traditional feeding methods. Due to an increasing human population, priority has been given to production of food grains and cash crops. Livestock frequently face a shortage of traditional forages and pastures. Under the circumstances, crop residues and agro-industrial by-products offer great potential for feeding livestock. Considering the feed resources available in the country, there exists an acute deficiency of nutrients. As a result, the productivity of livestock is not in accordance with their genetic potential. To overcome the feed deficit situation, efforts are necessary to increase forage supplies through the introduction of high-yielding varieties and increased application of fertilizers. This paper addresses the present main animal feed resource and current patterns of utilisation in Pakistan.

384 Mohammad Amin; Mohammad Nishat. 1980. **Economics of milk production in Karachi.** (AERC [Applied Economics Research Centre] discussion paper, 42). Karachi: University of Karachi. Applied Economics Research Centre. 48p.

Keyword(s): *Milk production / Dairy products / Pakistan*

Call No: 637.1 MOE P

Lang: En

This paper based on the economics of milk production in Karachi attempts to analyse the factors which influence milk yields and the cost of producing milk in the Landhi Cattle Colony. Both production and cost function are estimated with data collected from a sample of 114 herds from the cattle colony. The paper also seeks answers to a number of questions, such as how inputs are allocated to different levels of outputs, which factors determine levels of milk production, how milk production and cost functions vary by herd size, and the types of marketing channels which are used.

385 Pakistan. Agricultural Census Organization. 1989. **Pakistan census of livestock 1986.** Lahore: Pakistan. Agricultural Census Organization. 53p.

Keyword(s): *Livestock / Statistical data / Pakistan*

Call No: R 633.009549 AGP

Lang: En

This report presents the final results of 1986 Census of Livestock in Pakistan in three volumes. Volume 1 contains tabulation at country and province levels, Volume 2 at province, division and district levels, whereas Volume 3 presents data on milk production and number of animals slaughtered. Preceding the statistical tabulations, there is a brief introduction to geographic coverage, scope, reference period, sampling plan and operational procedures followed by main findings and concepts and definitions of terms used in the tabulations. The introductory part also include a write up on quality of census data and extent of sampling and non-sampling errors likely to be associated with the data on important items.

386 Rafiq H. Usmani. 1994. **Possible applications of biotechnology to increase livestock productivity in Pakistan.** Asian livestock 19(1):8-11

Keyword(s): *Livestock management / Biotechnology / Technology transfer / Animal production / Pakistan*

Call No: 636 ASL

Lang: En

One of the greatest challenges for livestock sector of Pakistan is to meet the growing demand for animal and poultry products. This situation calls an impressive increase in domestic livestock production. Animal biotechnology holds several promises to achieve different targets for the livestock improvement. In this paper, possible application of biotechnology to increase livestock productivity in Pakistan through genetic improvement, production in the field of efficiency improvement, production performances improvement, and effective and economical disease control have been briefly described.

Africa

387 Dozowela, B. H.; Saleem, M. A. **Agroforestry systems in Africa: role in livestock production and protection of the environment.**

Keyword(s): *Livestock production / Environmental protection / Agroforestry / Africa*

Call No: 634.9 COA

Lang: En

Agroforestry practices and systems for supporting pastoral and agropastoral livestock production in Africa range from the preservation of trees to more intensively planted and managed systems. In the extensive traditional practices of tree conservation,

use strategy is geared towards biomass maintenance rather than production. Certain native tree species are protected for their fodder value in grazing and croplands. A mixture of livestock, grazers and browsers make the best use of vegetation types and forms. This paper looks at agroforestry options (traditional pastoralist systems, extensive agropastoral systems, and intensive agropastoral systems) available to mixed crop-livestock smallholder farmers, especially with respect to sustaining crop yields and livestock production through animal traction for ploughing and the provision of manure. The paper also addresses issues of protecting the environment within the context of pastoralism and agropastoralism.

388 Goe, M. R.; Astatke, A. 1989. **Development of draught animal power systems in Ethiopia.** In Haffmann, D.; Nari, J.; Petheram, R. J. (eds.) *Draught animals in rural development: proceedings of an International Research Symposium held on 3-7 Jul 1989 at Cipanas, Indonesia.* Canberra, ACT: Australian Centre for International Agricultural Research. 69-77p.

Keyword(s): *Draught animals / Animal power / Animal husbandry / Ethiopia*

Call No: 307.72 HOD

Lang: En

Use of animal power in Ethiopia is mainly confined to primary and secondary tillage using a plough called *maresha* which is pulled by a pair of animals, usually oxen, under a ridge neck yoke. Efforts have also been made to use single animals and cows for traction and introduce alternative uses of animal power for transport, crop processing, land-shaping and water lifting. However, follow-up evaluation of such research outputs at the small holder level have been limited in scope. This paper reviews past animal traction research in Ethiopia, and discusses aspects of different technologies which could contribute to improved use of animal power systems within the country. For detail information on particular topics discussed, the reader has referred to those reports cited.

389 Hoste, C. H.; Chalon, E.; d'Ieteren, G. 1992. **Trypanotolerant livestock in west and central Africa.** (ILCA monograph, 2). Addis Ababa: International Livestock Centre for Africa. v.3(206)p.

Keyword(s): *Livestock management / Animal husbandry / Animal production / Africa*

Call No: 636 HOT

Lang: En

This edited volume is the continuation of Volumes 1 and 2 of the study on 'Trypanotolerant livestock in

west and central Africa'. This volume presents major results obtained since the publication of Volume 1 and 2 and updates national data on trypanotolerant cattle. Population analysis and their trends in between the two survey is provided in the first chapter of part one of this volume and research review activities is given in the second chapter, and the development activities in the third chapter. It also gives recent information available on the potential and utilisation of trypanotolerant livestock, which accounts for its title. Recent data and discussions for 18 study countries, as well as for Equatorial Guinea which was not covered in Volume 2 is presented in the second part. An additional section on major developments occurring during the study period has been included at the end of each country study. A selected bibliography for each country is included at the end of each country study. A general list of references for part 1 and 2 appears at the end of the document. The main comments and analysis are summarised in the conclusion.

390 Kerven, C. 1987. **Some research and development implications for pastoral dairy production in Africa.** ILCA bulletin (26):29-35

Keyword(s): *Animal products / Dairy industry / Livestock / Africa*

Call No: 636.05 ILB

Lang: En

This paper examines the relative merits of milk versus meat production by African pastoralists and concludes that development of the pastoral dairy sub-sector is warranted on the following grounds. While there is rarely a surplus of live animals in pastoral economies, pastoral herds may produce more milk during seasons of high milk production than can either be consumed in the household or exchanged at profit. The second argument in favour of developing pastoral dairying is that many pastoralists are already engaged in commercial exploitation of dairy produce, but are often constrained by lack of capital, inputs and, suitable processing techniques. Lastly, since extensive commercial meat production requires more land per animal unit to achieve economic and energy outputs comparable to those achieved by dairying, the latter can offer a high income to a greater number of people.

391 King, J. M.; McArthur, S. R.; Pike, D. J. 1988. **Studying husbandry and health of Awassi sheep in Bedouin flocks: evaluation of methodology using initial results.** In Thomson, E. F.; Thomson, F. S. *Increasing small ruminant productivity in semi-arid areas.* Dordrecht: Kluwer Academic Publishers. 199-212p.

Keyword(s): *Animal husbandry / Sheep*

Call No: 636.2 THI

Lang: En

The research strategy and methods devised to obtain information on the constraints to sheep production have been described in this paper. Some preliminary results used to evaluate the methodology regarding the health of Awassi sheep in Bedouin flocks are also presented.

392 Mbake, M. 1989. **Draught animal power in the Gambia.** In Haffmann, D.; Nari, J.; Petheram, R. J. (eds.) *Draught animals in rural development: proceedings of an International Research Symposium held on 3-7 Jul 1989 at Cipanas, Indonesia.* Canberra, ACT: Australian Centre for International Agricultural Research. 78-79p.

Keyword(s): *Draught animals / Animal power*

Call No: 307.72 HOD

Lang: En

A brief review of the developments and utilisation of animals for draught purposes in the Gambia and the subregion is presented in this paper. History of animal traction, its current situation, regional activities in draught animal power research, and the constraints along with recommendations have been reviewed. Draught animals are not used intensively, which could be attributed to a number of factors, such as animal trypanosomiasis, limited work force and financial resources and cultivation practices. Animals are used as a means of transportation in rural and some urban areas. Therefore, regional cooperation in the field of draught animal research is suggested if crop production is to be increased to meet the demands of an increasing population.

393 McCown, R. L.; Haaland, G.; DeHaan, C. 1979. **The interaction between cultivation and livestock production in semiarid Africa.** In Hall, A. E.; Cannell, G. H.; Lawton, H. W. (eds.) *Agriculture in semi-arid environments.* Berlin: Springer-Verlag. 297-332p.

Keyword(s): *Farming systems / Crop protection / Cultivation / Livestock*

Call No: 630.915 HAA

Lang: En

In this paper an attempt has been made to isolate the different types of relationship or linkage that characterise the interaction between cultivation and livestock production and to consider the conditions under which each linkage can be expected to occur. Eight cases from summer rainfall, semi-arid zones of Africa are described which demonstrates various configurations of linkage in existing production systems, together with the conditions under which they have developed. Finally, the trends in the form of linkages from an evolutionary standpoint are

considered. The paper on the whole presents, not the historical account, but rather it considers what forms are likely to emerge under different ecological, political, and economic conditions pertaining to future livestock-cultivation interaction.

394 Powell, J. M.; Williams, T. O. 1993. **Livestock, nutrient cycling and sustainable agriculture in the west African Sahel.** (IIED gatekeeper, 37). London: International Inst. for Environment and Development. 15p.

Keyword(s): *Livestock / Agricultural development / Nutrient content / Sahel*

Call No: 636 POL P

Lang: En

This paper addresses the issue of nutrient cycling by livestock in the West African Sahel. Its basic premise is that an efficient cycling of nutrients between soils, crops and livestock is vital to the sustained productivity of farming systems in the Sahel. It reviews traditional linkages between ruminant livestock (cattle, sheep and goats) and soil productivity, and assesses the adequacy of such practices in light of changes taking place in the region. It concludes by suggesting ways in which nutrient cycling could be improved and made part of a broader strategy to enhance sustainable crop-livestock production in the West African Sahel.

Asia

395 Agrawal, R. C. 1988. **Impact of cattle distribution from government livestock farms on smallholders in Sri Lanka.** Berlin: Technical University of Berlin. 172p.

Keyword(s): *Cattle / Small-scale farming / Animal husbandry / Sri Lanka*

Call No: 636 AGI

Lang: En

This report examines the impact of distribution of neat cattle and buffaloes from government livestock farms on small-scale milk producers in four agro-ecological zones, viz, Coconut Triangle, Dry zone, Mid-country, and Up-country of Sri Lanka. The constraints regarding livestock farming are discussed. The major findings and proposals deal with aspects of production including breeding, socioeconomy, target groups, distribution policy and channels and related services, such as the follow-up, especially with regard to animal health, artificial insemination services, extension and training, credit, milk collection, marketing and prices. The main focus is on neat dairy cattle. The results presented in this report are based on interviews with farmers and landless estate labours and visits to livestock farms.

396 Anderson, G. W.; Moore, R. W.; Jenkins, P. J. 1988. **The integration of pasture, livestock and widely spaced pine in South West, Western Australia.** *Agroforestry systems: an international journal* 6(3):195-211

Keyword(s): *Agricultural production / Pasture management / Livestock / Australia*

Call No: 634.9 AGS

Lang: En

This paper describes management procedures and incorporates biological and economic data, from a number of agro-silvo-pastoral trials in the southwest of western Australia. The integration of pine timber and livestock production is shown to have a range of economic and environmental benefits available in the long-term. Ways in which the choice of tree density, planting pattern, and silvicultural regime can each be directed towards the achievements of various objectives are also indicated. In general, this paper outlines methods of managing an agroforestry system, summaries data from trials in western Australia and presents the major findings of the economic analysis.

397 Copland, J. W.; Gleeson, L. J.; Chamnanpood, C. 1994. **Diagnosis and epidemiology of foot and mouth disease in Southeast Asia: proceedings of an International Workshop held from 6-9 Sep 1993, at Lampang, Thailand.** (ACIAR [Australian Centre for International Agricultural Research] proceedings, 51). Canberra, ACT: Australian Centre for International Agricultural Research. 209p.

Keyword(s): *Disease control / Vaccination / Viruses / Livestock management / Animal diseases*

Call No: 636.08944 COD

Lang: En

The proceeding include 20 research papers presented at the workshop under five broad heading. The first two papers deal with some of the broad issues that influence foot-and-mouth disease control programmes on a global basis placed under the heading: overview of global foot-and-mouth disease status and issues. The heading epidemiology of foot-and-mouth disease in Thailand includes six papers. The heading control of foot-and-mouth disease in southeast Asia includes five papers. The heading diagnosis of foot-and-mouth disease includes four papers. The heading information systems in disease control strategies includes six papers. Eleven country papers on diagnosis and epidemiology of foot-and-mouth disease in southeast Asia is also included in this publication. Finally, the recommendations suggested during the workshop have also been included.

398 Daniels, P. W.; Sudarisman Ronohardjo; Purnomo Ronohardjo. (ed.) 1988 **Malignant catarrhal fever in Asian livestock.** Canberra: Australian Centre for International Agricultural Research. 129p.

Keyword(s): *Livestock management / Animal diseases / Asia*

Call No: 636.089 DAM

Lang: En

This monograph presents the seminar proceedings and other contributions by the research project. It represents the first major study of malignant catarrhal fever (MCF) in Indonesia. In the first section, the directorate of animal health gives a concise overview of MCF in Indonesia. In the subsequent epidemiology section, the situation in certain areas is elaborated to illustrate various aspects of the disease, including epidemiological patterns that have been recognised. Each paper highlights some particular aspect or anomaly of the problem. Section Two discusses the consequent problems in differential diagnosis of the condition, and provides the framework on which to build a nationwide consensus among Indonesian veterinary diagnosticians on what should and should not be called MCF. Overviews of the current research of Indonesian and Australian scientists to define the etiology are comprised in section three. Additionally, recommendations on the task for the future are also provided.

399 Devendra, C. 1993. **Development of sustainable animal production in integrated small farm systems in Asia.** In *Asian Productivity Organisation. Sustainable agriculture development in Asia: proceedings of the report of an APO study meeting on Sustainable agriculture held on 23 Feb - 5 March 1993 in Tokyo, Japan.* Tokyo: Asian Productivity Organisation. 124-145p.

Keyword(s): *Animal production / Asia*

Call No: 630 ASS

Lang: En

Small farm systems constitute the backbone of Asian agriculture. They form the cradle of food production in the face of rapid population increase, continuing poverty in rural, and urban areas, and acute pressures on the natural resources base. The problems are especially complex and urgent in Asia. On the one hand, it concerns approaches and strategies that can be applied to improve livelihoods of human population and on the other, it encourages the use of technologies that can provide for increases in productivity and growth without damaging the natural resource base. This paper focusses especially on the role of animals in integrated systems, and in particular, the contribution of this sector to the development of sustainable agriculture.

400 Devendra, C. (ed.) 1988 **Non-conventional Feed Resources and Fibrous Agricultural Residues: Strategies for Expanded Utilization - proceedings of a consultation held on 21-29 Mar 1983 at Hisar.** Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research. 194p.

Keyword(s): *Animal feeding / Agricultural wastes / Waste utilisation / South Asia*

Call No: 636.085 DEN

Lang: En

This publication specifically focusses on expanding the utilisation of non-conventional feeds and fibrous agricultural residues in South Asia (Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka). It notes the continuing problems related to chronic feed deficits throughout this region, and the inadequate efforts to reduce their magnitude. The current availability of the total feed resources and present patterns of utilisation by ruminants (buffaloes, cattle, goats and sheep) and non-ruminants (pigs, poultry and ducks) are discussed in the context of the opportunities for expanding development efforts, especially at the farm level in the future. The assessment of current status and need for extending the available information led to the formulation of development strategies to enhance large-scale on-farm utilisation of the available feeds with the participation of farmers, consistent with maximising productivity from the animal genetic resources which is presented in this paper.

401 Fine, J. C.; Lattimore, R. G. (eds.) 1982 **Livestock in Asia: issues and policies.** (IDRC, 202e). Ottawa, Ont: International Development Research Centre. 192p.

Keyword(s): *Livestock / Animal products / Asia*

Call No: 636 FIL

Lang: En

This book contains the papers presented at a conference on livestock in Asia. The first paper provides an overview of the livestock in the region. It traces out the current patterns of livestock production and identifies the factors that will affect the farm economy in future. The papers contained in the section on livestock production issues and domestic and international livestock marketing issues provides an effective framework for generating hypotheses concerning the decisions likely to be made by traditional framers. While some papers indicate the potential benefits to policy makers. Draft of empirical research conducted within a rigorous conceptual framework is also provided. Similarly, some papers are concerned with various components of the livestock food chain. They include consumer tastes, prices and marketing policies, processing and distribution, the availability of feed supplies, and international marketing considerations. The papers

contained in the section on national policy choices do not support to address all the issues. Rather they attempt to provide a national perspective as currently seen by researchers in Korea, the Philippines, Thailand, and Indonesia and to identify, in a preliminary fashion, the type of research needed by national policy makers. The paper in the final section on methodology anticipate some of the problems involved in conducting research.

402 Panayoton, J.; Jokrisna, R. 1982. **Microeconomics of rural livestock: the case of buffalo and cattle in Thailand.** In Time, J. E.; Lattimore, R. G. (eds.) **Livestock in Asia: issues and policies.** Ottawa, Ont: International Development Research Centre. 65-74p.

Keyword(s): *Buffaloes / Livestock / Animal production / Thailand*

Call No: 636 FIL

Lang: En

This paper discusses the role of livestock in the rural economy, the optimum holdings age for a single animal is determined, and the size of the herd and its age and sex composition are analysed. Complications such as dual-purpose animals, indivisibilities, and trade in draft animals are also mentioned. Finally, concluding remarks and implications for policy are given.

403 Pattern, B. E.; Spencer, T. L.; Johnson, R. B. 1993. **Pasteurellosis in production animals: proceedings of an International Workshop held on 10-13 Aug 1992 at Bali, Indonesia.** (ACIAR [Australian Centre for International Agricultural Research] proceedings, 43). Canberra, ACT: Australian Centre for International Agricultural Research. 256p.

Keyword(s): *Animal diseases / Animal production / Animal husbandry / Animal products*

Call No: 636.089623 PAP

Lang: En

The proceedings of agricultural research system workshop includes 14 discussion papers related to agriculture, livestock, research planning, project formulation, monitoring and evaluation, manpower training, and some others followed by a brief report on the activities of Pakistan Agricultural Research Council (PARC) technical divisions on crop science, natural resources, animal, and social science. Finally, recommendations passed at the workshop are also included.

404 Punj, M. L. 1988. **Availability and utilization of non-conventional feed resources and their**

utilization by ruminants in South Asia. In Devendra, C. (ed.) *Non-conventional Feed Resources and Fibrous Agricultural Residues: Strategies for Expanded Utilization* - proceedings of a consultation held on 21-29 Mar 1983 at Hisar. Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research. 50-75p.

Keyword(s): *Agricultural wastes / Feed crops / Animal feeding / South Asia*

Call No: 636.085 DEN

Lang: En

The South Asian countries have a large livestock population with a very low level of production. The main reason for this poor animal production is their inadequate and low level of feeding due to very serious shortage of feedstuffs in the region. A major gap exists between the requirements and supplies of concentrates and green and dry fodders for feeding livestock in South Asia. The paper discusses the availability and utilisation of non-conventional feeds and inherent constraints. Rubber seed cake, sal seed meal, spent anatto seeds, tapioca waste, tea waste, babul seeds, slaughter house by-products, animal organic wastes, cassia tora seeds, mango seed kernels, niger seed cake, karanj cake, guar meal, vilayati babul pods, and cassava leaf meal are briefly described as potentially valuable feeds. Collection, dehydration for high moisture materials and detoxification processes are regarded as the main constraints to the use of non-conventional feed resources.

405 Rao, A. 1995. **The Muek-Lek Women's Dairy Project in Thailand.** In Leonard, A. (ed.) *Seeds 2: supporting women's work around the world*. New York: The Feminist Press. 91-109p.

Keyword(s): *Dairy industry / Women's participation / Milk production / Institutional framework / Thailand*

Call No: 305.4 LES

Lang: En

This paper provides brief information on the 'Muek-Lek Women's Dairy Project' in Thailand, which began in 1985. The paper presents its historical approach, finance, design, the feed mill cooperative, the process of collecting milk, its improved income, and lesson learned from running the project. Additionally, women in dairying: the Indian experiences is also provided in an Annex.

406 Remengi, J. V.; McWilliam, J. R. 1985. **Ruminant production trends in Southeast Asia and the South Pacific, and the need for forages.** In Blair, G. J.; Ivory, D. A.; Evans, T. R.

(eds.) *Forages in Southeast Asian and South Pacific Agriculture: proceedings of an International Workshop held on 19-23 Aug 1985 at Cisarua, Indonesia*. Canberra, ACT: Australian Centre for International Agricultural Research. 1-6p.

Keyword(s): *Animal production / Ruminants / Feed crops / Southeast Asia / Asia and the Pacific*

Call No: 633.2 BLF

Lang: En

The need for forage is a derived demand that cannot be divorced from factors that determine the demand for ruminant animals in developing countries. Therefore, the need forage inputs into the large ruminant sector will increase more than proportionately with growth in numbers. Production trends in ruminant populations and the need for forage in Southeast Asia and the Southern Pacific have been briefly reviewed in this paper.

407 Satari, G. 1985. **Interrelationship of ruminant production and socio-economic systems in Southeast Asia and the South Pacific.** In Blair, G. J.; Ivory, D. A.; Evans, T. R. (eds.) *Forages in Southeast Asian and South Pacific Agriculture: proceedings of an International Workshop held on 19-23 Aug 1985 at Cisarua, Indonesia*. Canberra, ACT: Australian Centre for International Agricultural Research. 12-14p.

Keyword(s): *Animal products / Economic aspects / Ruminants / Livestock / Southeast Asia / Asia and the Pacific*

Call No: 633.2 BLF

Lang: En

Ruminants appear to have been among the first animals to be domesticated by man. As hunting for wild animals became less and less successful, trapped ruminants were brought home alive and kept in confinement to become a food source in times of emergency. This confinement also gave man an opportunity to learn how to rear them and their offspring on the available forage. This paper highlights the benefits of ruminant production to the socioeconomic system as well as the constraints imposed by the socioeconomic systems. Some of the economic aspects are also dealt.

408 Stephens, A. 1990. **Women and livestock production in Asia and the south Pacific region.** Bangkok: FAO. Regional Office for Asia and the Pacific. 41p.

Keyword(s): *Livestock management / Women's participation / Women's role / Asia / Asia and the Pacific*

Call No: 305.4 STW P

Lang: En

Women's role in agriculture is a multiple one in which she is an integral part of a cropping and livestock production system on the small farm, but generally a mere labourer on larger farms or in agro-industry. In the pastoral systems of Mongolia, Tibet, and Baluchistan women are responsible for much of the care and shepherding of animals, but their major specialty is in smaller animal rearing and poultry. Although women produce about half the world's food their work remains for the most part invisible. This is especially true in the livestock sector. Small animal and poultry production for family use or for the market is usually women's work. The major responsibility for the care and feeding of larger animals generally rests with women. Dairying is traditionally a women's domain. Sericulture is mainly the work of women. Yet they are mostly discounted in production and employment statistics. This booklet sets out some of the important issues surrounding women's work in livestock production. It identifies constraints to their increased productivity and suggests action needed on the part of government to help women share in the development of livestock production as equal partners with men.

409 Tacio, H. D. 1992. **Contour farming and livestock raising: a likely combination.** Contour: newsletter of the Asia Soil Conservation Network 4(1):12-17

Keyword(s): *Contour cultivation / Farming systems / Livestock*

Call No: 631.4 CON

Lang: En

Contour farming and livestock raising is discussed in this paper as a likely combination to solve the environmental problem in the Philippines through the programme SALT (Sloping Agricultural Land Technology). The economic benefits generated through SALT are also given.

410 Tulloh, N. M. (ed.) 1991 **Buffalo and goats in Asia: genetic diversity and its application - proceedings of a Seminar held on 10-14 Feb 1991 at Kuala Lumpur, Malaysia.** (ACIAR [Australian Centre for International Agricultural Research] proceedings, 34). Canberra, ACT: Australian Centre for International Agricultural Research. 144p.

Keyword(s): *Buffaloes / Goats / Diversity / Genetics / Asia*

Call No: 636 TUB

Lang: En

The buffalo is still a key component of village systems of agriculture in Asia and its wellbeing and productivity have a major influence on, and in some

cases determine, the standard of living of the small farmers and their families in several countries in the region. The proceedings include the report of two projects which heighten the awareness of the potential benefits for the small holder farmers that can be derived from better utilisation of the buffalo genetic resources in the region. The main objective of these projects as mentioned in this report is to establish whether crossbreeding among buffalo types and strains leads to an increase in productivity, measured as growth, fertility, milk production and draught capacity, and to investigate the extent of the genetic variation among buffalo populations and among goat populations that could be identified using existing biochemical and karyotyping technology. According to this report these two projects have demonstrated two important principles, the first is that crossbreeding swamp and river buffalo has led to productivity increase, and the second is that there are substantial genetic differences among populations of swamp buffalo and among populations of goats from different regions in southeast Asia. Some results regarding the projects have also been highlighted in the proceedings.

411 Verma, M. L. 1988. **Availability and intensive utilization of cereal straws and fibrous agricultural residues in South Asia.** In Devendra, C. (ed.) *Non-conventional Feed Resources and Fibrous Agricultural Residues: Strategies for Expanded Utilization - proceedings of a consultation held on 21-29 Mar 1983 at Hisar.* Ottawa, Ont: International Development Research Centre / New Delhi: Indian Council of Agricultural Research. 21-32p.

Keyword(s): *Waste utilization / Agricultural wastes / Fibre crops / Straw / South Asia*

Call No: 636.085 DEN

Lang: En

South Asia possesses 64.1 per cent and 19.5 per cent of the cattle population of Asia and the world respectively. However, the cow's milk produced in this regions is very low. Low genetic potential and inadequate feed resources are generally considered to be the two major factors responsible for the low productivity. An analysis of feed resources in South Asian countries in terms of pastures and cultivated fodder per unit grazing livestock, quantities of indigenously produced feed grains, oil cakes and brans reveals that the situation is quite alarming. This paper examines the availability of feed resources, in particular cereal straws and fibrous agricultural residues, their present production and utilisation and possibilities of intensive utilisation of fibrous residues.

412 Watanabe, S. 1988. **A tether grazing method for cattle.** In Association for

International Cooperation of Agriculture and Forestry. Useful farming practices. Tokyo: Association for International Cooperation of Agriculture and Forestry. 255-256p.

Keyword(s): *Animal feeding / Grazing / Thailand*

Call No: 631 ASU

Lang: En

This paper provides a short illustrative information on the tether grazing method for cattle.

413 Yuen, C. F. 1994. **Animal feed resources: the exploitable potential for better use of locally available feed resources.** Asian livestock 19(1):1-5,12

Keyword(s): *Animal feeding / Feed crops*

Call No: 636 ASL

Lang: En

Livestock and poultry in Asia and the Pacific region are dependent on both important feedstuffs as well as locally available feed resources. Important feedstuffs are utilised to varying degree for the production of compound feeds, particularly for poultry and pigs. Ruminants, however depend very much on locally available feed resources. These resources vary in types, availability, usefulness and status of utilisation in different areas. It is well known that there is great potential in those resources, but it is equally acknowledged that there is still much room for improvement in this utilisation. In this paper, better use of locally available feed resources for animals and possibility of cultivating forage crops have been described in detail.

414 Zandstra, H. G.; King, D. J. 1982. **Technology changes and livestock development in Asia.** In Time, J. E.; Lattimore, R. G. (eds.) *Livestock in Asia: issues and policies.* Ottawa, Ont: International Development Research Centre. 167-174p.

Keyword(s): *Livestock / Farming systems / Asia*

Call No: 636 FIL

Lang: En

: Most animal products in Asia are still produced on small farms. Ruminants production on small farms in Asia strongly interact with crop production enterprises. Farming systems research has been extended to farming systems that include animal production. It has been developed in such a way that the site selection, description, testing, multiplication testing, and production programme formulation phases are conducted on local sites. Research by economists and other social scientists is also needed to determine market opportunities for and constraints to increase production, inputs costs, and availability, and the likely farm household response to increase

livestock production opportunities through modification of farming systems utilised and the use of household time and resources on off-farm activities. Research is also needed in agricultural sector, regional development, and social or equity policies that affect the relative prices of crop and livestock products and factors of production for particular socioeconomic or regional groups of farmers. This paper emphasises livestock production on small farm and some issues related to improve the contribution of that enterprise to farm productivity. Particular emphasis is placed on the role of production economists and their colleagues involved in planning and sector policy formulation in research aimed toward increased livestock production.

South America

415 Baied, C. A. 1989. **Transhumance and land use in northern Patagonian Andes.** Mountain research and development 9(4):365-380

Keyword(s): *Land use / Livestock*

Call No: 551.432 MOD

Lang: En

In the northern most Andean Patagonia, land use is characterised by the extensive exploitation of high and low altitude seasonal grasslands. This paper describes the transhumance and land use in the northern Patagonian Andes where, transhumance appears to be under an increasing pressure for change towards a more sedentary, intensive-oriented mode of production. The survival of long-time successful land-use practice is directly linked to aspects of land tenure, grazing strategies with native and non-native grasses, and livestock diversification. This paper also emphasises the need for the establishment of cooperatives of producers operating at the production and commercialisation levels, as well as for the active participation of pastoralists and regional communities in the decision-making process.

416 Cimo, P. 1988. **Alpaca, a symbol and a source of hope in the Andes.** Ceres: the FAO review 21(1):32-37

Keyword(s): *Alpacas / Animal husbandry*

Call No: 630.05 CEF

Lang: En

The alpaca are most widely found members of the camel family in the Andean countries. It is the domestic animal without which the people of that environment or region could not survive as it fulfils the requirements of the people. This paper focusses on the potential and prospects regarding the alpaca in the life of the Andean as a symbol and source of hope in the Andes.

417 Pasha, S. A. 1991. **Sustainability and viability of small and marginal farmers: animal husbandry and common property resources.** Economic and political weekly 26(13):A27-A33

Keyword(s): *Small-scale farming / Animal husbandry / Property rights*

Call No: 330.05 ECP

Lang: En

This paper examines the socioeconomic condition of small and marginal farmers in a drought-prone region. The method of farming adopted by the farmers to maximise their total returns is discussed. The role played by ruminant livestock and common property resource land in their economy is described. Finally, the constraints on the viability and sustainability of these resource-poor farmers are presented.

418 Smythe, N.; de Guanti, O. B. 1995. **Domestication and husbandry of the paca (Agouti paca).** (FAO conservation guide, 26). Rome: FAO. 86p.

Keyword(s): *Animal husbandry / Wild animals / Mammals*

Call No: 636 FOD

Lang: En

This document describes the method and means to domesticate and raise the paca, *Agouti paca*, a wild mammal from dense forests of South and Central America. It is shown that in changing the imprinted behaviour during early stages of life, the animal becomes sociable, loses its aggressivity and by living

in groups rather than in pairs, increases its reproductive rate, making its husbandry an economically viable enterprise. The husbandry of paca is considered as an interesting breakthrough because of its highly praised meat, and it may also relieve the hunting pressure on wild populations.

419 Sumar, J.; Camino, A. 1992. **The Andean camelids, llama and alpaca: the potentials and prerequisites for introducing these animals into other mountain environments.** (MFS [Mountain Farming Systems] discussion paper, 33). Kathmandu: International Centre for Integrated Mountain Development. 76p.

Keyword(s): *Ruminants / Alpacas / Animal husbandry*

Call No: 636.2 SUA

Lang: En

The Andean mountains are well-known for promising plant and animal resources, among which alpacas and llamas are an outstanding example. This document presents information about the habitat and the farming systems of the Andean highlands, of which these camelids are an integral part. Well-adapted to the high mountain farming systems, these alpacas and llamas are thought to have a potential for improving the high mountain agro-pastoral farming systems of the Hindu Kush-Himalayan region also. The paper mainly focusses on science and management of these animals and on the potentials and prerequisites for introducing these animals into the Hindu Kush-Himalayan region.