SUMMARY OF ISSUES DISCUSSED AND RESEARCH PRIORITIES IDENTIFIED

Research and Training Strategies for Goat Production Systems in South Africa

1. Session theme: Constraints and Opportunities to Goat production in South Africa

   1. Topics:
      1. A perspective on the constraints, opportunities and issues surrounding research on goat production in Southern Africa - Pierre Cronje (University of Pretoria).
      2. Constraints and opportunities for small-holder goat production systems in Asia - Barry Norton (University of Queensland).
      3. Constraints and opportunities in Australian goat production systems - Barrie Restall (University of Queensland).
      4. The farming systems approach and goat production by small-holder and communal farmers - Lawrence Tawah (University of the North).
      5. Socio-economic aspects of sustainable goat production - Roelf Coetzee (University of the North).

2. Discussion on broad issues affecting goat production and goat production research

   1. Lack of information on human resources and systems dynamics were identified as one of the major constraints affecting goat productivity. The following issues were identified and discussed
      1. Product value is a major motivator in small-scale and communal farming systems. A major constraint to delivering product value to the small farmer was lack of knowledge of existing market channels and a lack of understanding of the existing extensive informal marketing patterns. The group recommended the following actions be executed in the following order of priority:
         1. That research be initiated to collect data on marketing dynamics, constraints and opportunities, which may require the use of specialist multi-disciplinary teams (including economists, sociologists and extension workers)
         2. That research be initiated to identify new markets, marketing channels, secondary industries and value-added products and that research be directed towards the development of these products. Examples of novel products were discussed:
            1. Leather
            2. Cashmir
            3. Processed meat products
            4. Milk and milk products
         3. That goats be promoted to both the small-farmer producer and the consumer as ecologically friendly, a source of additional farm income and food security and as a source
of healthy and nutritious products. Goat milk production was identified as an example of a product which could significantly decrease infant mortality rates and improve human health status.

2. **Session theme: Product Potential**
   1. **Topics**
      1. Milk production from goats for households and small-scale farmers in South Africa - Ned Donkin (Medical University of South Africa - Veterinary Faculty)
      2. Meat production from goats in communal vs. commercial farming systems in the Eastern Cape region - Patrick Maseka (University of Fort Hare)
      3. The potential of leather production from goats - Mike Ginn (Leather Industries Research Institute)
      4. The meat production potential of Indigenous vs. Boer goats in extensive farming systems in the Northern Province - Isak du Plessis (Mara Research Station, Department of Agriculture)
      5. Cashmere production potential of indigenous goats - Albie Braun (Textile Technology division - CSIR)
      6. Biological constraints and opportunities for the production of meat, milk and fibre from goats - Barry Norton (University of Queensland)

2. **Discussion of issues related to meat, milk, leather and fibre production from goats**
   1. The following product-specific issues were identified and discussed:
      (1) **Milk:** The following areas requiring further research were identified:
          (1) Evaluation of the quality of goat milk in relation to human nutrition (nutrient content, contamination with pathogens, etc)
          (2) Disease resistance of milk goats, indigenous goats and their cross-breeds (resistance to ticks, tick-borne diseases and intestinal parasites).
          (3) Characterisation of optimal combination of milk breed crosses with indigenous goats for milk production in various South African environments
      (2) **Meat and leather.** The group identified a lack of information on the productive potential of indigenous and other genotypes under different farming systems with particular reference to lifetime productivity as a major constraint. Leather is considered to be a component of the productive potential of the animal. The meeting identified an initiative of the Leather Industries Research Institute as being of significant potential for developing a home leather processing industry in the communal farming systems of South Africa.
(3) Goat fibre: Viability and marketing studies were identified as a first priority action with regard to evaluation of potential production initiatives for mohair, cashmere and goat wool. Since there are no known markets for these products, apart from mohair, it is essential that evaluation include determination of the quantity and quality of fibre production.

3. **Session theme: Pasture and veld management**
   1. **Topics**
      1. Diet selection and intake in goats - Jan Raats (University of Fort Hare)
      2. Role of goats and fire in control of bush encroachment - Jorrie Jordaan (Toowoomba Research Station, Department of Agriculture)
      3. Potential of agro-forestry shrubs and tree legumes in communal goat farming systems - Lindela Ndlovu (University of the North)
      4. Impacts of browsing on savannah woody plants in Africa - Peter Scogings (University of Fort Hare)
      5. Management of goats at pasture - Barry Norton (University of Queensland)
      6. Vegetation dynamics in the communal rangelands of the Eastern Cape - Theuns De Bruyn and Peter Scogings (University of Fort Hare)
   2. **Discussion: Identification of specific issues affecting pasture utilisation and nutrition of goats**: The extensive (veld) grazing environment was identified as the future focus for new research in South Africa, and issues of the range management and condition, stocking rates and management of goats within a multi-species grazing system and the strategic management of goats for optimising productivity and for weed control was discussed. The constraints noted related to ownership laws and responsibilities for animal management in communal farming systems, drought frequency and its management, overgrazing, lack of fencing and in the longer term a likelihood that these grazing systems will not be sustainable.

4. **Session theme: Reproductive efficiency of goats**
   1. **Topics**
      1. Reproductive status of goats in communal systems in South Africa - Eddie Webb (University of Pretoria)
      2. The use of frozen goat semen in AI programmes for the improvement of indigenous goats - Johan Terblanche (University of Pretoria - Veterinary faculty)
      3. Controlled breeding for improved reproductive efficiency in goats - Johan Greyling (University of the Free State)
      4. In-vitro production of embryos for improved goat production - Theresa Arlotto (University of Pretoria - Veterinary faculty)
      5. Reproduction in goats - Barrie Restall (University of Queensland)
   2. **Discussion: Identification of specific issues affecting reproductive efficiency in goats**: The meeting concluded that little was known of the reproductive patterns and fecundity of indigenous goats in small-scale and communal farming systems. Such information is essential for improvement of overall productivity in these
farming systems. The following areas of future research were identified as high priority:

1. Baseline studies of reproductive performance in communal systems. Because of the uncontrolled mating practised in these systems, appropriate parameters such as annual reproductive rate and lifetime production should be used.

2. Identify opportunities for the management of reproduction through the use of environmental and social cues that initiate and influence reproductive performance.

3. Characterise the responsiveness of both male and female of different genotypes to environmental cues throughout the year.

4. Enhancement and facilitation of social and environmental cues for the management of reproductive performance.

5. Long-term effects of nutritional variations on reproductive performance.

5. Session theme: Breeding plans for goats

1. Topics

   1. Breeding a dual-purpose goat for communal farming systems - Joshua Roux (Cradock Experimental Station, Department of Agriculture)
   2. Implications of selection of goats for divergent production characteristics in environments subject to fluctuations in nutrient supply - Pierre Cronje (University of Pretoria)
   3. Genetics and breeding in goats - Barrie Restall (University of Queensland)

2. Discussion: Identification of specific issues affecting utilization and conservation of genetic resources. The meeting recognised the diversity of indigenous genotypes and the paucity of knowledge in this field and the dangers of indiscriminate crossbreeding with exotic genotypes. The following areas were identified as research priorities:

   1. Characterisation of the productive potential of the indigenous genotypes with particular reference to adaptation.
   2. The conservation of valuable / unique genotypes identified as a consequence of the actions referred to in (i) by the establishment of regionally based open nucleus herds.
   3. Evaluation of mohair and cashmere crossbreeds.

Summary of major conclusions

The workshop recognised the considerable potential of the indigenous goat to contribute to the quality of life of communities within small-scale and communal farming systems. The single most limiting factor was identified as a lack of research on indigenous goats, which can be overcome by the following actions:

1. The establishment of a network of goat research and extension workers in South Africa to efficiently use the collective resources of the group.

2. To develop a tertiary curriculum and training courses for graduate workers and extension officers employed in the goat industry pertinent to the realisation of the potential of the indigenous goat.

3. To seek support to harness the momentum generated by this workshop in order to launch a
training course to collect, collate and disseminate existing information on goat technology which will have a significant impact on the quality of life of rural farming communities.