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THE SMALL RUMINANT INDUSTRY IN THE CARIBBEAN – PRESENT STATUS AND STRATEGY FOR CONTINUED DEVELOPMENT

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ABSTRACT: An analysis of the status of the Caribbean small ruminant industry has shown that the industry has come a long way from the time of sheep and goats introduction in the 15th and 16th centuries and the realisation in the 1970s and 1980s of their economic potential. It is endowed with quality genetic resources some of which are exported, contributes to about 20% of mutton and chevon demands and benefits from some support and incentives. However, it is still a relatively young and unsophisticated industry, the continued development of which is mitigated by lack of or inconsistent policy on land availability and tenure, water use, praedial larceny, dog predation, and post harvest controls, lack of marketing and other pertinent databases, insufficient numbers of appropriate germplasm, lack of diversity in production systems, enterprises and value added products, inadequate technology and information and communication delivery and the need for continuous human resources development. R&D strategies have been identified to deal with these factors and together with the collaboration and cooperation of stakeholders, and particularly the empowerment of producers to take active part in product development, processing and marketing alongside traditional processers and marketers it is posited that the industry will be on the path to accelerated development.

INTRODUCTION

It is believed that the Spaniards introduced small ruminants, especially goats into the islands in the Caribbean Sea from or via the Canary Islands in the 15th and 16th centuries during the slave trade (Fielding and Reid, 1994). Up to the end of slavery, and subsequently of colonisation sheep and goat production in the independent states, as well as in the French and Dutch overseas territories remained a small-, low-resource farmer and hobbyist activity and therefore for a very long time the commodity's role was mainly in social and cultural events and it played only a minor role in economic development (Devendra and Burns, 1970; Devendra and Rankine, 1972; CARDI 1994). In the 1970s and 1980s the economic potential of small ruminants was recognised in many territories of the region and programmes were began to develop a small ruminant industry as a catalyst for food security, poverty alleviation, rural development and the diversification of the export-crop agriculture.

During the last decade regional governments, private individuals and organisations and international donor agencies, including the Arab Gulf Fund, Canadian International Development Agency (CIDA), European Development Fund (EDF) of the European Union (EU), International Fund for Agricultural Development (IFAD) and United States Agency for International Development (USAID) have provided resources to facilitate research and development (R&D) activities in support of the growth of the industry. Most of the efforts concentrated on component technology development, rather than total farm or production systems strategy, and mainly in the areas of nutrition and feeding, management and breed improvement (Table 1) with emphasis on biological efficiency as the determinant parameter. Some good technologies have been developed and where savings or increased income have been demonstrated (Table 2) or where there has been sustained technology transfer producers have responded positively and shown improved productivity (Table 3).

The continued and accelerated development of the industry in the coming years will depend mostly on the amount of investments and commitments made by stakeholders at all levels of the industry,

especially in areas such as post harvest and market development where there is a clear lack of sufficient involvement at present.

Therefore we have analysed the industry and ascertained the current status and determined the critical factors that need to be addressed in order to achieve the desired accelerated development. This paper reports on the findings of the industry analysis.

METHODOLOGY

Commodity system analyses were conducted in Barbados, Jamaica and Trinidad and Tobago in the latter part of 2000, using samples of about 25 producers, processers and marketers. This information was supplemented or complemented with status data from Antigua and Barbuda, the Cayman Islands, French West Indies, Grenada, Netherlands Antilles, St Kitts/Nevis, and St Lucia. A report on the status of the industry was prepared, and using that as background document an eleven-member working group performed a SWOT analysis from which the key factors were identified. Strategies were then proposed to deal with the factors identified.

RESULTS

Overview of the current status of the industry

Production environment

Of the ten territories surveyed sheep are produced principally in Barbados, Trinidad and Tobago and the Windward Islands but Jamaica, the Leeward Islands and the Cayman Islands produce goats. The others tend to place equal emphasis on both species. Meat is the main focus and the product is useful primarily for food security. One-half of producers surveyed is commercially motivated and includes well-educated producers (Table 4). The majority are small producers and occupy small parcels of land. Family members are the main source of labour. The all-in-one system is the dominant production enterprise in the industry. Semi-intensive and intensive management systems are employed in 40-70% of cases. Improved pastures and fodder banks used for these systems include *Brachiaria* sp., *Cynodon* sp., *Digitaria decumbens*, *Panicum maximum*, *Pennisetum* sp., *Sorghum* sp., *Gliricidia sepium*, and *Leucaena leucocephala*. Free ranging and tethering are done on native pastures. Local production is estimated, at best, at 20% (2,511 MT) of the total demand (13,711 MT). Estimates of cost of production are available for models but there is not much reliable data on production costs for commercial operations. Competitiveness and profitability, therefore, are uncertain. Generally there are insufficient industry databases.

Genetic resources

There is availability of quality breeds of sheep (Barbados Blackbelly, West African, Virgin Island White, Blackheaded Persian, Katahdin and Dorper), and goats (Nubian, Saanen, Toggenburg, Alpine and the Boer). However, there are insufficient numbers of females to be used for foundation stock.

Agri-business/entrepreneurship

The all-in-one production system is the predominant enterprise. The industry lacks diversification in either production or processing and hence suffers from equitable income distribution.

Agro-processing

Very few producers also engage in post harvest operations. Most of the post harvest handling and processing are done at supermarkets. The CARDI Master Butcher Programme sensitised many producers and processers of small ruminants to the potential of value added products.

Marketing

At present there is virtually no marketing of by-products but there are marketing arrangements for meat and breeding stock (overseas), particularly Barbados Blackbelly sheep. For meat, traffickers and itinerant butchers dominate the marketing channels and producers do not maximise income. There is very little value adding. There is preference of the local market for local fresh mutton and chevon notwithstanding the relatively high prices compared with imported mutton and chevon. Local primary products and value added products have low penetration of supermarkets and the tourism sector because of a lack of consistency of supply and quality of products. There is insufficient information on local market intelligence, supply and demand, price elasticity, standards, etc.

Policy, support systems and incentives

There are policies available to support genetic improvement, research and to some extent post harvest systems and incentives. Several territories have duty free concessions or preferential duties on farm machinery and equipment and relief from income tax. A common external tariff on small ruminant products, currently at 20-40% is in place. There are farm roads, training and extension/technology transfer and information delivery systems. There is assistance for veterinary and public health inspection. Inputs supplies are generally available at farm stores. Specific support services such as project feasibility studies, appraisals for breed quality assurance and credit may be available on request.

Strategic alliance

The industry benefits from strategic alliances fostered primarily through CASRUNET under the PROCICARIBE mechanism. The members of the alliance include: MoAs, CARDI, UWI, IICA, SFC, THA, BAS, BSFI, JAS, RADA, GBSJ, ALPART, KAISER, SLREP, ART, feed manufacturers and suppliers of other agricultural goods and services.

Critical factors affecting future development

The key issues of the industry identified from the SWOT analysis of the status report were:

1. *Policy*: There is need for cohesive policies on land availability and tenure, water use, praedial larceny, dog predation, fair trade and pricing and post harvest controls
2. *Industry databases – production and marketing*: Reliable databases on true animal populations, producers, marketing systems and markets, especially of potential value added products are unavailable
3. *Foundation stock for commercial production*: There are insufficient females to be used for foundation stock by new entrants to the industry or for expansion by old producers
4. *Cost effectiveness and diversification of production enterprise*: There is a need to develop and validate in commercial environment low-cost production systems for a diversity of enterprises (breeder stock, weaner stock, feedlot and dairy enterprises)
5. *Value added products*: There is a total lack of special meat cuts for differentiated markets, as well as milk and milk products and by-products
6. *Quality assurance of products and by-products*: There is not much product differentiation at this time and therefore there are no standards

7. *Information and communication*: There is a need to ensure availability of information on all aspects of the industry to producers and processers
8. *Human resource development*: Both the technical personnel and the practitioners (producers, processers and marketers) need to be well trained and properly informed

Strategies for continued development

The overall underlying strategy for the continued development of the industry is the empowerment of producer associations to take active part in product development, processing and marketing alongside the traditional processers and marketers in order to ensure equitable income distribution. R&D institutions will work as facilitators with such producer groups. Seven R&D areas were identified from the analysis to address the key issues as follows:

Policy

Participate in or initiate, if possible, the development of new policies to address critical areas such as land availability and tenure, water usage, praedial larceny, dog predation, post harvest controls on health and safety and regional trade/distribution of germplasm
Use existing farmers' groups or form new groups to lobby political directorates to implement policies

Industry databases

Establish databases on current population of small ruminants, number of producers and associations, production practices, marketing systems and financial sources. Market studies to be undertaken to gather information on the market channels, prices, demand, price elasticity, potential for value-added products, by-products and demand for breeding stock.

Enhancing the availability of quality stock for commercial production

Introduce and evaluate new breeds and multiply the appropriate breeds and breed types for distribution to producers

Development of cost effective and sustainable production systems

Develop and test forage-based production systems for breeder, weaner, fattener/feedlot stock and dairy production enterprises. Transfer improved production technologies and monitor and evaluate improved production systems under commercial setting.

Post harvest systems for existing products and new value added products

Identify and/or develop post harvest infrastructure. Explore opportunities to create and develop new and value added products to fit the market and develop safety and quality standards and certification systems.

Development of information and communication systems

Information deriving from the databases and other *ex post* data to be stored, analysed, synthesised, packaged and distributed to stakeholders using appropriate technologies. Provide feedback on relevance of information to be collected from users. The Caribbean Small Ruminant Network (CASRUNET) as umbrella network, through its national nodes to be used to achieve the above listed strategies

Development of sustainable human resource base for the industry

Develop and expand linkages and foster alliances with other national. Regional and international institutions, including NGOs. Encourage professional development through workshops and seminars, and publication of R&D outputs and assist with the formation and strengthening of producer groups. Provide training for stakeholders in new production and processing technologies. Promote the participation in the industry of young and technology-receptive ("new farmers") producers.

The successful execution of the development plan will require the involvement of various stakeholders and collaborators/partners with different areas of expertise and levels of resources. Therefore roles were proposed for various stakeholders as follows:

Governments and Government agencies: Policy, enactment of legislations and development of standards and infrastructure, particularly those for post harvest and marketing, and financial support for R&D.

- CARDI and NARS: Spearhead R&D in collaboration with producers and other partners. Develop pilot enterprises and post harvest and marketing systems to produce investment profiles. Facilitate and coordinate development of the industry
- Producer groups and other stakeholders: Ownership of industry. Participate in R&D. Undertake commercialisation of the production, value adding and marketing.
- CASRUNET: policy analysis support and linkages, coordination of information flow and collation, synthesis, packaging and distribution of relevant information on the industry

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Table 1. A count of small ruminant research and development work in the Caribbean

R&D focus	1970-mid 1980	Mid 1980-1990/91	1990/91-2000	Total
Breed improvement	8	5	21	34
Management and production systems	12	13	41	66
Nutrition and feeding	17	15	44	76
Animal health	4	7	5	16
Technology transfer	0	0	4	4
Post harvest	0	1	3	4
Marketing	0	0	11	11
Socio-economics and gender	1	2	8	11
Total	42	43	137	222

Table 2. Pre and post intervention changes in feed costs and mortality at Marilissa Farms, Trinidad and Tobago

Production parameters	Pre intervention October 1994	Post intervention October 1997
Average monthly feed cost (TT$*)	9,000	3,500
Lamb mortality (%)	65	20
Ewe mortality due to pregnancy toxaemia	36	0.7

*6 TT$ = 1 US$

Table 3. Comparative mean productivity of sample Jamaican goat farmers.

	1992/93*	1999**	% Improvement
Herd size	38	91	139.5
No. breeding does	20	49	145.0
Litter size	1.52	1.69	11.2
Pre-weaning mortality (%)	18.7	11.3	39.6
Birth weight (kg)	2.35	2.94	25.1
Weaning weight (kg)	11.1	15.4	38.7
Weight 9 month old (kg)	21.2	30.0	41.5
Total stock sold/year	33.2	79.0	138.2

*1992/93 data from 29 producers; **1999 data from 78 producers

Table 4. Key production parameters of small ruminant producers in selected countries in the Caribbean.

	Barbados	Jamaica	Trinidad & Tobago	Average
Commitment (%):				
Full time		50.0	30.8	40.4
Part time		50.0	69.2	59.6
Reasons (%):				
Business/income	41.0	55.0	54.0	50.0
Other	59.0	45.0	46.0	50.0
Age (%):				
Under 40 yr	13.0	20.0	15.0	16.0
40 or more yr	87.0	80.0	85.0	84.0
Education (%):				
None/primary	6.0	20.0	61.5	29.2
Secondary and above	94.0	80.0	38.5	70.8
Farm size (%):				
<1.0 ha	73.0	25.0	38.5	45.5
1-2 ha	27.0	20.0	23.0	23.3
2.5-6 ha	0.0	30.0	23.0	17.7
>6 ha	0.0	45.0	15.5	20.2
Land tenure (%):				
Own and/or lease	82.0	85.0	76.9	81.3
Other arrangements	18.0	15.0	23.1	18.7
Labour (%):				
Farm family	65.0	70.0	77.0	70.7
Hired	35.0	30.0	23.0	29.3