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## THE EFFICACY OF USING SHEEP REARING AS A MEANS OF MICRO-ENTERPRISE DEVELOPMENT IN A RURAL COMMUNITY

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**ABSTRACT:** The Princes Town Small Ruminant Project was developed primarily to alleviate poverty in a rural community. The poverty rate in the Princes Town area is 49.3%, which places that community among the poorest in Trinidad and Tobago. Sheep production and marketing was used as the vehicle for rural transformation through micro-enterprise development. Thirty families from the community were each supplied with an average of four ewes, adequate animal housing, feed, veterinary and other ancillary supplies necessary for the successful rearing of sheep. Participants were trained in basic sheep husbandry, sheep marketing and agribusiness management. The group formed a co-operative that would be responsible for purchasing weaners from members, fattening them in a feedlot and marketing the animals thereafter. After one year, 20 families or 67% of participants remained with the project. A total of 93 animals were distributed and fifty-three lambs were born during the first six months of the project. The frustration level of the remaining participants has however increased in recent times due to internal problems in the NGO, intermittent funding and the slow rate of return on their investment. It is clear that unforeseen problems contributed to some of the frustrations seen, however, given the expectations of the participants, it would appear that sheep production alone may be insufficient to transform the socio-economic circumstances of the rural poor in a timeframe consistent with their needs. It is therefore recommended that this activity be coupled with the production of cash crops that will provide income in the short term and improve the nutritional status of the family while the sheep production enterprise is maturing.

### INTRODUCTION

Trinidad and Tobago imports 1.5 million kg of sheep and goat meat annually. It has been estimated that local production accounts for only 30% of total demand. Market research (Craig and Seepersad 1993) has shown that the demand for local lamb is strong, especially but not exclusively among higher income groups and the product compares favourably with frozen imports from New Zealand and Australia. The local product is fresh; with much less fat and more flavour and as a result, has greater appeal in the market place. The problem faced by the market has been attributed to inadequate and inconsistent levels of supply. Research at CARDI and other institutions has linked this to a limited production base (Gibson and Ramlal, 1998) and poor methods of husbandry.

This study was therefore initiated by CARDI in collaboration with a rural-based NGO (The Committee for the Upliftment of the Under-Privileged [CUUP]) in order to increase local lamb production by small, resource poor farmers, utilising a co-operative approach. The focal point of the study (Princes Town) covers an area of approximately 160 square kilometres and has a population of almost 30,000 people. It is a rural district with a large agrarian population, among which almost 50% of all households are considered to be below the poverty line. The poverty rate is 49.3 percent, well above the national average of 35 percent, so that poverty alleviation has been a major focus of the study. Micro-enterprise development, utilising sheep as the main capital resource, was identified as the mechanism for improving the standard of living of the participants.

### MATERIALS AND METHODS

In Phase I of the project, target families were supplied with four mature ewes, adequate animal housing, feed, veterinary and other ancillary inputs to successfully rear sheep. The delivery of these items

and the commencement of feeding would have brought Phase I to completion. In Phase II the CUUP will act to facilitate the formation of a co-operative among the group that will construct and manage a feedlot. The feedlot will buy the weaned lambs from the group, fatten and sell them on the open market and all profits will accrue to the members as dividends and shares. The group will be required to give back to the CUUP, four lambs that will be distributed to other families desirous of joining the project. The second phase of the project has been delayed because of the need strengthen some aspects of Phase I, particularly animal husbandry training and marketing.

#### *Family selection*

Socio-economic status, aptitude for animal husbandry, amenability to training, character, size and composition of household and residency in the municipality of Princes Town, were the major criteria used for the selection of participants. After the candidates were selected, a contractual arrangement was entered into with each participant. The contract stipulated the obligations of both parties (participant and CUUP) and outlined fully their responsibilities.

#### *Animal housing*

Adequate animal housing was constructed on each farm at a cost of EC\$435.00 per unit. Housing consisted of a wooden structure of approximately 9.29m<sup>2</sup> with concrete floors and roofing made from galvanised metal sheets. Wooden forage feeders were built into the housing such that the farmer had easy access to fill the feeders without having to enter the pen and the animals could not easily contaminate the feed. Waterers, constructed from PVC, were generally designed the same way but in some cases farmers used a plastic bucket, which was filled with water and placed inside the pen. Housing was designed to be low-cost, with the farmer supplying labour only. The cost of the materials was borne by the project.

#### *Animal procurement*

Animals were obtained from various sources and differed significantly in breed, physiological state and general condition. The main breeds represented were Barbados Blackbelly, West African and their crosses. Some of the ewes were pregnant at the time of sale. The project deliberately sought to procure pregnant ewes, as it was felt that this would give farmers an added advantage in terms of the time taken to first lambing, especially since provisions for a stud service were not very well developed. A total of 90 ewes were bought and distributed to each of 25 farmers. The remaining five farmers were supplied by a later batch of animals

#### *Feed and ancillary supplies*

It was determined that animals would be reared primarily on forages that were readily available to the farmer. These consisted in the main of Tanner grass (*Brachiaria* sp.), Elephant grass (*Pennisetum purpureum*), Para grass (*Brachiaria mutica*) and a number of other local species. In some cases Kudzu (*Pueraria phaseoides*) was also available for feeding. In all cases, the semi-intensive system was used for rearing. Animals grazed for a limited time each day and were fed additional forage and supplements when penned during the evenings. The supplement, consisting of a 14% dairy ration, was supplied by the project to each farmer. Feeding rates varied between 0.2 to 0.4 kilograms of supplement per animal per day, depending upon physiological state. Each farmer was also given a supply of iodine, wound spray, disinfectant and access to anthelmintics.

## *Training*

All participants were exposed to a basic animal husbandry course, inclusive of health and disease management, ruminant nutrition and reproductive management. Four hours of contact time was given to sheep marketing principles and practices and agribusiness management.

## RESULTS

### *Participants' staying power*

Thirty participants signed up for the project and after one year, 20 remained. This represents an approximately 67% success rate. The reasons for dropouts from the programme are shown in Table 1. There was a considerable lag time between housing construction and delivery of the animals. During this period, some participants became frustrated and opted not to receive any animals when they became available. The project targeted resource-poor families in Princes Town who were either unemployed or engaged in extremely seasonal or part-time work. Those who found full-time employment were not then able to continue with the project. Due to sickness and changes in family situations, some participants were unable to adequately care for their stock and were forced to give them up.

### *Distribution of stock*

Stock was distributed over a six-month period between January–June 2000. This was necessitated by the low levels of local stock available, which had to be procured from several sources scattered throughout Trinidad and Tobago. The stated intention of the project to procure pregnant ewes in the main was not fully achieved since only 42% of the ewes bought were pregnant. A total of 93 animals were procured including 90 ewes and three rams. The average price paid for pregnant ewes was 34% higher (EC\$283.00) than that paid for open animals (EC\$208.00). The rams were bought from a Government station at a highly subsidised price of approximately EC\$63.00 per animal.

### *Stock increases/decreases*

Ninety ewes were purchased for the project, out of which two died and three were culled, leaving 85 animals to be distributed. Fifty-three lambs were born during the first six months of the project and two died. Stock inventories are shown in Table 2. Lamb mortality for this period was 3.7%, well below the first-year target of 10% expected for the project. No detailed data was available for the second crop of lambs except that there were reports of unusually high levels of mortality, occasioned by lack of adequate supplementation and some disease problems.

### *Income generation*

Participants have earned no appreciable income as yet, however, some lambs have been sold to butchers but the details of these transactions were not readily available at the end of the reporting period. CARDI has projected that farmers will not be able to realise profits until after 2 years of operations. When the projected income per month is compared with the monthly costs of a basic basket of food items (Figure 1), the breakeven point is achieved only in year 3. This is the main reason for some of the frustration among participants, the relatively long wait for returns on their investment.

## DISCUSSION AND CONCLUSIONS

The project revolved around the creation of micro-enterprises within a rural community using sheep production and marketing systems development as the primary vehicle to effect socio-economic

transformation. Sheep production systems generally take about 13-15 months before the break-even point is reached and up to two years before some measure of profitability is attained. In this regard, it was expected that it would take some time before real benefits could accrue to the target community. Ideally, a period of not less than three years is needed for rural-based small ruminant projects to bear fruit. The concept therefore was sound in that improvements in income of the participants were a reasonable expectation. However, it should be noted that these improvements would be modest in nature, given the margins associated with semi-intensive sheep production systems in the tropics. After 13 months, profit margins from a four-ewe operation represent only about EC\$80.00 per month for the operator and this is provided that labour costs are not charged. By Year 4 that figure is \$1000.00 and in Year 5, it is \$2100.00 per month. The costs used represent the contribution of concentrate feed and medication only. Nevertheless, collateral benefits accrue from empowerment through training and the manure produced can be sold or used to sustain home garden production of vegetables.

### Project management

This is often a critical factor that influences project success more than any other. CARDI is increasingly recognising the need for formal collaborative arrangements with its partners when forging project alliances, with responsibilities clearly defined by signed Memoranda of Agreement (MOA). An independent project manager (not a member of the NGO) was appointed by the CUUP to oversee the project, even though CARDI had suggested that the CUUP itself should logically assume that responsibility. This advice was offered in view of the fact that the CUUP owned the project, no funds were budgeted for a project manager and therefore the NGO should have assumed full responsibility for project management. The project manager's costs were partly met by the small ruminant project and the rest was paid from a number of other unrelated projects for which he had responsibility. The problem that arose because of this arrangement was that the project manager could not devote enough time to the small ruminant project and as a consequence direct technical support to the farmers was not as frequent as it should have been. Nevertheless CARDI continued to provide technical support through the Project Management Committee and directly by limited site visits to farmers. A project management committee was formed and consisted of:

President – CUUP; Secretary – CUUP; Project Manager; Livestock Scientist – CARDI; Research Assistant – CARDI; Livestock Officer – MALMR; Extension Officer – MALMR

After initially holding monthly meetings, the committee convened on a quarterly basis to discuss and determine management issues with respect to the project and to provide guidelines for technical support. This arrangement worked well as it provided a ready forum for the discussion of problems that arose on the project, with a view to finding cost-effective solutions. The project manager had overall responsibility for project execution and was supported in the field by the extension officer. CARDI personnel and the MALMR livestock officer were responsible for technical support in all aspects of animal husbandry. CARDI personnel made regular site visits to the farmers and also provided project development and marketing support. A major limitation of the project management committee was the omission of the farmers or their representatives.

### Project execution

Despite initial teething problems the 20 farmers who remained with the project after one year were generally satisfied with the manner in which the project was executed. However, after that period, it soon became apparent that the project manager simply did not have the time to visit the farmers as often as required, especially during the lambing period. One of the reasons for this, apart from his responsibilities to other projects, was that there was no suitable vehicle available to service the project. Given the widely scattered nature of the project site and the general deplorable conditions of the access

roads, an appropriate means of transportation was indicated. The project had budgeted for and had acquired a vehicle for this purpose, however, during this period a number of internal problems developed within the NGO and as a result the vehicle was never made available to the project. Other internal complications arose that had the effect of severely curtailing the funds available for feed, medication and other ancillary supplies. During this period, lamb mortality was at its highest, mange became a major health issue and dissatisfaction among the farmers was a growing concern. The resignation of the NGO secretary, a founding member, had a significant impact on project execution, given her intimate knowledge of the participants and her commitment to the project. As the internal problems worsened, so too did the conduct of the project in terms of funding for basic items. The NGO has since reorganised and is now trying to sort out project financing and other internal issues. The project manager has resigned and the NGO is in the process of appointing a co-ordinator from its own ranks, to oversee the running of the project.

## CONCLUSIONS AND RECOMMENDATIONS

The success of the project was premised upon a vibrant and robust NGO that had experience in the target rural community, which would serve to facilitate the technology transfer process. This premise is sound and many of the problems that subsequently arose were unforeseen and partly precipitated by an associated agency. Nevertheless, the project was owned by the NGO and they are ultimately responsible for its success or failure. CARDI should continue to forge collaborative linkages with NGOs to jointly execute rural-based projects. The twin imperatives of poverty alleviation and rural development dictate this type of approach. However, more careful research into the background, experience (with projects and working with other institutions) needs to be conducted before CARDI gets involved. A thorough SWOT analysis is indicated.

CARDI's research has shown that sheep production and marketing systems projects provide a relatively slow means of tackling rural underdevelopment and as such participants must be made aware from the start that this does not represent a get-rich-quick scheme. CARDI's findings in this project have indicated that it would be useful in the future to combine home-gardening (vegetable and food crop production) with sheep production and marketing projects to more adequately address the issues of nutrition and income, within a timeframe that is more appealing to the rural poor. Alternatively, another livestock enterprise like rabbit production that has a much higher off take and better opportunities for income in the short term may be considered in addition to sheep production. During the July-December 2001 period, the project will introduce a pilot vegetable production and rabbit-rearing scheme to test this hypothesis. Research done by the International Livestock Research Institute (ILRI) in sub-Saharan Africa has shown that the synergies derived from combining these enterprises in terms of nutrient cycling and cash flow play a major part in the success of livestock-based rural development projects. CARDI is working with its collaborators in Trinidad and Tobago and the region to bring the benefits of this type of research to the rural poor.

## REFERENCES

- Craig, K and M Seepersad 1993. *Marketing functions and the consumer* in Proceedings of a workshop on *Survival of the Livestock Industry: Marketing Strategies*, Caribbean Agricultural Research and Development Institute, 24<sup>th</sup> June 1993, St. Augustine, Trinidad. pp 25-33.
- Gibson, N and H Ramlal 1998. *A review of small ruminant research in Trinidad and Tobago*. In Proceedings 10<sup>th</sup> Annual Niherst Conference on Agricultural Research and Development. Agricultural Research: Beneficial or Irrelevant? November 1998, Couva, Trinidad. pp 113-126.

Table 1. Reasons for participants dropping out.

Reasons Advanced for dropping out of the project	No. of Participants
Never started the project	3
Found full-time employment	2
Were unable to take care of the animals for reasons of incapacity	3
Death of participant	1
Unable to continue due to personal reasons	1
<b>TOTAL</b>	<b>10</b>

Table 2. Breakdown of livestock population

Class of sheep	No. of animals
Rams	3
Ewes	85
Lambs	51
Male	24
Female	27
<b>Total</b>	<b>139</b>

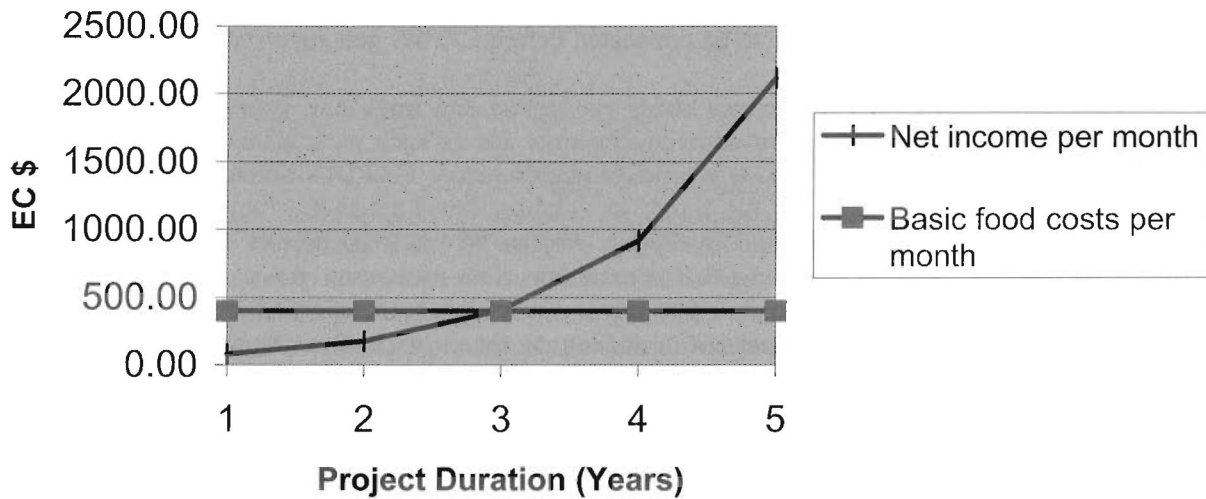


Figure 1. Comparison of net income per month by farmers on the project and the monthly cost of a basket of basic food items