

SCALE, SKILL AND SUSTAINABLE LIVELIHOODS – PARTICIPATORY APPROACHES TO IMPROVING POULTRY PRODUCTION IN PERI-URBAN COMMUNITIES: EVIDENCE FROM SOUTH AFRICA.

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ABSTRACT

Poverty and food insecurity are widespread in developing countries around the world. Sub-Saharan Africa which accounts for approximately one quarter of the world's poor has acute food insecurity in Central, East and Southern Africa. Poverty has multiple dimensions characterised by the inability of individuals, households or entire communities to access sufficient assets to sustain a socially acceptable standard of living. By improving their asset status households can become more resilient to external shocks through increased options for livelihoods. This paper examines the scaling-up of traditional family poultry systems as a possible livelihood strategy to reduce poverty and food insecurity in peri-urban communities in South Africa. Participative action research methodologies revealed small-scale broiler enterprises as the preferred poultry system. Through business incubation, trainee entrepreneurs from the community demonstrated abilities to manage scaled-up broiler systems profitably over four successive cycles of production and marketing. Participation in the broiler enterprise enabled entrepreneurs to accumulate a range of assets which contributed to improving their income and food security status. Improvements in household food security were achieved directly through the increased availability of poultry meat and indirectly through increased cash incomes to acquire other foodstuffs. At the community level, localised benefits included the increased availability of fresh poultry meat and the income effects derived from more competitive retail pricing. The paper concludes that further research is required to determine the viability of different scales of production that could be managed within the framework of local culture and access to resources.

Keywords: *poverty alleviation; sustainable livelihoods; family poultry; participatory research*

INTRODUCTION

According to the World Bank indicator of less than US\$1 per day an estimated 21% of the world's population (1.1 billion people) lives in poverty (World Bank, 2005). Between 300 and 420 million people worldwide are trapped in chronic poverty, the largest proportion (30–40%) of which is found in sub-Saharan Africa (CPRC, 2005). In South Africa, between 45-55% of the population are considered as living in poverty and 25% of this group is chronically poor based on the official

indicator of R352 (US\$50) per adult equivalent per month (De Swardt, 2003). (The exchange rate used for all conversions is US\$1.00 = ZAR 6.50)

However, such narrow monetary-based measures have been challenged as failing to capture the complexity of human poverty. An emerging consensus holds that poverty has multiple dimensions characterised by the inability of individuals, households or entire communities to access sufficient resources to satisfy a “socially acceptable” minimum

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standard of living (UNDP, 1997; May, 1998; May, 2004; Bhorat *et al*, 2004; Noble *et al*, 2004). A further dimension of poverty is its frequent concurrence with food insecurity. Food security may be defined as “enough food for an active, healthy life” (World Bank, 1986). The link between poverty and food insecurity is acknowledged in livelihood approaches which adopt a multidimensional perspective based on people’s strategies, assets and capacities (Hussein, 2002). Within this framework the degree of food security at the household level depends both on the availability of and access to food. Thus, food insecurity may not necessarily be a consequence of a shortfall in agricultural production (e.g. due to drought) but of a failure of livelihoods to facilitate stable access to sufficient food (Devereux and Maxwell, 2003). Thus, both poverty and food insecurity can result from constrained livelihoods opportunities. Moreover, poverty eradication is essential to improve access to food.

The Human Development Report of 1997 argues that the eradication of poverty should seek to grow the assets of the poor (UNDP, 1997). Indeed, May (2004) suggests that long term poverty may be more readily understood in terms of the access to (or lack of) assets that generate income. Thus, the ability to escape poverty and food insecurity depends significantly on having secure access to a range of assets (natural, social, physical, financial and human) (Carney, 1998). Improving the access of the poor to productive assets will expand livelihood options. This could be achieved by providing access to new assets (e.g. land reform) or by assisting the poor to work more productively with existing assets (e.g. extension).

South Africa is self sufficient in food, yet 14 million people are estimated to be vulnerable to food insecurity and 43 percent of households suffer from food poverty (National Treasury, 2003). Further, around 30% of the lowest income households in urban areas in South Africa are considered to be food insecure (HSRC, 2004). In the urban and peri-urban areas of South Africa shortages of land limit the ability of households to improve their food security through the domestic production of food. Inadequate access to land reduces the range of livelihood options for this group, encouraging a reliance on paid employment. Unemployment in South Africa is estimated to have increased from between 17-29% in 1995 to between 28-42% by 2003 (Kingdon and Knight, 2005). More recent official estimates place unemployment in South Africa at 26 % (StatsSA, 2006). Evidence at the local level suggests that around 76% of inhabitants in Khayelitsha and Langa townships outside Cape Town fell below the official poverty line (de Swardt, 2003). By limiting livelihood options, a scarcity of both land and paid employment will increase the frequency and extent of food insecurity amongst the urban and peri-urban poor. Thus, one approach to improving the food security of this group would be to focus on raising the productivity of existing assets.

This paper explores increasing the scale of traditional poultry systems as a livelihood strategy to improve asset status and household food security in peri-urban communities in South Africa. The role of traditional poultry systems in the livelihoods of poor communities is discussed and the results of a programme of participatory action research (PAR) undertaken in a peri-urban settlement are presented. The establishment and management of

a small-scale semi-intensive broiler chicken production unit based on business incubation methodologies is discussed. The article concludes with an appraisal of broiler chicken production as a strategy at the household level to improve income and food security from utilizing existing assets more productively.

Family poultry production systems

The production of poultry is widespread in all societies. A simple classification of the main production systems would include the free-range scavenging or village system, the backyard or subsistence system, the semi-intensive system and the intensive system (Guèye, 2000). In low-income food-deficit countries (LIFDC's) the traditional extensive free-range and backyard systems, generally referred to as family poultry systems, tend to predominate (Gueye, 2002). Globally, it is estimated that up to 80% of poultry production occurs within family poultry systems. In the developing world, low input - low output systems of this type are an important element of household food security in rural, peri-urban and even urban areas (Sonaya *et al*, 1998).

Guèye (2000) notes that family poultry production contributes to the well-being of people in Africa in two main ways; directly as a source of food and indirectly a source of family income. For example, in Côte d'Ivoire 69% of the poultry meat consumed comes from family poultry systems (Diambra in Guèye, 2000) while in Morocco and Kenya the proportions are 25% and 72% respectively (Houadfi and Mbugua, in Guèye, 2000). Further, up to 20% of protein consumed in developing countries originates from poultry (Branckaert and Gueye, 1999). Regarding the contribution to income a

study in Tanzania found that up to 10% of the average annual family income was derived from family poultry systems (Chitukuro and Foster in Guèye, 2000). In Nigeria, it was found that almost 10% of the monthly income generated from livestock production was attributable to family poultry (Kushi *et al*, in Guèye, 2000). Survey results of family poultry projects in Bangladesh emphasise the increased income and nutritional status of participants (Ahamed, 2000), and up to a seven fold increase in household income of distressed communities (Fattah, 1999). Additional benefits accruing to the household from poultry production would include improved household hygiene due to feeding on insects and household refuse, serving as a unit for barter (e.g. to be exchanged for other food stuffs such as cereals or vegetables), religious and symbolic purposes (e.g. slaughtered for special occasions) and as a form of household savings and insurance (Gueye, 2000).

The Rome Declaration on World Food Security (FAO, 1996) encourages the production of food in home gardens and urban agriculture. In South Africa, informal settlements are commonly located in the peri-urban areas of many cities and towns. In such areas, restricted access to land and water limits the capacity to produce food to supplement household diets and incomes. In this context, poultry production has significant potential to improve household food security since, unlike other forms of agricultural production, it does not require large quantities of land or the intensive use of inputs; moreover, the feed conversion ratio of poultry is more efficient than that of ruminants. Further, the size of poultry relative to other household livestock provides flexibility in marketing and

consumption (Kusina and Mhlanga, 2000).

Since family poultry production represents a known skill to most poor people in Africa the alleviation of poverty and food insecurity may be mediated through interventions that seek to improve the productivity of family poultry systems. In Bangladesh, family poultry has been recorded as offering a unique entry point for the poor to reverse poverty (Jensen and Dolberg, 2003). However, most poultry production systems are small and extensive in nature so that productivity is often far below potential (Kitalyi, 1997; Saleque, 1999; Permin and Pederson, 2000). As noted previously, options for livelihoods are expanded where access to new assets is provided or new ways of working with existing assets are developed. Thus, increasing the scale and efficiency of family poultry systems should lead to improvements in household income and food security.

Typically, family poultry systems are small-scale and suffer from inefficiencies in both production and marketing. Poor housing and feeding practices conspire to reduce the potential yield due primarily to high mortality rates from disease, predators and poor stock management. At the marketing stage, a lack of business skills and limited access to credit and finance reduce the potential financial returns on poultry production (Saleque, 1999; Gueye, 2000; Permin and Pederson, 2000). Thus, interventions that aim to nudge family poultry systems towards small-scale commercial enterprises must focus on improving husbandry practices supplemented with training, extension and entrepreneurship skills (Kitalyi, 1997). Assuming traditional family poultry systems provide a basis around

which a more intensive commercial system can be developed the challenge becomes to devise a method and process of transition that is both acceptable (technically and culturally) and sustainable by people already burdened by poverty and food insecurity.

RESEARCH METHODOLOGY

The study was conducted in the Thembaletu peri-urban settlement (wards 3, 13, 14, 15 and 16) of the George municipal area in the Western Cape province of South Africa. The study area is inhabited by *c.a.* 10 659 households with 57.4 % people in the age group 15 years – 64 years. Of this age group some 33 % are not economically active and an estimated 45 % of the total labour force is unemployed. The education level of people over 20 years old is low; 47 % have no education or only completed primary school. In terms of household income 26 % have no income and 33% of all households live below the \$2/day metric (StatsSA, 2003). Paid employment exists on adjacent commercial dairy and vegetable farms, although much of this is limited to short term seasonal employment. The scarcity of both paid employment and land limits livelihood options and increases the extent of food insecurity amongst the peri-urban dwellers.

Within the framework of sustainable livelihoods (Carney, 1998) participatory action research was undertaken with members of the Thembaletu community to explore whether a small-scale commercial poultry enterprise could provide a sustainable livelihood. This sought to identify if and how existing family poultry systems could be scaled up and what training and extension may be required for efficient management and

sustainability. It encouraged community participation and flexibility in learning based on experiences gained as the project developed. Action research adopts an iterative approach from the initial planning stage through action and observation culminating in a critical review of the results as inputs to the next phase (Kemmis and McTaggart, 1988; Dick, 2000). Action research methodology is regarded as particularly suitable for investigative or pilot research and lends itself to be used in community settings (Smallbone *et al*, 2002).

A series of participative meetings and informal gatherings with community members revealed small-scale semi-intensive broiler enterprises as the preferred option for scaling up traditional poultry production. Day-old broiler chickens were to be raised and marketed at six to eight weeks of age as slaughter birds. Since broiler rearing is intensive and required new knowledge and skills in addition to substantial amounts of capital, it was decided to experiment with one enterprise. This would afford members of the community the opportunity to participate in running the business as “trainee entrepreneurs”.

An analysis was undertaken over four rearing cycles to determine if the community entrepreneurs would be able to manage a small-scale commercial poultry enterprise independently. One way to assess management ability is to measure the financial viability of the broiler enterprise. The logic is that if a profit is made during a cycle with limited or no access to support or training, then the entrepreneurs are deemed capable of managing the enterprise independently. In addition to measuring financial indicators, two factors known to affect profitability in

broiler enterprises were measured. Firstly, the nature and magnitude of any losses will assist in evaluating decision-making during the production phase. Secondly, the extent to which value is added during production will, in part, determine the success of marketing activities.

To facilitate a gradual transition to semi-intensive poultry production the enterprise was operated according to business incubation methodologies and principles. Business incubation is a process of skills development for new entrepreneurs who are supported under controlled conditions to learn how to survive and grow during the vulnerable start-up phase (Smilor and Gill, 1986; Lalkaka, 1997, Adkins *et al*, 2001).

RESULTS AND DISCUSSION

A small broiler rearing operation of 200 day-old Ross-type chickens was established as the enterprise in incubation. A vacant outbuilding on communal land was used as the “business incubator” facility. Five people from the local community invested R 120 (US\$ 18) each of their own money in the operation, giving them ownership of 40 broiler chickens each. Seed money for operating capital was provided by the local university in the form of a loan, repayable at the end of each eight week rearing cycle. At the end of the rearing cycle, each entrepreneur was allowed to sell their mature birds, pay back their portion of the loan and re-invest their profits in a new cycle.

Hands-on demonstration and training was initially offered in the incubator facility, with the first cycle focusing on technical aspects of broiler rearing and the researcher fully involved as mentor and manager of the operation. From the second cycle onwards, additional

business and entrepreneurship training was provided with the mentoring and management role of the researcher decreasing gradually. As their learning and skills improved, the trainee entrepreneurs increasingly took responsibility for managing the operation as a team (see Jordaan *et al*, 2004 on the applicability of the business incubator model in distressed communities).

Despite some expected teething problems, the first cycle returned a moderate net income (Table 1). During this period the management of the production was highly controlled by

the researcher and the marketing of the birds was largely the responsibility of the trainee entrepreneurs. The rearing operation was successful in terms of the number of birds that became available for marketing. Losses due to mortality and theft amounted to 5.5 % of the total stock but were well within acceptable norms. The marketing phase was less successful since the majority of the birds were marketed live at an age of 9 weeks and older, much later than the norm of 6 – 7 weeks. This was largely due to the inexperience of the entrepreneurs and resulted in additional feed costs which reduced profitability.

Table 1: Results of a scaled-up 200-chick broiler rearing operation

Parameter	Cycle 1 Rand	Cycle 2 Rand	Cycle 3 Rand	Cycle 4 Rand
Financial:				
Sales	5,218	4,059	5,885	6,265
Total cost	4,766	3,792	3,324	4,092
Net income	452	267	2,561	2,173
Net income per bird	2.39	1.93	14.39	12.49
Net income per entrepreneur	90	53	512	435
Technical:				
Birds purchased	200	200	200	200
Feed consumed (kg)	1,300	1,100	1,000	1,200
Feed cost	3,492	2,969	2,531	3,055
Bird losses ^a	11	62	22	16
% Bird losses	5.5%	31.0%	11%	8%
Birds available for marketing	189	138	178	184
Slaughtered birds marketed ^b	53	94	178	184
% Slaughtered birds marketed	28.0%	68.1%	100%	100%
Age of birds at sale (weeks)	9	8	6	6
^a $X^2 = 67.982$ $p < 0.001$ d.f = 3				
^b $X^2 = 139.534$ $p < 0.001$ d.f = 3				
Exchange rate (R / \$) :1 US \$ = R 6.50				

From the second cycle, greater responsibility was given to the entrepreneurs in managing the rearing operation. The production phase was less successful due to a significant loss of broilers arising from mortality and theft. Losses increased from 5.5 % achieved in the first cycle to 31 % in the second with only 138 (69 %) birds being marketed. The marketing phase was more successful since the majority of the birds were marketed at an age of 8 weeks. This resulted in less feed consumed than in the first cycle with a slight cost reduction. This time more birds (68 %) were sold dressed (slaughtered) and realized a higher price. Nevertheless, net income declined sharply, dropping from R2.39 to R1.93 per bird sold.

In the third cycle the entrepreneurs assumed further responsibilities and subsequently net income and the margin per bird increased sharply. In the fourth cycle higher feed costs led to a slight decline in margin per bird. This was due to increased feed consumption normally observed during the winter months (June – August). However, margins were much higher than those of the first two cycles. The higher margins can be attributed to three main factors. Firstly, in the rearing phase losses were reduced leading to an increased number of birds available for sale. Secondly, birds were sold earlier at an age of 6 weeks which led to reduced feed and other costs. Finally, in the marketing phase, a higher proportion of the birds were dressed prior to sale, a form of value-adding that resulted in premium prices received.

Most of the variables measured showed positive trends over the fourth cycle. A Chi-square test revealed a significant difference between the cycles with regard to losses (mortality

and theft), the single most important factor affecting profitability during production ($X^2 = 67.982$; $p < 0.001$; $df = 3$). A significant difference was also observed between the cycles with regard to value-adding (dressing birds), a factor critical to improved marketing ($X^2 = 139.534$; $p < 0.001$; $df = 3$). This would suggest an increased efficiency in both the performance of the business and the ability of the entrepreneurs to manage for profit a small-scale commercial poultry enterprise independently.

It would appear that the change from an extensive family poultry production system to a small-scale intensive commercialised system contributed to the asset status (in terms of the sustainable livelihoods framework) of the participants. This became manifest predominantly in the form of increases in human assets (knowledge, skills, capability etc.), social assets (networks, connectedness, group membership, etc.) and financial assets (stocks of cash, livestock, savings, credit, etc.). Active participation in the enterprise, particularly involvement in management and decision-making, were empowering and contributed positively to the human assets of the participants. The knowledge and skills acquired through the practical experience of running the broiler operation increased the technical, business and entrepreneurship competencies. It was observed that the greater knowledge and skills accumulated by the participants led to raised self-confidence and esteem. This in turn developed self-management and independent decision making (evidenced by preparing the stock for sale earlier and by the marketing strategy of adding value by dressing birds prior to sale). Participation in the local economy and stimulating job creation in the

enterprise supply chain (provision of feed, slaughtering, marketing, etc.) added to social assets. The improvement in the financial asset status was more direct in the sense that participants invested money in an enterprise and experienced a cash return on their investment which could be re-invested or saved for future investment or consumption. There was also increased access to credit and production inputs, e.g. the Landbank (agricultural bank) offered the entrepreneurs access to finance through their "Step-Up program" where operating capital can be advanced to small farm and micro-business operations. One major feed manufacturer offered the entrepreneurs discounts on feed purchases. The findings above concur with similar evidence from the use of family poultry in poverty alleviation projects in Bangladesh (Saleque, 1999; Ahamed, 2000; Fattah, 2003; Jensen and Dolberg, 2003).

With adequate technical support and access to information the project demonstrated that a broiler enterprise can generate a net income for participants. An enterprise of two hundred birds has the potential to yield in excess of R2000 every six weeks or around R1300 per month. Divided between five entrepreneurs this would translate into a monthly equivalent of R267 which compares favourably with the average monthly income derived from casual work (R82) and self-employment (R75) reported for households in the Khayelitsha and Langa areas (de Swardt, 2003).

This research suggests that increasing the size of the poultry system towards more commercial scales in a peri-urban community has the potential to augment household income. The observed impact of increased poultry

production on household food insecurity was two fold; directly in the form of increased poultry consumption and, more importantly, indirectly through increased access to all other goods through income derived from the sale of poultry. This finding is supported by evidence on scaled-up poultry production systems in Bangladesh and India (Dolberg, 2003). It was noted that the additional income generated by the increased sales and asset accumulation associated with poultry production had a more significant impact on reducing poverty and household food insecurity than increased consumption of poultry meat within the household.

Finally, at the community level, there were some important localised benefits from the increased poultry production. Since the production and marketing of the poultry took place entirely within the Thembalethu area certain costs such as transportation and storage were not incurred. Together with other economies the retail price of the poultry was competitive relative to alternatives leading to real income effects in purchasing households. In poorer households where food constitutes a considerable proportion of total expenditure such income effects can be significant.

CONCLUSION

The ability to escape poverty and food insecurity is a function of the access enjoyed by individuals and households to a range of economic and social assets. In this respect, this paper has explored the potential of increasing the scale of traditional family poultry systems in a peri-urban setting to provide sustainable livelihoods. By expanding livelihood options the project sought to reduce poverty amongst the participants by increasing

their asset, income and food security status.

Participative action research methodologies revealed small-scale broiler enterprises to be the preferred poultry system in the peri-urban community of Thembaletu. Applying business incubation methodologies trainee entrepreneurs from the community were able to acquire the relevant technical skills and management capabilities to operate profitably a small-scale broiler enterprise over four successive cycles. The production and marketing strategies developed by the participants were successful in facilitating access to and the accumulation of a range of human, social and financial assets in addition to increasing household income.

Improvements in household food security were achieved directly through an increased availability of poultry meat for the participants and indirectly through increased cash availability to acquire other foodstuffs.

At the community level, localised benefits included the increased availability of fresh poultry meat and the income effects derived from more competitive retail pricing.

The informal production of poultry is common throughout Africa and the developing world. With targeted support and training, increasing the scale of poultry production at the household level has the potential to contribute towards alleviating poverty and reducing food insecurity. Further research is required to determine the viability of different scales of production that could be managed within the framework of local culture and access to resources. However, the initial evidence suggests that a successful enterprise can confer a range of benefits including technical skills and knowledge accumulation, increased self-confidence derived from participation in the market, income generation, asset accumulation and the opportunity to escape poverty and deprivation.

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