

# The FAO special programme for food security: livestock diversification - a case study in Chad

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This paper presents a Technical Cooperation Project associated with the FAO Special Programme for Food Security (SPFS) in Chad. The project entitled "Diversification Component of the SPFS in Chad", which started in November 2000 and ended in October 2002, focussed on improving the contribution of small ruminants (sheep and goats) and poultry (chickens, ducks and guinea fowl) to household food security. Only data from the poultry component are presented in this paper.

An initial analysis identified access to credit, goods and services, and markets as the main constraints faced by farmers wishing to expand their poultry production. High mortalities, especially in chickens, were identified as a major cause of low productivity. Through a consultative process that involved all the stakeholders, project interventions were designed to overcome these constraints. The project introduced credit with repayment in kind, access to animal health care, staff and farmer training, and demonstrated improved animal husbandry practices.

Sixty percent of the original 55 farmer production/demonstration units remain active and profitable. Guinea fowl and duck keeping proved to be the most profitable as their meat is in high demand during festivals, and guinea fowl lay during the wet season when there is a scarcity of eggs. Efforts to control Newcastle Disease were less successful and the disease occurred in 78 percent of the units keeping chickens. Credit repayments have started in 40 percent of the units. This pilot project has shown the potential of poultry as a means of increasing household income and it has become a model for SPFS programmes elsewhere in sub-Saharan Africa.

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**Keywords:** food security; scavenging birds; income generating activities; native birds production

## Introduction

### THE SPECIAL PROGRAMME FOR FOOD SECURITY

In 1994, the Food and Agriculture Organization of the United Nations (FAO) launched its global Special Programme for Food Security (SPFS) with the objective to help Low-

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Income and Food-Deficit Countries (LIFDCs) improve their food security both at national and at household level. Chad is one of the countries participating in the Special Programme for Food Security and, in 1997, a multidisciplinary team formulated Chad's national SPFS document. In 2000, FAO's Technical Cooperation Programme approved a project in support of the SPFS entitled "Diversification Component of the SPFS in Chad" to improve the contribution of small ruminants (sheep and goats) and poultry (chickens, ducks and guinea fowl) to household food security. The paper is presenting only data from the poultry component.

#### THE LIVESTOCK SECTOR IN CHAD

Agriculture represents 39.2 percent of the GDP (\$1.41 billion in 2001) in Chad and is a vital sector in the economy. Livestock's contribution to agricultural exports varied between 22.5 and 53.2 percent from 1998 and 2001, while cotton, the other major export commodity, varied between 35.1 and 71.1 percent over the same period (FAO, 2004). Chad has an estimated 5.9 million cattle, 0.73 million camels, 2.3 million sheep, 4.3 million goats, and 11 million poultry (FAO, 2004). Extensive pastoral production systems predominate in both the Sahelian and Saharan zones of the country. In the Sahelian zone mainly cattle and small ruminants are kept, while in the drier Saharan zone camels replace cattle.

The majority of the rural population keep small-stock, either small ruminants and/or poultry. According to Mopate *et al.* (1997a), 89.2 percent of households in the Sahelian zone (central Chad) keep chickens for selling products (lives birds and eggs) rather than for home consumption. Livestock also have important socio-economic roles and are an important means of risk aversion in times of need, such as crop failure, drought or family emergencies. A constraints analysis, undertaken by the SPFS in Chad, indicated that the low income of livestock producers were due to poor management, limited resources to invest and difficulty in accessing reliable drugs and vaccines (Patcha, 2001).

#### **Project objectives**

The overall objective of the project was to increase the contribution of poultry to household food security by increasing productivity and ownership, and to create further employment opportunities, especially for women and youth. The specific objectives of the project were to:

- establish farmer managed production units to demonstrate improved husbandry practices for keeping different poultry species (guinea fowl, chickens and ducks) that could be used as a model elsewhere in Chad, and
- create a partnership between the existing farmer associations and the private sector suppliers of goods and services, to ensure the sustainability and financial viability of the production units.

#### **Project approach**

A constraints analysis of the poultry sector was undertaken by Patcha (2001), within the framework of the SPFS. The main conclusions were:

- That marketing opportunities existed given the high demand for poultry meat and eggs in the urban centres. Domestic production was not, however, sufficient to meet this demand.
- Poor farmers did not have the resources to obtain improved birds or quality feeds in sufficient quantities.

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- Poor housing, no feed supplementation and poor disease prevention resulted in high poultry mortalities. Losses were mostly reported in young birds (0-8 weeks of age) and often were attributable to Newcastle Disease (ND), especially in chickens, and internal parasites in guinea fowl. According to Mopate *et al.* (1997b), Newcastle Disease was the most important disease constraint affecting 54 percent of poultry producers surveyed and accounted for 85 percent of all reported cases of poultry disease during the rainy season. Newcastle Disease does not affect all bird species with the same intensity, chicken are more sensitive than ducks and guinea fowl (Sonaiya and Swan, 2004).
- It was difficult for poor farmers to get reliable access to veterinary services, drugs and vaccines, even though private veterinary practice in Chad dates back to the 1990s and Community Animal Health Workers (CAHWs) also practice in Chad. The CAHWs provide basic animal health cover at full cost recovery and work in association with private veterinarians (Thonnat, 1997).
- The Newcastle Disease vaccine used was an injectable, inactivated, oil suspended, thermo-resistant vaccine well suited for use in remote areas with simple cold chain facilities. The CAHWs were trained how to vaccinate chickens and to motivate farmers to undertake seasonal vaccination. Outbreaks of Newcastle Disease occur normally during the dry and hot season, therefore the vaccination campaigns were undertaken during October and November. Suppliers of the vaccine were local veterinarians and CAHWs could purchase them directly accordingly to their needs.
- Using the constraints analysis as a starting point, and through a consultative process involving all stakeholders (farmers, farmers' associations, NGOs, extension and private veterinary services) the project developed a detailed work plan. Interventions and activities were designed to overcome the constraints identified and to be profitable and cost effective.

### **Project design and implementation**

Fifty five farmer production/demonstration units were established between 2000 and 2002 within a radius of 100 km of N'Djamena. This ensured that there was easy access to the N'Djamena market. South of the capital, producers were predominantly from the Massa and N'gameaye ethnic groups. They represented 31 of the total production units and were located in seven villages along the Chari River. North of N'Djamena, the dominant ethnic group is the Muslim Kotoko which represented the remaining 24 units located in six villages. Forty three percent of the participants were women.

Participants could choose between three poultry species: 44 percent opted for indigenous chickens (*Gallus domesticus*), 28 percent for guinea fowl (*Numida meleagris*) and 28 percent for Muscovy ducks (*Cairina moschata*). The project supported an improved traditional, semi-intensive production system that allowed birds to scavenge during the day. At night, the birds were kept in improved housing made from locally available material, well ventilated, draught free and providing protection against thieves and predation. Supplementary feeding was promoted, and information and training was provided on using locally available feeds, such as cereal by-products, termites, waste brewers grain, etc.

The project provided up to US\$500 in seed capital to each participating farmers' association. The credit was provided partly as building material (doors, locks, wire netting etc.) and partly in cash to purchase birds. Recipients of credit were chosen by the members and usually the most motivated and experienced were selected. After one year, the borrowers were to repay in kind, by providing live birds to the next group of participants. The community monitored the process and identified the participants for the second and

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subsequent phases. The farmers' association guaranteed the repayment and provided social pressure to ensure members met their obligations.

Farmers, extension staff and CAHWs were trained in improved management practices including housing, feed supplementation, breeding and reproduction, and animal health care (ND control and de-worming). Existing training material available in the country was modified and used, including training material for CAHWs made available by the Ministry of Agriculture.

The project built upon the experience in Chad with CAHWs and private veterinarians to provide animal health services to the participating sites. The project encouraged the protection of young birds against diseases as recommended by Sonaiya and Swan (2004) including Newcastle Disease control by vaccination. CAHWs were to provide this service, including drugs and vaccines, at full cost recovery. Local veterinary pharmacies either existed or were established, with project and private sector assistance, in the villages and provided a basic stock of veterinary drugs and vaccines.

### **Data collection**

In January 2004, eighteen months after the formal closure of the project, an impact evaluation was undertaken by FAO's Animal Production Service and the Regional Office for Africa. In addition to open, structured discussions, 56 questionnaires were distributed to the farmer's associations requesting information on the following:

- general information on the association, location, ethnic grouping, etc;
- current numbers (age, sex, species) of poultry;
- estimated income generated in the previous year from the sale of birds and eggs;
- estimated mortality of poultry by species and age over the previous year;
- average number eggs laid and hatched;
- major constraints faced over the previous year;
- details of any animal health care and vaccination given over the previous year; and
- estimate of all related expenses.

### **Project results**

In the northern zones of N'Djamena, preference was given to local chickens (74.5% of the choices beneficiaries) and guinea fowl for 25.5 percent as the Kotoko community do not eat duck meat. South of N'Djamena, the Massa and N'gameaye communities, along the Chari River, chose muscovy ducks as their first preference followed by local chickens. Here farmers were able to exploit the presence of water for local feed resources to raise muscovy ducks and also by-products from local artisan breweries as a feed supplement. Guinea fowl require a large area for scavenging and these were found mostly in those villages with plenty of open space.

Newcastle Disease control measures were not successful in seven sites. High mortality (81%) was recorded with chickens due to ND outbreaks in 78 percent of the cases where indigenous chickens were kept. This was in spite of the fact that the majority of the Community Animal Health Workers (CAHWs) were reported to be active and had organised vaccination programmes for poultry of their villages. Seventy nine percent of the CAHWs ranked the farmers understanding on the importance of the vaccination as the biggest difficulty encountered, followed by the ability to organise vaccinations on time. In seven sites where vaccination did not succeed, five were associated with delayed vaccination and no vaccinations at all in the other two.

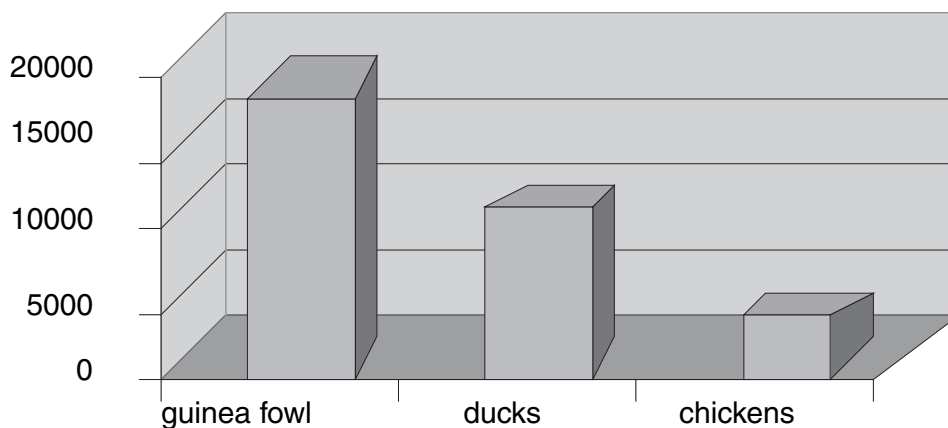
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Valuable training material already existed for CAHWs translated by the project into local languages and simple village pharmacies were in place and utilized on a regular basis. Some producers, who were also CAHWs, played an important role in managing on-farm demonstrations. The pharmacies are managed directly by the CAHWs who purchase drugs in N'Djamena depending on the seasonal needs. Stocks of veterinary drugs and treatments were recorded by the CAHWs and supervised by the community committee.

In the analysis, production units were grouped according to their performance in generating income. High performers represented 30 percent of all units and were earning between 8 000 to 18 000 FCFA<sup>a</sup> (\$15-34) per month. The average performing units represented 30 percent of all units and were earning an average of 3 000 to 8 000 FCFA (\$5.6 - 15) per month. The remaining 40 percent had not performed well and producers had either left the scheme, or, more commonly, changed to another animal species or agricultural activity offered within the SPFS in Chad. Sixty-seven percent of the poor performers had kept chickens and had been badly affected by Newcastle Disease.

An analysis of the monthly net income indicated that profitability of guinea fowl was highest, followed by ducks and local chickens (*Figure 1*). Guinea fowl provide a high income from the sale of eggs produced during the rainy season when supply is low. Some eggs were kept back for hatching under broody chickens. The value of guinea fowl and duck meat increases considerably during festivals, especially Christmas. The best performing producers waited to sell their birds during these periods to obtain a better price. The extra feeding costs were more than offset by the higher prices.

#### **Monthly incomes generated in FCFA**



**Figure 1** Monthly incomes generated by production units with different species.

By January 2004, just under 40 percent of the units had started to repay their loans in kind, with birds being given to the second generation of participants. Repayments were delayed in 40 percent of the cases where farmers had changed to another species. The farmers' associations were responsible for monitoring the repayment and a special agreement was signed between the participants and the community committee.

<sup>a</sup> 527 FCFA = 1 US \$ (2004)

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### **Discussion**

The project aims were to improve the traditional, semi-intensive system of keeping indigenous breeds of chickens, ducks and guinea fowl. The technologies introduced proved to be well within the means of the producers.

The high popularity of local chickens, despite the higher risk in keeping them, is partly explained by the strong social role they play in all communities in Chad's society, as described by Bouimon (2002) and Bebay (2004). Poultry are kept all over Africa as a source of income to be sold in case of need (Sonaiya and Swan, 2004). The choice of species influenced the performance of the production unit. The analysis of monthly incomes showed that ducks and guinea fowl performed better than indigenous chicken. Three reasons could explain this:

- The higher value of ducks and guinea fowl when sold at a specific festive periods.
- Fewer losses associated with ducks and guinea fowl due to their higher disease resistance, especially to Newcastle Disease.
- The greater susceptibility of local chickens to Newcastle Disease was exacerbated by the lack of adequate disease control.

There are different reasons to explain the difficulty in controlling the Newcastle Disease outbreaks:

- The participants were used to low-input, low-output production practices and would not normally invest scarce financial resources in caring for poultry. Farmers were, therefore, reluctant to pay to vaccinate their birds. The adoption of more profitable production systems is slow to take off and CAHWs and extension staff will have to be particularly active to sensitise and explain to the necessity of controlling Newcastle Disease by vaccination.
- CAHWs need to be more efficient in organising vaccination campaigns and mobilising the farmer groups. The logistical difficulties of vaccinating village chickens, especially where a cold-chain is required, were clearly demonstrated and need to be resolved in the future.

### **Conclusions**

The poultry activities associated with the SPFS in Chad have demonstrated that real benefits can be derived from affordable and practical interventions. Sixty percent of the production units remain active and are making a profit, one and a half year after the end of the project. The project approach allowed for producers to access credit with repayment in kind. This provided the inputs for subsequent groups of participants to take part in the project. Access to animal health services, with full cost recovery, and technical training also contributed to the success. The creation of income generation for women and young people in the selected villages was a major achievement of the project. Solutions still need to be found for producers from more remote rural areas who lack resources and have poorer access to goods and services and, importantly, to market.

This project was been positively evaluated by a number of donors. In Chad, a large UNDP project is now being implemented using the model developed by this project. In Mali, Burkina Faso, Niger, Togo and Cameroon, similar approaches are being developed that take account of each country's circumstances and which include other species, such as pigs, rabbits, guinea pigs and grass cutter.

*Developments in family poultry production and health***References**

- BEBAY, C.** (2003) Développement de l'Aviculture villageoise; dix années d'expérience au Togo. Proceedings FAO Workshop, Rome, Italy, July 2003.
- BOUIMON, T.** (2002) Le mariage traditionnel Toupouri, Journal de Tchad et Culture.
- FAO** (2004) Special Programme for Food Security. <http://www.fao.org/spfs/>.
- FAO CHAD** (2002) Plan d'opération de la composante diversification du PSSA au Tchad, document principal et document annexe.
- FAO CHAD** (1998) Projet CHD/96/G31/B/IG/99, Elaboration de la Stratégie Nationale et plan d'Action pour la Conservation de la Diversité Biologique.
- MOPATE, L.Y., HENDRICKS, P. and IMADINE, M.** (1997a) Exploitation des poulets dans la région du centre-Est du Tchad. Proceedings INFPD Workshop, M'Bour, Senegal, 9-13, 1997.
- MOPATE, L.Y., HENDRICKS, P. and IMADINE, M.** (1997b) Contraintes sanitaires des poulets dans la Région du Centre-Est du Tchad. Proceedings INFPD Workshop, M'Bour, Senegal, 9-13, 1997.
- PATCHA, O.** (2001) Repérage des villages, groupements et candidats potentiels pour la conduite des unités de démonstration et analyses des contraintes. Rapport du Ministère de l'Agriculture, Tchad
- SONAIYA, E.B. and SWAN, S.E.J.** (2004) Production en Aviculture Familiale, un guide technique. <http://www.fao.org/waicent/faoinfo/agricult/aga/agap/lpa/fampo1/intropap.htm>.
- THONNAT, J.** (1995) La formation des auxiliaires d'élevage au Tchad (Cirad-Emvt).

