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From Sheep to Broilers: Development of Poultry Production around Marsa Matruh, Egypt.

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ABSTRACT

Following a drought period (1995-2010) in the Matruh region in Egypt and an increase in feed prices, traditional Bedouin sheep production systems based on transhumance on rangelands have incurred a reduction in flocks by 50 to 80%. Recently, a strong development of broiler production was observed. It is based on intensive medium-scale production, with a constant technical model of 5000 broilers in 600m² poultry sheds of local conception. In 10 years the production around MM raised from almost zero to more than 20 million birds / year (illustrated in Figure 1). It already represents more than 2% of the total Egyptian poultry production. Feed factories have been built, while day-old chicks still come from Alexandria or Cairo.

Short-term profitability of poultry production is high, thanks to limited investment (15,000 USD/building) well controlled production costs and low manpower costs. Under good conditions, the return on investment is obtained in less than a year. However, the economic model is highly sensitive to uncontrolled factors such as high feed prices, low broiler selling prices, or even to technical accidents such as high mortality rates in summer. This example shows how modern poultry farming is a small scale family activity which is a way to adapt to the drought conditions of the last 15 years in a context where animal production was previously more extensive and traditional. It is however difficult to estimate its sustainability in this type of environment.

CONTEXT

Until the middle of 20th century, Bedouin society of Coastal zone of western desert of Egypt (CZWD) was based on the pastoral activities, mainly rising of sheep, goats and camels. Recently, this zone has been affected by a severe 15-years drought from 1995 to 2010 with an annual rainfall less than 150mm over the period. Due to the duration of the drought, all the families have been led to reduce drastically their reproductive flock to cover the costs of feed and food (Alary *et al.*, 2012); many plantations, mainly the young plantation, died; and families have been obliged to find new alternatives. In the same time, the region has seen the rapid development of touristic infrastructure on the coast which has affected land access in the coastal zone, creating also some new aspirations of jobs and demands.

In the framework of the ELVULMED project (Livestock and Vulnerability in Mediterranean, funded by ANR), surveys in the region of Marsa Matruh have evidenced the rapid development of poultry farming. This paper aims at presenting some key facts about this phenomenon and discuss its sustainability.

Observations are based on data collections during farm visits, and interviews with farmers, traders, technicians, veterinarians and feed manufacturers. Identification and georeferencing of poultry farms was done by examination of successive aerial images of the region (2000-2012) available on Google Earth website. Figure 1 shows an image with 6 poultry sheds. They are easily identified on aerial photographs thanks to their typical long shape which correspond to no other buildings in the region of Matruh

Figure 1. Poultry shed appearing on “Google earth” aerial images.



1. RESULTS

Since the last 10 years, we observe a surprising development of medium-scale intensive poultry production units in the Matruh region. This is illustrated on Figure 2 representing localization of poultry farms in the Naghamish sector, where only 1 poultry farm was present in 2007, and 54 in 2012. The Bedouin breeders who decided to invest in poultry production usually are young men married, between 30-45 years old, with young kids. They don't have enough money to invest in sheep fattening, in a shop or in another activity in the urban area. The decision to start a poultry activity comes from neighborhood contact. Impressed by the observation of the efficiency and profitability of this activity they contact with key-persons in the poultry chain to develop their own unit.

They are seven poultry traders based in Matruh. Traders not only market the animals, but they are also advisors and can provide access to day-old chicks and feeds. Poultry farmer pays his inputs (chicks and feed) only when he sells the broilers at the end of each band. This means the trader is the guarantee for all the suppliers. This business is based on trust and social network: the trader knows the future poultry farmer who is always from the same tribe.

At the beginning, the new poultry farmer has only to invest in the building. All buildings have the same conception and approximate size. Typically they are simple barns of 10-12m width by 50-60m length (i.e. $\approx 600\text{m}^2$) hosting approximately 5000 birds. They are built with blocks and bricks, windows to ventilate, and with the required equipment (manual feeders and bell

drinkers). The investment cost of the building was around 10-15.000 US\$ in 2012. The workforce is another strategic point. A poultry farm needs at least two workers, usually the farmer and one of his young brothers or cousins. One of the two workers generally has been trained to apply the basic rules of poultry production.

Figure 2. Development of poultry farms in the sector of Naghamish (Matruh, Egypt)

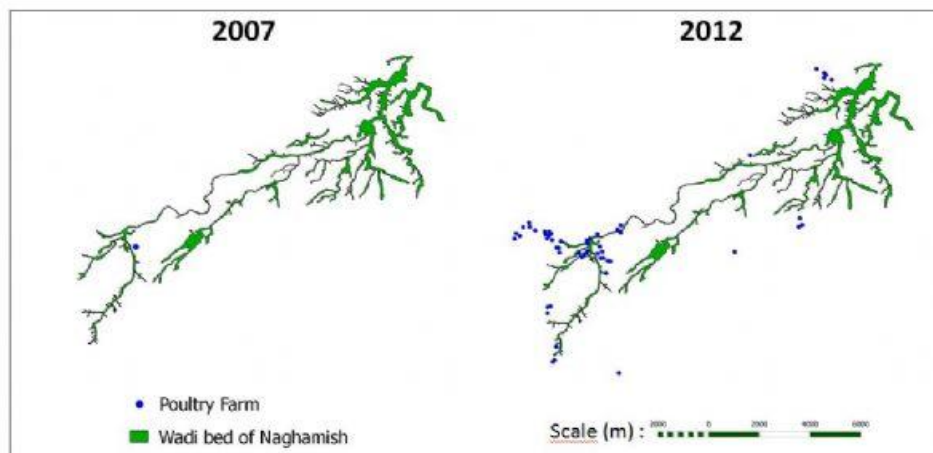


Table 1 presents the technical parameters of a typical poultry farm in the CZWD. There are 5 to 6 bands per year. The average marketing liveweight is around 2.1kg at 38-40 days, with a feed consumption ratio (FCR) of 1.9. Chicks are fast growing broilers, of the same strains as found in the Nile Delta region (*e.g.* Cobb). Water consumption is estimated to 80 m³ per band, part of which is brought by water truck. The mortality rate depends on the farm, from 2% to 10%, with sometimes high mortality (>25%) in summer. The margin on total costs is around 15-20000 EGP (\approx 2000US\$) per band.

Table 1: Technico-economic parameters of poultry production unit developed in Coastal zone of western desert in Egypt

TECHNICAL PARAMETERS		Average value
Number of broilers	Nb	5 000
Feed consumption ratio	kg/kg	1,90
Feed consumption	kg/cycle	19 950
Water consumption	m ³ /cycle	80
Mortality rate	%	5,0
ECONOMICAL PARAMETERS		
Day-old chick price	EGP/chick	2,5
Feed Price	EGP/kg	3,80
Variable costs	EGP/cycle	1 500
Manpower	EGP/cycle	2 000
Building and equipment	EGP/building	80 000
Broiler price at sale	EGP/kg	11,00
INCOME		
Income from sale	EGP/cycle	109 725
Margin on chicks and feeds	EGP/cycle	21 415
Margin on total costs	EGP/cycle	14 715

2. DISCUSSION – SUSTAINABILITY OF POULTRY PRODUCTION

The development of poultry farming around Matruh was extremely rapid. Today this production appears to be significant at the Egyptian level. There is a lack of information on the number of farms, but a reasonable evaluation of 200-300 farms around Matruh would represent 2-3% (perhaps up to 5% in the whole governorate) of the Egyptian poultry production potential, which is not negligible. The local poultry production chain is fully connected to the national market both through the inputs (feeds, birds) and the outputs (living broilers sent to the Delta region or sold locally).

When the economic conditions are favorable, production is very profitable, with a high and rapid payback : the margin of 20000EGP/band allows the payment of the building in less than one year ! In recent years this led to a fast increase in the number of poultry breeders.

However there are important potential limitations to the development of poultry production on the long term:

On a technical point of view, the fact that intensive poultry breeding is new in the region, and the dispersion of farms provided a significant advantage in terms of diseases. This advantage could decrease in the future with densification of production – but anyway the situation of biosecurity is more favorable than in the delta. High mortalities can occur in the hot summer period. Indeed one problem is that the poultry houses have to be closed in the colder winter period; this requires relatively small openings and therefore generates bad ventilation in summer. One solution is would be to stop production in summer but it would decrease overall production.

On a commercial point of view, the production depends on the price of inputs (chicks, feeds) and the market price of broilers. The farmers have almost no possible actions on these factors because the market is completely connected with big cities (Cairo, Alexandria) in which prices are determined. So farmers can experience bad marketing contexts, which can make them loose money on one or several bands. While it is possible to overcome this situation for larger farmers, the most vulnerable ones can be discouraged. There are already observations of empty poultry sheds in neighboring regions, testifying of discontinued production. In fact only the most skilled farmers, with some resilience capacity can survive in this activity - but if they do they can make much profit. Some diversification has been observed (Turkey production) and it would not be surprising to see laying hens appear in the near future.

Moreover on a more general point of view, the sustainability of poultry production is questionable. A significant part of the water needed for production ($\approx 80\text{m}^3/\text{band}$) is brought by water truck and the effect of the development of this activity on water availability has to be investigated. All inputs are brought by road, if not imported through Alexandria, and the markets are quite far, the local consumption being low compared to Cairo market.

3. CONCLUSION

The strong and rapid expansion of poultry production units in the CZWD and the good performances in term of productivity and mortality have been a surprise for many experts. Four main factors explain this situation: the national market which absorbs all the production; the Bedouin 'quest' in efficient farming systems to face the drought; the lack of specific

poultry pathologies in the region; the capacity of the tribe to organization the access to poultry chain. Some other factors have contributed to the expansion *e.g.* the availability of space for the buildings, the rapid learning of the local labor, and the installation in Marsa Matrouh of three feed plants and consultants with skill in poultry production.

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