CHARACTERIZATION OF MILK AND VEAL PRODUCTION CHAINS OF BUFFALO UNDER CROP-LIVESTOCK PRODUCTION SYSTEM IN EGYPT

By

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B.Sc. Agric. Sci. (Animal Production), Fac. Agric., Cairo Univ., Egypt, 2004
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APPROVAL SHEET

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ABSTRACT

This thesis includes four parts to characterize Buffalo milk and veal chains at different chain levels, the objectives of the first part were to identify the diversity of different chains and more deeply to determine main actors along the milk value chains in three villages to understand how these chains work. Also, milk analysis was applied to study the effect of location on milk composition, milk urea nitrogen (MUN) and somatic cell count (SCC). Field visits and interview are used to collect data. Milk samples were collected from farmers through 2013/14. Results indicated that there were a short chain and a long chain. Short chain achieved higher profit for farmers and reasonable price for consumers compared to long chain. While long chain provides a lot of jobs. MUN, SCC and milk composition could be used as diagnostic tools for different regions to identify the most priority services and extension needs at village level.

The aim of the 2nd part was to suggest a methodology to characterize the diversity of dairy farming systems in Egypt to understand the traditional dairy sector. Data were collected from 65 farmers in three villages through three consecutive seasons. Based on multiple factorial and cluster analyses, six farmers' group were identified. Milk production was a major activity in very small land farms, the sustainability of this sector facing the lack of technical support and lack of pricing system for milk and feedstuffs, more governmental and NGOs projects needed to supply farmers with high quality forage seeds, high producing animals and veterinary services. So, considering the diversity of farming systems, one agricultural policy will not fit all farmers' categories taking into account the region and the season.

The objective of the 3rd part was to apply a SWOT analysis on a traditional milk chain, particularly buffalo skimmed milk chain around greater Cairo, which considered as one of the main dairy markets in Egypt. Main stakeholders of the chain were farmers, milk collection points, milk collection center, and dairy processing units. SWOT analysis allowed highlighting the major role of social network to explain the flexibility and adaptation of this sector to the major constraints in linked with international competitiveness and national constraints, mainly on land access. These elements could help decision makers and developers to prioritize sustainable development activities in link with agriculture global agenda.

The aim of fourth part was to characterize the veal supply chain using survey analysis for different actors along the chain and to understand the preference of some meat consumers to veal meat through comparing meat quality parameters of buffalo meat categories in Egyptian market including meat quality analysis of veal, fattening males and culled females. Survey analysis results indicated that 65 % of Egyptian farmers sold veal as early as possible. About 61 % of these farmers sold their animals for economic reasons, 14 % for technical reasons and 25 % for both reasons. Fat content and cholesterol levels were lower in veal meat compared with fattening calves or culled females; the same trend was observed for shear force values and cooking loss percentage. These results explained why the veal meat is regularly consumed by elders, sick peoples and employees with limited physical activities, veal showed high tenderness and more attractive color, in contrast veal contained lower fat and cholesterol levels.

Key words: Buffalo, chain, crop/livestock production system, SWOT, skimmed milk, veal.

DEDICATION

I dedicate this work to whom my heartfelt thanks; my mother, my wife, my brothers, my sister, my friends and my lovely sons Ahmed, Omer and Ali for their patience, encouragement and help, along the course of my study.

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LIST OF ABBREVIATIONS

ADG	Average daily gain
CFM	Concentrate feed mixture
Cfu	Colony forming unit
CIE	Commission International de l'E´clairage
CLS	Crop/livestock system
CP's	Collection points
DPU's	Dairy processing units
GDP	Gross domestic product
GPS	Global Positioning System
Ha	Hectare
IR	Infra-red
Kgf	Kilogram force
L. dorsi	*Longissimus dorsi* muscle
MCC	Milk collection center
MCPs	Milk collection points
MFA	Multifactorial analysis
MPUs	Milk processing units
MUN	Milk urea nitrogen
NGOs	Non-governmental organization
NRL	Newly reclaimed land
OLs	Old land
SCC	Somatic cell count
SCS	Somatic cell score
SNF	Solids not fat
TBC	Total bacterial count
TS	Total solids
TVBC	Total Viable bacterial count
WHC	Water holding capacity

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