With support from

Federal Ministry of Food and Agriculture

ptble Projektträger Bundesanstalt für Landwirtschaft und Ernährung

by decision of the German Bundestag

2019 - 2022

Analysis of cost of production and profitability of dairy farms in Ghana and Senegal: an application of typical farm approach

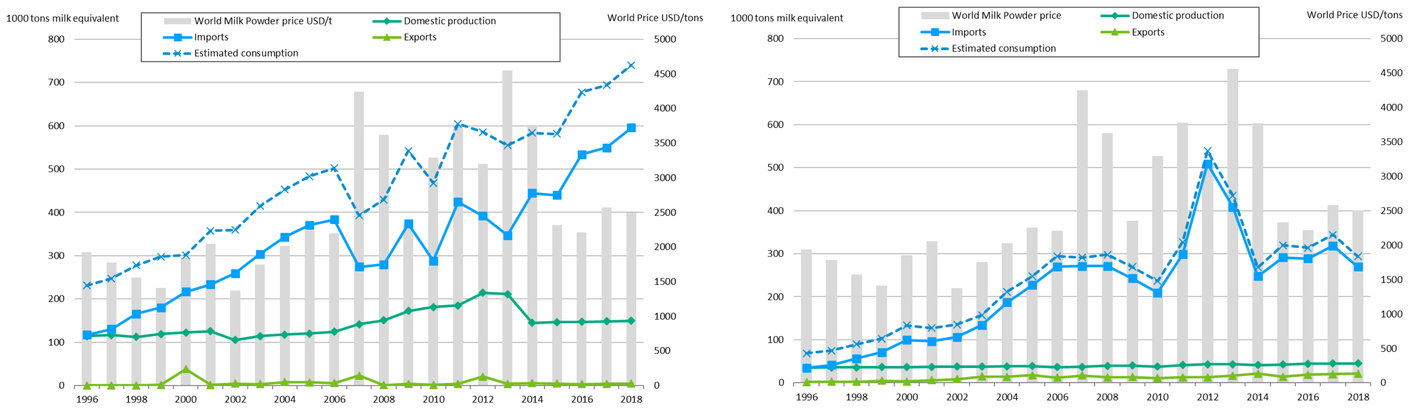
Dr. Anoma Gunarathne · Dr. Mohamad Isam Almadani · Lena Behrendt · Craig Chibanda · Dr. Claus Deblitz

Thünen Institute of Farm Economics, Bundesallee 63, 38116 Braunschweig, Germany

Introduction

- Rapid population growth, rising per capita income, and fast-growing urbanization have led to increase in the milk and dairy products demand in West Africa
- Local milk production has failed to catch up with such a growing demand, and rely heavily on imports, mainly from European Union
- Cattle are primarily kept for beef production, and dairying is still a developing and neglected industry

Fig. 1: Development of the dairy sector in Senegal (left) and Ghana (right) in 1000 tones, milk equivalent



Source: Zamani et al.,2021

Objectives

- Identify and characterize the prevailing dairy production systems in Ghana and Senegal
- Measure and compare the cost of production and profitability of the identified systems

Methodology

The typical farms were constructed through a series of steps in the context of the *agri-benchmark* Standard Operating Procedure:

Step 1, identification of most common dairy production systems and production regions by reviewing national statistics and consulting local experts

Step 2, selection of individual farms with characteristics that represent the identified typical production systems

Step 3, Collection of data through semi-structure interviews and focus group discussions

Step 4, the Technology Impact Policy Impact Calculations (TIPI-CAL) model, was used to analyze the typical farm data

© Stephen Awuni, Ghana, 2019

© Moussa Sall, Senegal, 2022

Results: production systems' characteristics

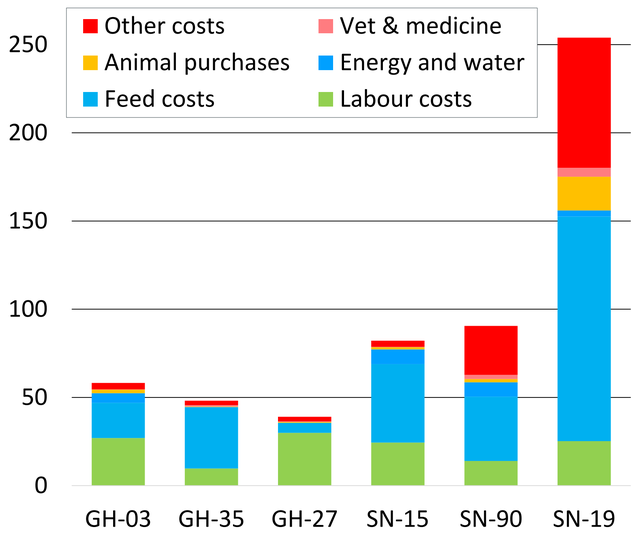
Table 1: Characteristics of the identified dairy production systems

Farm	GH_03 Intensive	GH_35 Semi-intensive	GH_27 Extensive	SN_90 Confined-silage	SN_15 Agropastoral	SN_19 Confined-cut and carry
Breeds	Jersey Local x Sanga Friesian	Jersey x Local Nigeria x Local	Sanga WASH x White Fulani	Holstein, Normande	Gobra, Ndama, Diakore	Holstein
Milking cows	3	35	27	90	15	19
Farm land (ha)	0.2	0.4	1.6	73	1	7
Milk yield kg/cow/year	4160	1063	963	3150	600	714
Cattle sold	Calves	Finished cattle	Finished cattle	Calves	Finished cattle	Calves
Labour (hrs/year)	1,008	4,592	2,080	37,440	6,760	11,232
Feed ration Wet season	Cut grass Wheat bran, Brewers grain	Grazing, Wheat bran Cassava peels	Grazing Cow-pea Cassava peels	Sorghum Maize silage, Maize grain, Panicum, Rice bran	Grazing, Crop residues Cottonseed Peanut hay	Panicum, Alfalfa Cut grass Rye grass Maize silage Maize grain Concentrates

Source: Own calculations

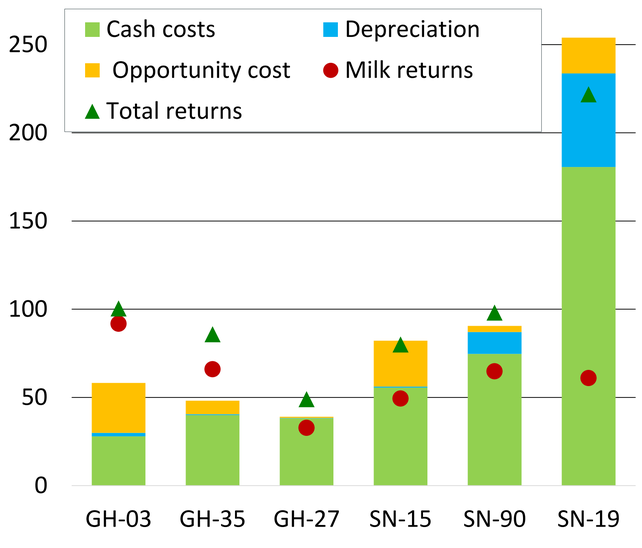
Results: production costs and profitability

Fig. 2: Comparision of milk production costs (EUR/100 kg milk ECM)



Source: Own calculations, © Thünen-Institute

Fig. 3: Cash and non-cash costs, total returns and profitability (EUR/100 kg milk ECM)



Note: Total returns = milk + claves + cull animals

Conclusions

- Due to grass availability, feed costs in Ghana are lower as compared to Senegal
- Labour costs are relatively higher in Ghana due to hired labour which is paid with milk
- Cattle fattening is a common practice in GH-35 and GH-27 in Ghana and SN-15 in Senegal to ensure considerable returns
- Low milk yield in SN-19 is due to heat stress and inadequate access to good quality and sufficient feed
- Cost of milk production in Senegal is higher compared to Ghana

THÜNEN

Thünen Institute of Farm Economics, Bundesallee 63, 38116 Braunschweig/Germany
Phone: +49 (0)531 596-5102 · Fax: +49 (0)531 596-5199 · E-Mail bw@thuenen.de

claus.deblitz@thuenen.de