OPTIMIZATION OF COOPERATIVE HERB FARMERS' PRODUCTION IN IMERETI; GEORGIA

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INTRODUCTION

Agricultural cooperatives play an important role in supporting small agricultural producers such as small farmers in developing countries. This study was carried out in Georgia, Imereti Region to model alternative profit maximization and crop-land allocation strategies for two cooperative herb farms under constrained resource conditions. We simulated 3 scenarios for each cooperative using General Algebraic Modelling System.

AIMS AND OBJECTIVES

➢ The aim of this research primarily focused on what herb crops to produce and to which extent given limited resources in the Imereti region in-order to get maximum profit. In simple terms, the aim was translated in partial objectives which included i) to analyze the market and farm capacities ii) to construct a model and iii) to run scenarios and interpret results.
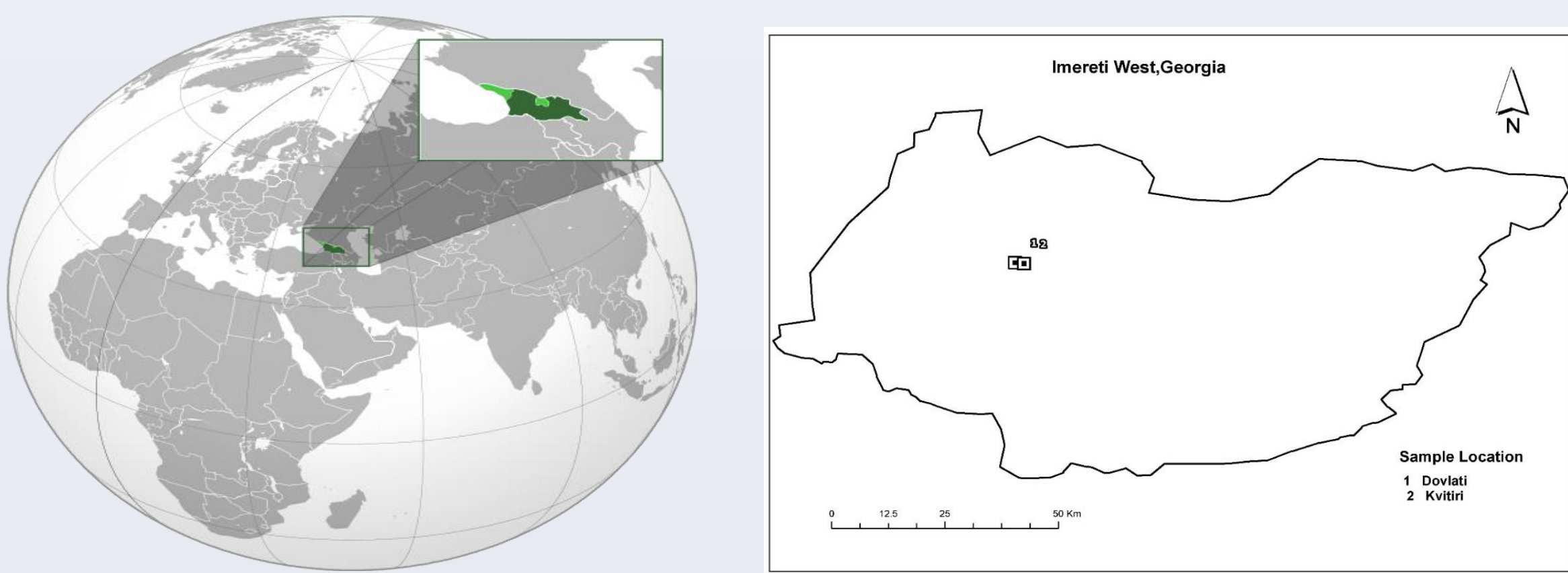
STUDY AREA : TARGET LOCATION
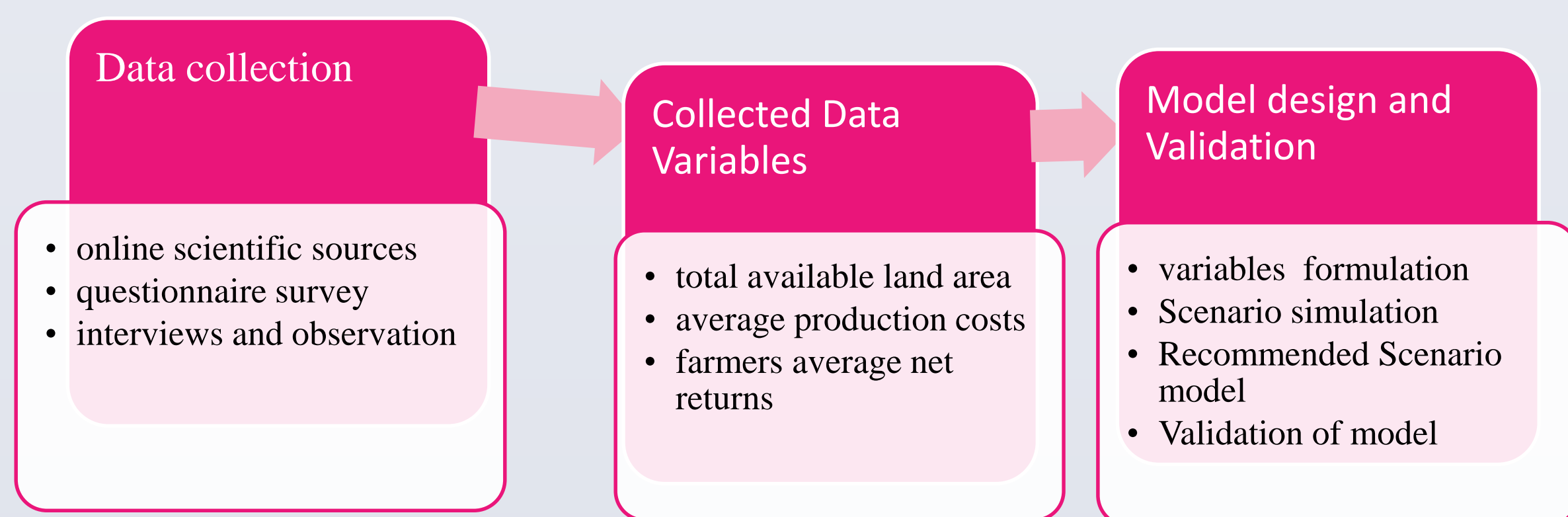

Fig. 1: Map of Georgia

METHODOLOGY

Fig. 2: Methodology flow diagram

The author combined structured questionnaires and observations in collecting primary data in the target area. The selection of the questionnaire variables was premised on the numeric nature of the variables under study. The scenarios were developed in such a way that scenario 2 was a development of scenario 1 while scenario 3 was a development of both scenario 1 and 2 (Ruben etal., 2005).

RESULTS

KVITIRI COOPERATIVE

Sc (Scenario)	Net Profit (GEL)	Land (ACRES) Lower	Bounds Upper	Land Margin (ACRES)	Cash (GEL) Lower	bounds Upper	Cash Margin (GEL/ACRE)	Market (GEL) Lower	bounds Upper	Market Margin GEL/TON	Crop Allocation (ACRES) Fennel	Parsley
Sc 1	2,400	2	2	-	4,000	25,000	1.2	-	-	-	-	2
Sc 2	4,880	2	2	1,200	4,000	4,000	-	-	-	-	2	-
Sc 3	3,150	2	2	-	4,000	4,000	0.6	500	500	1.5	1.25	0.75

Table 1: Scenario results

DOVLATI COOPERATIVE

Sc (Scenario)	Profit (GEL)	Land (ACRES) Lower	Bounds Upper	Land Marginal GEL/ACRE	Cash (GEL) Lower	Bounds Upper	Cash Margin GEL/ACRE	Market Bounds (TON) Lower	Upper	Market Margin GEL/TON	Crop Allocation (ACRES) Fennel	Parsley
Sc 1	39040	16	16	2440	32000	95000	-	-	-	-	-	16
Sc 2	28800	16	16	-	32000	32000	0.9	-	-	-	-	16
Sc 3	23200	16	16	-	32000	32000	0.6	2000	2000	2	6.666	9.333

Table 2: Scenario results
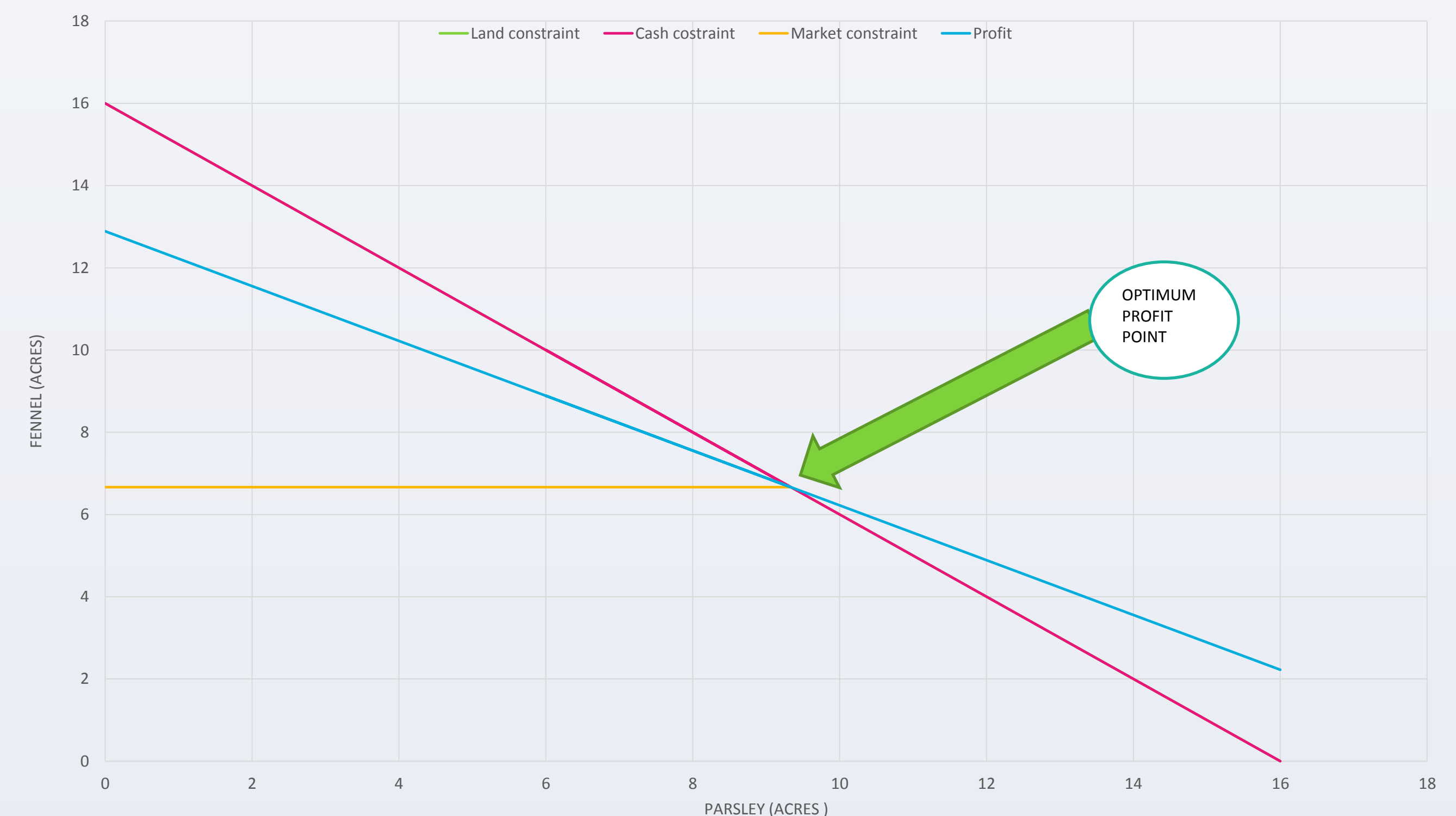

GRAPHIC VIUALIZATION OF MODEL

Fig. 3: Graphic visualization of model

MODEL DISCUSSION

The scenarios in both cooperatives advised us to drop coriander and specialize in only fennel and parsley . Scenario 3 was the chosen model since it recommended to grow fennel and parsley which in our view offsets risks associated with markets price fluctuations and unforeseen natural hazards. Our model follows specialized and market oriented approach for attaining profit maximization goals (EU, 2013). Other studies share the same view and suggest that optimal land use results in the reduction in crop types under production. In such circumstances farmers have to adopt and specialize in producing crops their farms are suited for, aligned with their objectives (Niragira et al., 2013).

MODEL LIMITATIONS

Variability of prices is one of the major factors which affect our model. Intra-cooperative decisions and adaptability of farmers to new cropping techniques can also affect the applicability of our model in Imereti. One of the major assumptions we made is that the price of herbs do not significantly rise or fall in 2016-2017 season .This model is a short term planning measure which is only used in accordance with the current situation in Imereti herbs production.

CONCLUSION

The model (scenario 3) can be applied in the context of the parameters which were used in scenario formulation .However a significant increase in costs of production structure can alter the patterns of the scenario and can lead to a different crop combination with different profit margins associated with each herb crop. The model can be further developed into a comprehensive sector model and be used by the Agricultural ministry of Georgia and the farmers as an instrument for effective farm decision making.

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