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## Optimisation of Cooperative Herb Farmers’ Production in Imereti, Georgia

WELCOME ZIMUTO, JANA MAZANCOVA, TOMAS RATINGER

*Czech University of Life Sciences Prague, Fac. Tropical AgriSciences, Czech Republic*

### Abstract

Agricultural cooperatives play an important role in supporting small agricultural producers in developing countries. This study was carried out in Georgia, Imereti Region to model alternative profit maximisation and crop-land allocation strategies for two cooperative herb farms. 32 farmers from two cooperatives; Dovlati and Kvitiri were interviewed. We simulated 3 scenarios for each cooperative using General Algebraic Modelling System. The GAMS results were used to assess the best crop land allocation strategy with profit and crop land allocation as the key informant variables. The results of the first and second scenarios in both cooperatives recommended farmers to grow only fennel crop while abandoning parsley and coriander herb crops. To offset the one crop allocation recommended in scenarios 1 and 2, the market constraint was introduced in the third scenario. The model results for scenario 3 recommended the farmers to grow fennel and parsley and not to grow coriander for both cooperatives. As such scenario 3 was selected as the suitable optimal profit maximisation alternative for both cooperatives. The shadow prices associated with all the scenarios indicated that the farmers were over utilising land and labour resources. In all the three models there was a slight decrease in profit as we progressed from the first scenario simulation to the third scenario simulation. The model presented both cooperatives with an opportunity to maximise their profit margin if the farmers cooperate both on production and marketing. In conclusion 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.

**Keywords:** Cooperative farmers, crop-land allocation strategy, profit maximisation, shadow prices