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A model to improve corn productivity and production

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Abstract

Purpose

This paper aims to address the corn productivity and production problem under the environmental dynamics to improve the productivity and production through the use of models and scenarios.

Design/methodology/approach

System dynamics simulation model is implemented to develop harvested area, productivity and production models. To improve productivity and production, several scenarios have been developed by modifying the model's structures and parameters.

Findings

Some factors affecting productivity include soil nutrition, planting patterns, corn quality, irrigation, technology, climate, disease and pest attacks. Corn production after land expansion and intensification depends on the harvested area, productivity and rendement.

Research limitations/implications

The data and information used in this study were obtained from East Java Agricultural Department.

Practical implications

Corn productivity after land intensification would achieve 73.68 quintals/ha as the impact of structural and non-structural approaches implementation. Corn production after land intensification and expansion would achieve 10.2 M tons in 2030. Fulfillment ratio is above 100 per cent; however, the trend continues declining due to demand growth of 5 per cent and production growth of only 2.8 per cent.

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areas. Furthermore, the practical implications can facilitate decision makers in agricultural systems to improve the land productivity and corn production.

Keywords

Modelling   Productivity   Simulation

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