



Exploring the resilience of vegetable growers in a country facing rapid environmental and socio-economic changes

The case of fresh tomato in Morocco.



Kenza Benabderrazik¹ • Birgit Kopainsky² • Jonas Joerin¹ • Johan Six¹

Context

In a world characterized by globalization of agricultural markets and climate change, farmers are increasingly exposed to various types of stresses and shocks, hence the **need to build their resilience**. For horticultural growers, this is all the more striking as vegetable production, such as **tomato, is input demanding** and therefore dependent on various exogenous factors.

Tomato is not only a key staple food crop for consumers all over the world but also a **key cash crop for the producers**.

This raises concerns about the ability of value chain actors, in particular tomato producers, to be sustainable and resilient to unexpected changes, such as drought.

Objectives

The goal of this project is to **explore the dynamics of the tomato production system and their effects on the environment, as well as on the socioeconomic development of the producers**. It illustrates the synergies and trade-offs between different goals such as **productivity, resilience and sustainability** under rapidly changing framework conditions.

Moroccan framework

In Morocco, the agricultural sector has evolved during the last decades around the willingness to **develop a modern agriculture while building up smallholders' welfare**. This strategy implemented in 2008 has mostly been supported by the Green Morocco plan (GM - Plan Maroc Vert). However 10 years after, this agricultural development policy has rather fostered a **productivist model, contributing especially to increased stress on natural resources, such as water**.

Extreme weather events such as drought have become more frequent in the country, raising concerns on the ability of producers in both production systems to recover from those shocks, and build more resilience.

The model depicts the current situation in Morocco for tomato production, with:

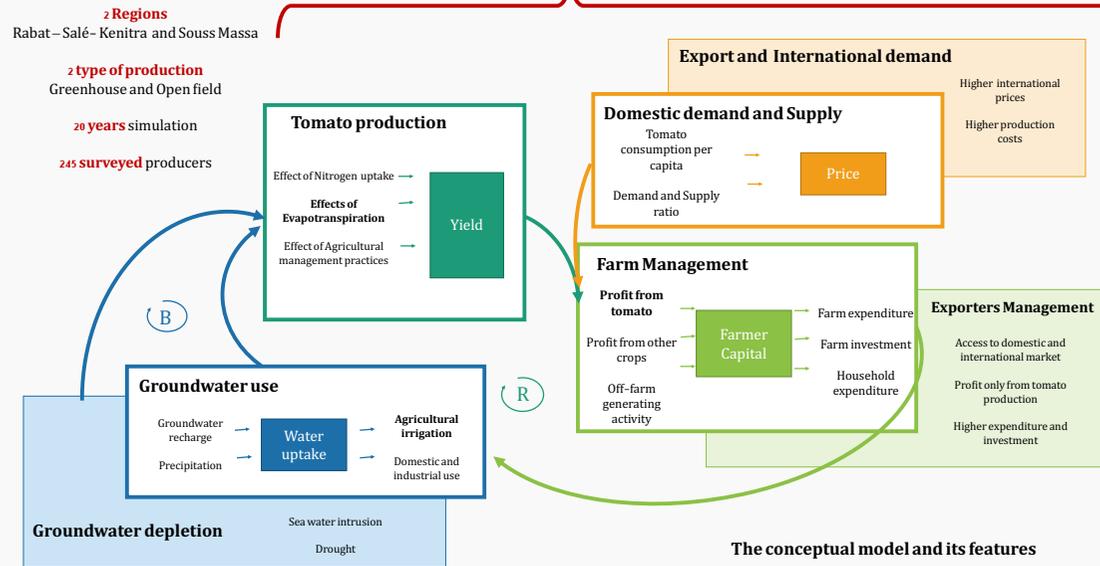
1. **Smallholder farmers** that produce **vegetables all along the year** exclusively for the domestic supply, and
2. **Exporters** that produce **exclusively tomato** under greenhouses and for off-season international market.



Open Field smallholder farmers



Greenhouse exporters



How can you help

DISCUSS
INFORM
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On any question and comments on the model, Food system Resilience, Vegetable production, Morocco, etc.

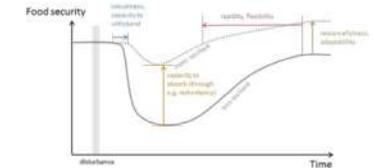
If you have ever modeled natural resources depletion, agricultural production, Farmers decision-making in face of a change

If you have pieces of models that you are eager to share in order to improve or complement the current model, send a mail to: kenza.benabderrazik@usys.ethz.ch

- 1) Sustainable Agroecosystem Group • Agricultural Institute • ETH Zürich • Tannenstrasse 1, TAN F 1, 8092, Zürich, Switzerland
- 2) System Dynamics Group • Department of Geography • University of Bergen • Postbox 7800, 5020 Bergen, Norway

Insights

A more resilient food system is one that is capable to limit the impact of a disturbance, and able to recover from it and increases its functionality.



In such context, the functionality of the system is not only to ensure the maintenance or growth of their private goods provision, proxied for example by producers' income, but also to be able to deliver public goods and services, such as ecosystem services.

In this system, while exporters have a better capacity to withstand shocks, the functionality of the natural system is slowly depleting, leading to a long-term failure of the intensive production system.

Long-term consequences of groundwater depletion on yield, and subsequently farmers income, raise the necessity to ensure a more sustainable agricultural approach in order to enhance the resilience on vegetable growers in face of drought.

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Partners

