Balancing Land and Technological Efficiency to Achieve Food Security In the Face of uncertainties from climate change

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Why it is important to pursue a balance between technology and land efficiency?
Technological trends

- In an era of rapid population growth and rising pressure on agricultural systems to provide sufficient food, some authors contend that effective resource use is crucial for both food security and eco-efficient agricultural practices.

- Eco-efficiency is the practice of increasing agricultural output while using less land, water, nutrients, energy, labor, or capital.

- Precision Farming, which promotes the utilization of land and water resources effectively.

- Many issues faced in agriculture and other related industries can be addressed through nanotechnology as a new instrument.

- Utilization of radiation consumption efficiency.

- Of interesting observation is that crop yields have been shown to have increased two to three times in the past as a result of the usage of synthetic nitrogen fertilizers in agricultural production to meet the rising demands of a growing world population.
Deductions from South Africa’s National Food and Nutrition Security Survey

- A dual system of land rights defines households’ access to land in South Africa.
- This includes a constitutionally protected statute law, largely patrilineal tribal traditions, and custom-based customary law.
- According to the National Food and Nutrition Security Survey, every household in South Africa's nine provinces owns the land on which it is located.
- The average size of land possibly owned by households is 500 square meters, and the maximum size is typically 1000 square meters.
- A sizable proportion of households reside in rented or public property.
- This may be either private or governmental land.
- The amount of land that can be used for agricultural production is minimal to non-existent because of the small proportion of land owned by households.
Deductions from South Africa’s National Food and Nutrition Security Survey

➢ Not many households in South Africa's nine provinces cultivate their own land for food or other purposes.

➢ Consequently, the land that households are considered to "possess" is mostly used for residential purposes.

➢ Livestock production is a popular agricultural practice in many provinces. Compared to the production of other commodities, such as maize, livestock production seems to occur at a significantly small scale.

➢ In addition to livestock rearing, poultry farming is a popular agricultural activity that occurs at a modest scale in households throughout the provinces.

➢ Crop output is always supplemented by vegetables, potatoes, and legumes that are grown at subsistence levels.
Concluding Remarks

With these highlights it can be concluded that the state of food security in any country needs to be assessed in the context of the existing land and technological interventions that are within households' reach.