

## WHY IS AGRICULTURE DIFFERENT?

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**Abstract** – *This review paper describes the significant differences agricultural activities have compared to other economic sectors. A literature review was done using Google Scholar, without time or geographic bindings. The several aspects that differentiate agricultural production from other economic activities create specificities for farming around the globe. However, in some cases, a more capital-intensive production, together with an agribusiness approach (value-chain approach), where production and processing technologies may transform agriculture into a less-natural-conditions-dependent activity.*

**Keywords:** *Peculiarities of Agriculture. Farming Specificities. Importance of Agriculture.*

### I. INTRODUCTION

The economic principles of industry and commerce are also generally valid for agriculture. However, regardless of its scale, agriculture has specific characteristics to consider when studying or analyzing an agricultural or livestock production enterprise. At the same time, there is a lack of literature documenting those characteristics to facilitate readers' comprehension.

Therefore, this review paper describes agricultural activities' significant differences from other economic sectors.

### II. METHODOLOGY

A literature review was done using Google Scholar, without time or geographic bindings. We used the words “agriculture” and “agribusiness” in searches in English and Portuguese to select a set of authors and sources that help us understand and explain how and why agricultural activities differ from other economic areas of a country or a subnational region (North, 1959; Olson, 1985; Antle, 1999; Araújo, 2008; De Bon, Parrot & Moustier, 2010; Pardey, Alston & Ruttan, 2010; Dethier & Effenberger, 2012; Collier & Dercon, 2014; Klasen *et al.*, 2016; FAO, 2017; Mann, 2018; Bilali, 2019; Samborska, 2020; Lioutas & Charatsari, 2021; Golovina & Logacheva, 2022; Kuzmenko *et al.*, 2022). In addition, the author's experience based on his participative observations in agriculture also has been considered.

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### III. RESULTS AND DISCUSSIONS

Several aspects were identified where agriculture differs from other economic activities. We discuss them in this section. Of course, this is a set of differences and may not be considered a complete list of differences. Instead, they can be seen as an exemplary set of differences in agricultural activities compared to other economic areas.

#### *3.1 – The importance of land as a production factor*

For the manufacturing industry, the land factor of production is almost exclusively a place for construction, where the buildings are placed on.

For agriculture, it is the environment where a biological growth process occurs. Therefore, it is embedded in the quality attributes of the land associated with this process. Better soils enable higher-performing biological production processes.

Soil improvements done with capital investments may improve soil characteristics to turn it into a better environment for the biological growth processes of agriculture. In some cases, capital-intensive ways of production like hydroponic cultivation allow overcoming this limitation.

#### *3.2 – The role of climate and seasons*

It does not play a vital role in the manufacturing industry, but it conditions all agricultural activities:

- Along with the soil (land) and the location of markets, the climate determines the farms from which farmers and ranchers must choose their type of farm.
- The succession of the year's seasons marks precise times when the producer must carry out almost all the work.
- This fact must be kept in mind when planning the use of labor and machinery and is of great importance in financing agricultural production.

Climate change may interfere with the natural environmental conditions, changing rainfall and temperature behavior in agricultural production environments.

Investments in protected environments such as greenhouses and growth chambers target harmonizing the climatic conditions to overcome this issue and thus allow continuous production over the year regardless of natural climatic conditions.

#### *3.3 - The associated production*

In agriculture, there is practically no product that can be produced alone. Even in the most specialized enterprises, co-products cannot be avoided, that is, goods from the same biological individual, plant, or animal: there is no production of milk or eggs without the simultaneous production of meat and manure.

The main implications are:

- One cannot think of isolated products to limit the offer of a single product; and
- One cannot calculate unit costs without making arbitrary assumptions.

#### *3.4 - A large number of farms*

Agricultural production is generated on many farms, which creates some difficulties:

- Makes it challenging to benefit from advantages like economies of scale;
- It creates enormous challenges for information and knowledge to reach all the producers;
- Makes marketing difficult;

- It complicates the organization of the producing class at the national level;
- Among others.

### *3.5 - Land tenure*

Agricultural activities require permanent or long-term investments, which a temporary land user, who has no guarantee of land use in the coming years, is unwilling to make.

It is important to remember that maintaining land fertility typically implies sacrificing part of current profits in favor of future earnings from the same land parcel.

### *3.6 - Production and supply seasonality*

The production and supply of agricultural products are seasonal, depending on the climate and seasons of the year. However, the demand for farm products from urban consumers is constant.

In addition to influencing prices, this phenomenon leads to intermediaries (middlemen) willing to keep the products to deliver them to the consumer according to their needs.

Investments in infrastructure and technology as protected cultivation in greenhouses and irrigation may reduce the seasonality. When the market prices are high enough to compensate for investment, farmers may produce under more intensive and controlled conditions to reduce the seasonality of production (supply).

### *3.7 - Product perishability*

Many agricultural products are challenging to preserve and require rapid movement between harvesting or slaughtering and consumption.

However, the food industry is focused on reducing perishability and thus ensuring a continuous supply to the consumers, regardless of natural seasonality in production.

### *3.8 - Risks*

Agriculture is exposed to significant, unpredictable losses because of meteorological calamities (droughts, floods, hail, etc.) and biological ones (pests and diseases).

The repercussions of these phenomena on agricultural activities, especially for small and medium-sized producers, make it possible to consider that agricultural insurance can become as important as agricultural credit.

### *3.9 - Non-uniform production*

Due to biotic factors (genetic variability, pests, diseases, and parasites) and abiotic factors (light, temperature, humidity), not controllable by the producer, in addition to differences in farmer's managerial capacity, the product tends to show variability, that is, it is uneven if compared to any industrial process. And there is no assembly line (according to Taylor, the greater the control of the production process, the greater the efficiency (productivity) of a company).

### *3.10 - Production cycle irreversibility*

Once produced, the agricultural or livestock origin product cannot be undone; it needs to be marketed or consumed. This limits the flexibility of farming companies, as production represents "a one-way street."

### 3.11 - High cost of entry/exit of the agricultural business

Compared to other economic segments, the entry and exit of the agricultural business are associated with high costs, given the considerable amount of assets (land, improvements, machinery) for specific use. In this case, when these assets represent high investments, planning must always be long-term due to the low flexibility in changing the production process in the short term.

### 3.12 – Additional aspects

- Spatial dispersion: Almost all activities are carried out in the open, under the influence of sunlight and rain.
- Production time is longer than working time. This may generate idle capital, e.g., agricultural machinery.
- Purchase inputs from oligopolistic sectors and sale of production in sectors of perfect competition.
- Inability to predict the exact quantity to be produced.
- Dependence on climate and biological activity.
- Labor with little or no qualifications.
- Long time to recover invested capital (payback).

## IV. CONCLUDING REMARKS

The several aspects that differentiate agricultural production from other economic activities create specificities for farming around the globe. However, in some cases, a more capital-intensive production, together with an agribusiness approach (value-chain approach), where production and processing technologies may transform agriculture into a less-natural-conditions-dependent activity.

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