

SUSTAINABLE AGRICULTURAL SYSTEMS IN ARGENTINA

LORENZATTI S

Grupo Romagnoli / Aapresid

E-mail: s_lorenzatti@gruporomagnoli.com.ar

Humankind is facing a difficult situation –the urgent need to increase food production both in quantity and quality, and to do it without destroying the environment. Consequently, it is essential to design and develop agricultural models aiming to solve both issues simultaneously. In this regard, in Argentina (South America) there are some true experiences, such as Grupo Romagnoli, that are permanently trying to achieve this goal of economic, ecological and social sustainability.

Grupo Romagnoli directly manages about 15,000 hectares (mixed production system) under 40 years of No Till system –absence of tillage and the presence of a permanent soil cover. The holistic conception of a production system under No Till implies the adoption of a set of Good Agricultural Practices (GAP) for the system to be sustainable.

Among the GAPs implemented together with NT by Grupo Romagnoli we can mention crop rotation (adjusted to crop diversity and intensity based on the environment), crop nutrition and fertilization; cover crops, integrated pest management, and efficient and responsible use of pesticides.

Moreover, choosing the right genetics turns to be a key factor to achieve the maximum sustainable productivity. Within this context, biotechnology is a vital tool –and the most promising one- to boost productivity in every environment.

Finally, both the production system as a whole and the agronomic management at Grupo Romagnoli are set within a framework of environmental quality management called Certified Agriculture (AC, as per the Spanish acronym). Certified Agriculture system, created and promoted by Aapresid (Argentine No Till Farmers Association) consists in implementing a GAP protocol as well as **using, measuring, and registering environmental management indicators**. AC implementation allows to gain access to better tools for a **professional agronomic management**, increasing productive systems efficiency, enabling continuous improvement processes while reducing costs and increasing profits. Also, by having a described, monitored and certified process farmers can show the rest of the society how food production processes work and their impact on the environment which allows to capture the value of the positive externality Agriculture Certification exerts on environment.

Sustainable agriculture in Argentina with no-till systems and Certified Agriculture

Santiago Lorenzatti

General Manager of Romagnoli Group

Former-Adjunct Director of Certified Agriculture, Aapresid.

Director of OKANDU

Global Context: The role of agriculture

- **Increasing demand** in quantity and quality for **food and energy**.
- **4E Paradigm**: Economy, Ecology, Ethics, Energy
 - Environmental sustainability of agricultural sector.
- Strategy: **Higher productivity, sustainable**
- Tools:
 - **Intensification** on land used under production with GAPs.
 - **New areas under production** (Land Use Planning).

TRADITIONAL AGRICULTURE

Modification of the environment

(soil)



Plant

Yield potential



SUSTAINABLE AGRICULTURE

Adaptation of the plant and the technology



Environment

Sustainable production potential

Source: Gil (2005)

NO - TILLAGE

Productive system based on the absence of tillage, and the presence of permanent soil cover with crops and residues.



No-Tillage

Crop Rotation: Diversity and Intensity

Balanced crop nutrition

Integrated Pest Management

Responsible and efficient management of agro-chemicals

Cattle information management



Agriculture in Romagnoli Group

- The same practices used to maximize agricultural production are those that protect the environment.
- Food should not be produced at expense of the environment, nor the conservation of the environment at expense of food production.
- In Romagnoli Group, we implement Good Agricultural Practices, monitor its impact on the environment, and finally we audit and certify the production process. This is the Certified Agriculture system.

What is it?

AC is the 21st Century agriculture

Certified Agriculture is a quality management system for the productive processes under No Tillage. It has been designed to improve the business management and to optimize the resources-use efficiency. As a result, we obtain greater productivity within an environmentally friendly and energetically sustainable context.

It constitutes a key step for the institutional life of Agropar. It is supported by a 20-year experience in No Till practice—a productive system based on the absence of soil tillage, on crop rotation and the coverage of the soil surface with crop residues. This procedure allows to achieve a rational, sustainable and even reparative use of the agro-ecosystem basic resources like soil, water, air and biodiversity.

The implementation of AC requires the fulfillment of a set of Good Agricultural Practices (GAP's). It also needs the registry of the agronomic management and the measurement of soil chemical and physical indicators for subsequent audits and the productive process certification.

GAP's Good Agricultural Practices

1 No Soil Disturbance / Presence of Soil Residue Cover

A practice that consists in the absence of continuous soil tillage, and the presence of a permanent soil cover (crop or residues). It contributes to:

- Minimize soil erosion.
- Reduce the use of fuel.
- Lower carbon emissions.
- Improve water quality.
- Increase soil biological activity.
- Increase soil fertility.
- Improve productivity and yield stability; and
- Lower production costs.

2 Crop Rotation

It means the alternation of different crops in time and space. This practice has advantages from the agronomic standpoint:

- It has an inhibitory effect on pathogens.
- It uses nutrients in a balanced way; and
- It improves the soil physical, chemical and biological conditions.

It favors the business management, because it allows the diversification of productive risks.

3 Integrated Pest Management (IPM)

It aims to optimize the control of weeds, insects and other pests, reducing the sanitary problems through different methods, considering economic, social and environmental factors. It requires a deep knowledge of the pest biology as well as of the environment.

The concept of "eliminating" a pest has been changed for that of "managing it below the economic damage threshold".

The IPM requires a lower environmental impact and a more efficient business management.

4 Efficient and Responsible Agrochemical Management

It is necessary to achieve a highly efficient application of phyto-sanitary products in all the treatments applied according to responsible agronomic decisions. This means:

- To choose the product with less toxicity and/or higher selectivity, which only controls the "target pest" without affecting the others.
- To consider the minimum time needed between the product application and harvest.
- To dose and transport the products in a safe way.
- To care for workers' health; and
- To manage sewage waters satisfactorily in the right way.

5 Strategic Crop Nutrition

Adopting a rational fertilization strategy in every production unit, which not only considers the amount of nutrients to apply, but also their efficiency and by crops, constitutes a challenge that will have to be fulfilled to achieve an environmentally sustainable production.

The soil chemical health should be maintained or improved. The soil nutrient balance is a good method to evaluate it, considering production strategy in a comprehensive way, as a consequence, it is key essential to conduct soil testing.

6 Stockbreeding Information Management

All stockbreeding activities developed in the farm will have to fulfill some minimum sustainability requirements according to the National Service of Animal Sanitary (Servicio Nacional de Sanidad Animal, SENASA).

The products and crops produced in the farm will have to comply with all the GAP's, regulations and indicators defined under the AC Protocol. (a to f).

What is the scope?

I Better Business Management

The systematic application of the set of GAP's, together with the measurement of soil chemical and physical indicators and the ordered registry of all the information, constitute a true "control panel" of the agronomic and business management.

- It writes and facilitates the decision-making process related to the agronomic management.
- It allows to evaluate the system evolution, and ensures a continuous improvement of production, and
- It promotes the investments in adequate technologies and infrastructure as well as the demand of qualified services, which contribute to the dynamics and development of networks.

After obtaining the certification, what are its potential uses?



B+O Benefits and Opportunities

II Higher Agronomic Efficiency

AC seeks a sustainable and a more efficient use of natural resources.

- Higher water use efficiency.
- Higher nutrient use efficiency.
- Energy efficiency in the productive system.



A Documenting

The farmer analyzes and describes the processes compared to his productive activity.

B Measuring and Registering

The farmer should establish, implement and keep systematic records that allow tracking the management plans of AC.

C Auditing and Certifying

The certifying entity must obtain evidences and evaluate the accomplishment of the management plans and requirements of the AC Protocol in order to issue the Certificate.

III A World of Opportunities

AC fulfills within an increasing global demand for food, which also requires guarantees of environmental and social sustainability. Because of that, new opportunities for agribusiness arise:

- Differential contracts and agreements with companies whose products get to the consumer (certified production).
- Development of a "Country Brand" related to a Differential production.
- Added Value products.
- Preferential access to specific markets; and
- New markets.

AMI Agronomic Management Indicators

They allow to evaluate the productive management with scientific support and to observe the recent changes in the management and their impact on the system. They constitute a tool to integrate soil properties and to interpret complex processes.

Some scientific evidences correlate the soil health indicators with the GAP's.

F Soil Physical Indicators

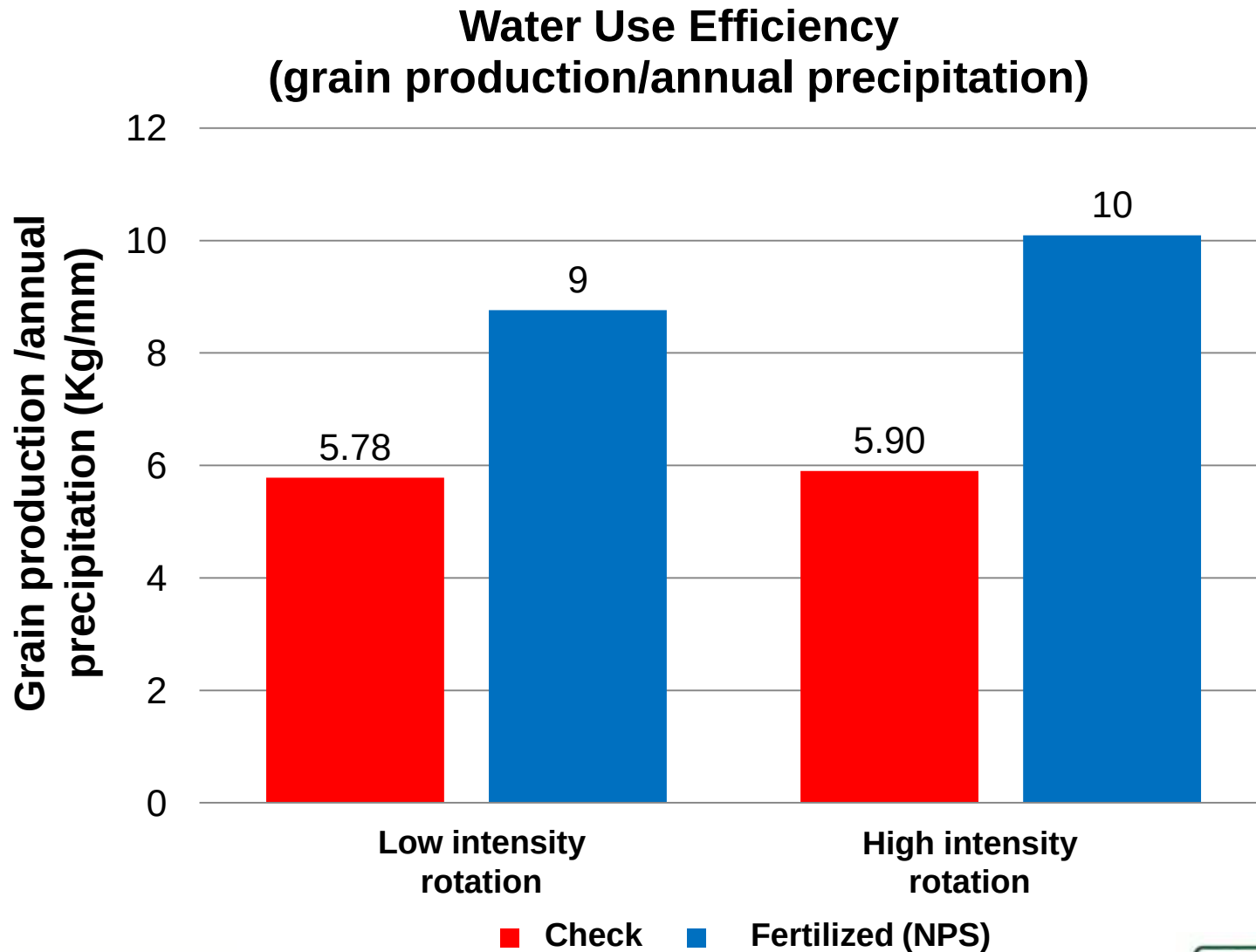
The soil should have optimum physical conditions for the development of the crops, which means:

- Stable structure;
- Good water storage capacity and distribution, apart from soil erosion; and
- Absence of limiting factors for the development of roots.

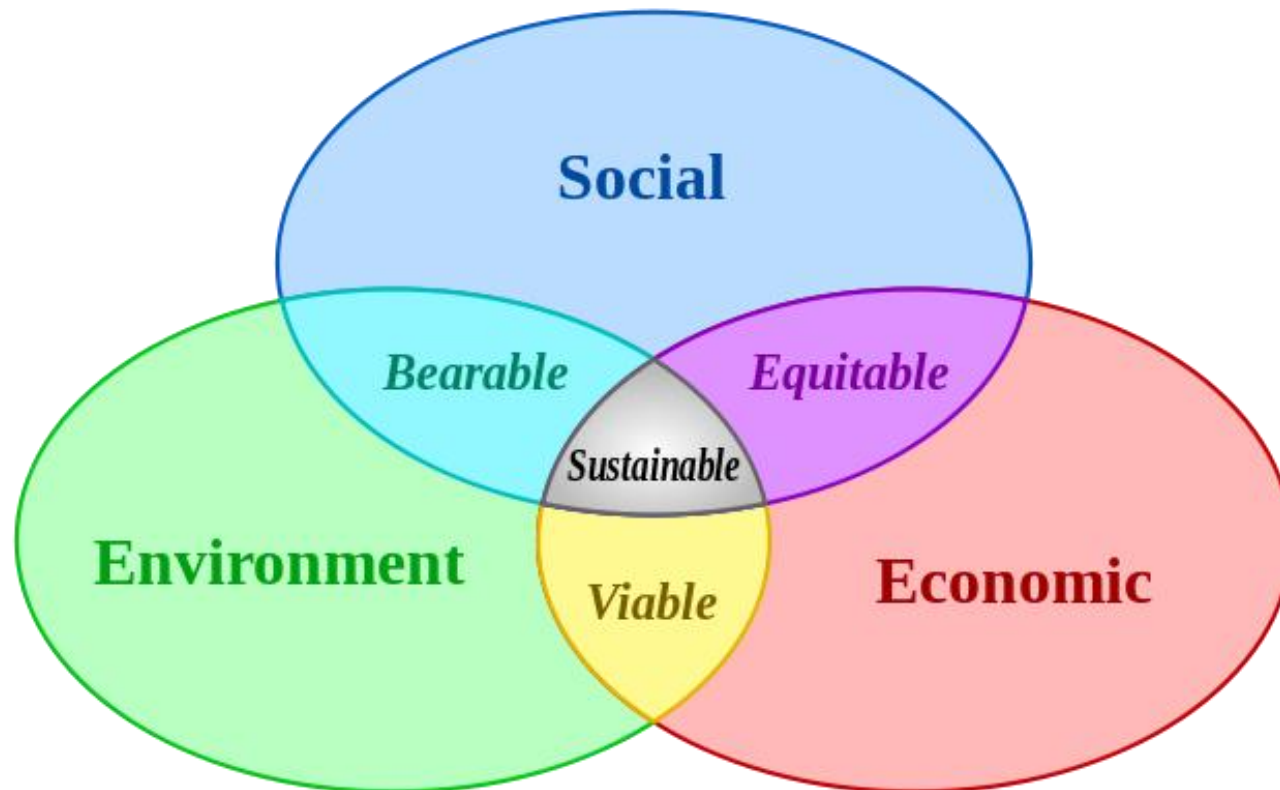
C Soil Chemical Indicators

They allow knowing the supply of nutrients and other soil chemical characteristics that facilitate the normal growth and development for plants.

Good Agricultural Practices in action



Final comments ...



Adams, W.M. (2006)

Thank you !

www.gruporomagnoli.com.ar

www.ac.org.ar/english

www.okandu.com.ar