Agronomists Job Don't Reduce Natural Resources to Meet Today's Needs Without Compromising the Needs of Future Generation

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Abstract: Agronomist, term covers professional profiles such as agricultural scientist, agricultural engineer, agricultural economist, food scientist, food engineer and others based on academic education with university degrees relating to the European Qualifications Framework (EQF) in the above fields. As a food designer, optimizes the production process within the agri-food chain, inspired by principles of providing a healthy and nourishing food, meeting the needs at a global scale, reducing food waste, ensuring safety of production, health and wellbeing of final consumers. The Agronomists’ job is to get a qualitatively high content of food it is necessary that quality measurements characterize the whole production steps along the food chain, starting from the phase of first production, to the processing one, to the following phase of distribution. The Agronomists’ job has to tend toward actions which do not reduce natural resources, in order to meet today's needs without compromising the needs of future generations. In a world increasingly crowded, where resources should be managed with social conscience and fairness, the safeguarding of sustainability is an ethical and environmental duty of the professionals as best qualified agronomists. At a time when millions of people still suffer from hunger, misuse of resources is intolerable, not only in an ethical point of view, but also on an environmental basis, as it represents a useless waste of natural resources. Universal chart of the agronomist was created at the VI WORLD CONGRESS set in Milan, in EXPO 2015 at the pavilion Global Farm of the future “Farm LAB”, to enhance society's social status as an agronomist and to offer him recognition and acknowledgement. This document defining the ethical principles pointing to a professional development respecting people from any country and continent.

Keywords: Agronomist, Universal Chart, Agri-food Chain, Agronomist, Sustainability, Natural Resources

1. Introduction

“Food is the moral right of all who born into the world”  
Norman Borlaug

In a world increasingly crowded, where resources should be managed with social conscience and fairness, the safeguarding of sustainability is an ethical and environmental duty of the professionals as best qualified agronomists. To question of usefulness of concept agricultural sustainability the study [8] cited that: Sustainability interpreted as an approach to agriculture developed in response to concerns about impacts of agriculture, with motivating adherence to sustainable ideologies and practices as its goal; and sustainability interpreted as a property of agriculture developed in response to concerns about threats to agriculture, with the goal of using it as a criterion for guiding agriculture as it responds to change. Interpreting sustainability as an approach has been useful for motivating change. However, usefulness of this interpretation as a criterion for guiding change is hindered by a lack of generality of prescribed approaches, a distorted view of conventional agriculture and circular logic. Although interpreting sustainability as a system property is logically more consistent, conceptual and practical problems with its characterization have limited its usefulness as a criterion for guiding change. In order for sustainability to be a useful criterion for guiding change in agriculture, its
characteristic should be literal, system-oriented, quantitative, predictive, stochastic and diagnostic. [8]

Many authors focus on one main factor of sustainability, for instance flexibility, which is the adaptive capacity of agriculture to adapt to future changes. [6, 7]

Sustainable agriculture is an alternative for solving fundamental and applied issues related to food production in an ecological way [11]. While conventional agriculture is driven almost solely by productivity and profit, sustainable agriculture integrates biological, chemical, physical, ecologial, economic and social sciences in a comprehensive way to develop new farming practices that are safe and do not degrade our environment.

Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Starving people in poor nations, obesity in rich nations, increasing food prices, on-going climate changes, increasing fuel and transportation costs, flaws of the global market, worldwide pesticide pollution, pest adaptation and resistance, loss of soil fertility and organic carbon, soil erosion, decreasing biodiversity, desertification, and so on. [14, 15]

Overall, all authors agree on the occurrence of three approaches of the concept of sustainable agriculture: environmental, economical and social approaches. In other words, agricultural systems are considered to be sustainable if they sustain themselves over a long period of time, that is if they are economically viable, environmentally safe and socially fair. Beyond this ideological definition, the practical issue is to build operational solutions to reach global goals. This is a challenging task because the stakeholders do not agree on the criteria to measure the sustainability of a farming system, and on how to balance those criteria. Many indicators have indeed already been produced to evaluate sustainability. [14, 17]

To study crop production, agronomists have to integrate highly complex sciences that rule farming systems at very different spatial and temporal scales. Agronomists have also to cope with a high environmental variability. As a consequence, results obtained in an experimental field may not be reproducible in another field due to slight - possibly unknown - variations of soil and climate factors. Therefore a key point of agronomical investigations is to define the validity domain of each finding. Concerning the integration of agricultural practices, a key point is to enlarge the classical scales of crop production studies, "plant and plot", to scales that are meaningful for the farmers, such as combination of plots and farm territory, and even larger scales. In a way, agronomy is a science of complexity aimed at integrating knowledge at various spatial levels from the molecule to the living organism, the farming system and the global scale. [3, 11] Thus agronomy appears more and more as the science relevant for global issues because it integrates knowledge from various sciences at various spatial scales. Considered for a long time as a soft, side science, Agronomy is rising fast as a central science because actual issues are about food, and humans eat food [1, 10, 12]

The systemic dimension is essential because in the next decades most improvements of farming systems will rely on enhancing positive interactions among various parts of farming systems. To build sustainable farming systems, agronomists will not only have to assess the direct effects of techniques on a crop, but also the indirect effects on the whole ecosystem such as biodiversity changes, water pollution, and soil erosion. The economical and social consequences of the new farming systems should also be evaluated with a pluridisciplinary approach with economists or social scientists. Therefore sustainable agriculture fosters the development of multidisciplinary studies that associate agronomy with ecology, economics, sociology and geography [13, 5]. In Italy, during the last two decades, applied research in agriculture has started broadening its interests, e.g. taking into account: (i) the socio-economic impact of farm activities, especially in marginal and rural areas. [2] Four different ways identified to design of innovative agricultural systems for sustainable development: - inventing new farming systems, breaking off with the actual ones; - identifying and improving farming systems built by the local stakeholders; - giving tools and methods to stakeholders to improve their own systems or evaluate those proposed by scientists; - identifying the economical, social, organisations conditions that may help the actors to adopt alternative farming systems. [18]

Sustainable development in education of agriculture imposes involvement of new system in education of agronomists, such as ethical view off point to the reality of agricultural production, synthesis of traditional practices (crop rotation and mixed crops, etc.), the love to the land inherited from ancestors and modern scientific achievements from this perspective which will have a positive environmental effect over the agrarian ecosystems and the environment in general. From this perspective, lectures and practices should be based on the principles of integration of different systems and methods of production, which will include sustainable management of fertilizing and irrigation, energy use associated with production and integrated control of pests with sustainable application in the farms. These principles should be presented in a special section entitled “Sustainable agricultural knowledge” which will form the basics related to the topic. They should be included in an appropriate place in the relevant sections for each crop, with the active participation of trained people. In order to overcome the specified problems and ensure sustainable development of the sector, it is necessary to provide well-trained people who know not only the traditional technologies used at present, but also the principles of sustainable agriculture as well, especially related with keeping natural resources to next generations. [19]

2. State of Art

To unified efforts between the Food and Agriculture Organization of the United Nations with its headquarters in Rome, Italy from one side and the World Association of Agronomists, with its headquarters in Rome, Italy, decided to sign Memorandum of Understanding (MoU) between them. In which recognizing that the Food and Agriculture Organization, (hereinafter referred to as the “FAO”) is a specialized agency of the United Nations system, with a vision for a world free from hunger and malnutrition, where
food and agriculture contribute to improve the living standards of all, especially the poorest in an economically, socially and environmentally sustainable manner. It is a knowledge organization with three global goals: eradication of hunger, food insecurity and malnutrition, elimination of poverty through increased food production and rural development and sustainable management and utilization of natural resources for the benefit of all. Within the framework of five Strategic Objectives, FAO works closely with Member Nations and a range of partners at national, regional and global levels to achieve these goals. Acknowledging that the World Association Of Agronomists, (“WAA”), represented for the purpose of the present agreement by Andrea Sisti, in his quality as President of WAA, with registered office at Matr./ Reg. AACR/011./. Florianopolis, January 18, 2008., is an international professional organization which gathers more than 44 organizations that represents more than 380.000 professionals around the world, and its purposes are to unify, coordinate, and represent associations of agronomists throughout the world, promote the practice of such profession, its academic excellence and professional ethics, promote the social and economic development of the rural sector and represent agrarian rights in international forums and before governments.

Conscious- WAA was founded by representatives from thirty countries on September 8, 1994 in Santiago, Chile, as a result of the First World Congress of Professionals in Agronomy. The WAA is a non-governmental, non-political, non-religious, non-racial, and non-profit international organization, with perpetual existence and managed only by agronomists; Theme of the UN Participation in Expo Milano 2015 was: “The Zero Hunger Challenge. United for a Sustainable World”; Theme of the WAA Participation in Expo Milano 2015 was: “THE GLOBAL FARM OF THE FUTURE - Projects for identity-creating, sustainable and long-lasting models of food production. The role of the agronomist profession in social responsibility for sustainable development and respect for the territorial diversity of local communities”. [19]

Practicing the profession in the agricultural, food supply, rural, landscape and natural resources fields embraces a biocological dimension at a planetary level, with no borders of thought, professionalism and technology. The professionalism, while offering advanced technical solutions, raises our ethical responsibility and obliges agronomists to always address their work toward a social progress. Within the global challenges of XXI century the role of the agronomist has wide potentials, that is why very important to cooperate in the definition of a common strategy over food production and environmental sustainability.

This concept is summed up in the Zero Hunger Challenge launched by UN Secretary-General Ban Ki-moon in 2012. The UN System brings this vision to Expo Milano 2015, demonstrating to visitors how it is possible to end hunger in our lifetime, how this can only be achieved if we work together and how we can and need to be part of the solution; The Zero Hunger Challenge consists of five pillars:
1. Zero stunted children less than 2 years;
2. 100% access to adequate food all year round;
3. All food systems are sustainable;
4. 100% increase in smallholder productivity and income;
5. Zero loss or waste of food; UN and WAA have developed a collaboration during the Expo2015 period for the dissemination and knowledge of the Millennium Development Goals and themes of the Zero Hunger Challenge project; During Expo2015 it has been held the Sixth World Congress of Agronomists with the election of the new President of the WAA and the approval of the Universal Chart of the Agronomist and the new program that provides a strong synergy with the United Nations and in particular with FAO; The Universal Chart of the Agronomist has been inserted in the Milan Expo 2015 Chart; Noting that FAO and WAA have a history of close collaboration, particularly in the areas the dissemination of good practices of sustainable agriculture, vocational training, planning and design of resilient systems, innovation in agricultural, forestry and animal husbandry as well as the conversion of urban systems; Recognizing that FAO and WAA have a common global interest in promoting improved coherent action for achieving integrated approaches to sustainability, improvement of diet quality, and agricultural innovation in developing countries; Considering that cooperation between FAO and WAA would mean better access and exchange of information, knowledge and expertise in the field of food and agriculture sustainability that can benefit the services that FAO provides to its Members within the framework of the Strategic Objectives of the Organization.

The broad thematic areas where synergies will be established upon mutual agreement between the Parties are, among others:

- dissemination of good design practices;
- qualification of professionalism;
- improvement in the perception of FAO objectives;
- dissemination of culture and knowledge on sustainability and food biodiversity;
- integrated approaches to sustainability;
- agricultural innovation;
- food and nutrition;
- processing and value addition of agri-food products.

Regarding these matters, a collaboration between WAA and FAO would be desirable, in order to create a profitable synergy among Authorities with the common goal of creating a shared project on the Farms of the Future. The innovative concept that two parties want to develop together with your experts is the transition from the traditional farm - organized according to the principle of adding volumes spread throughout the territory, which often oversized compared to their production volume - to the Global Farm organized according to shared methodological principles, always connected to other Farms. The keystone to this vision is the importance of the Network, which aims to be the resource of a truly sustainable development. Each Farm is a tile that, together with others, can compose a global model, for a complete and waste-free system.

3. Principels of Sustainable Education System of Agronomists

The context where must to respect the following principles:
3.1. For Food and Health

The agronomist, as a food designer, optimizes the production process within the agri-food chain, inspired by principles of providing a healthy and nourishing food, meeting the needs at a global scale, reducing food waste, ensuring safety of production, health and wellbeing of final consumers.

The defence of nutrition involves a professional activity based on consciousness and rationality on several fronts. The skills of the agronomist involve the design of food, the active management and waste reduction, as well as training and information for consumers in order to make them more and more aware of the nutritional value of products.

To get a qualitatively high content of food it is necessary that quality measurements characterize the whole production steps along the food chain, starting from the phase of first production, to the processing one, to the following phase of distribution.

The role of the agronomist in the food chain processes is to ensure and certify that each actor applies all necessary measures in order to ensure the final consumer high levels of food quality and safety, considered sufficient for all inhabitants of the planet.

3.2. For Sustainability

The Agronomists’ job has to tend toward actions which do not reduce natural resources, in order to meet todays needs without compromising the needs of future generations.

In a world increasingly crowded, where resources should be managed with social conscience and fairness, the safeguarding of sustainability is an ethical and environmental duty of the professionist. At a time when millions of people still suffer from hunger, misuse of resources is intolerable, not only in an ethical point of view, but also on an environmental basis, as it represents a useless waste of natural resources.

3.3. For Biodiversity

The agronomist ensures the custody of biodiversity, commits himself for development and transmission of genetic diversity for food and agriculture and provides “diversity within all life beings, included those living underground, in the air, in water ecosystems and the ecosystems they are part of”.

Protection of biodiversity implies the professional moral obligation towards future generations to guarantee the balance between biodiversity and genetic improvement in planning and designing. This is to be obtained by encouraging farm agricultural practices that contribute to forming balanced agricultural ecosystems, by safeguarding existing interactions between agriculture and biodiversity, and by improving the efficiency of production. The fulfillment of this principle is to be reached with the promotion of crop choices that increase the biodiversity of farms.

3.4. For Soil and Water

The Agronomist ensures soil and water protection and sustainable management, in order to preserve its functions, and economical, environmental, social and cultural services.

The protection and sustainable management of soil request to the Agronomist the adoption of professional practices that maintain unchanged the fertility of the soil and prevent degradation. Through finding water needs of a specific production environment, a rational and cautious use of water resources involves the agronomist in the adoption of professional practices that enhance the use of this resource and reduces its waste, also by developing the use of innovative production systems as well as non-conventional water resources.

Soil and water are an essential element for life; they are the fundamental component of terrestrial ecosystems and the environment that provide a range of benefits to humans through a variety of functions and ecosystem services. Avoid their losses and enhance their role are key factors for the welfare of present and future generations.

3.5. For Landscape

The Agronomist preserves the “territory and culture” value and promotes local identities promotion, trough rural land and its traditions conservation.

The professionist, having deep knowledge of the productive vocation of the territory, has the task of promoting “ad hoc” development models, able to interconnect local features and places of production. The rational and prudent management of the "territorial capital" is aimed to develop strategies and convey the value that a territory can reveal.

The Agronomist, through proper spatial planning and designing, ensures rural development, namely the maintenance and growth of socio-economic values.

3.6. Social Use of Genetics

The Agronomist uses genetic improvement techniques in order to ensure better living conditions, on an environmental, social and cultural level, avoiding economic colonialism toward weak populations.

The rational use of genetics, free from economic purposes, involves professional rectitude anywhere in the world. Genetic pool of species is the heritage of all and therefore must serve the good of all mankind, in other words biotechnology applications should safeguard this principle without becoming arbitrary domain of interests, or being used for purposes of material economic interest.

3.7. Social Use of Technology

The Agronomist guarantees that the use of technologies and innovative practices does not determine asymmetric information, prevarication of weak ones, decrease of fundamental rights. Well directed techno-science can produce valuable ways to improve the quality of human life, preserve the balance of the ecosystems and safeguard environmental sustainability.

Any professional application is expected to stay within this framework, and with no doubt constant attention is needed in order to consider any ethical issues involved.

To this end, the professional ensures a scientific and social debate that is responsible and large, able to consider all
available information and without interest, be they political, economic or ideological.

3.8. Intellectual and Professional Freedom

The Agronomist excludes any obstacle and bond to his freedom in the exercise of profession. He should always preserve his freedom in judgment, technical and intellectual role, any external influences.

In a social context dominated by the financial aspects, where money is no longer the instrument but becomes an end, intellectual autonomy is often subjected to economic constraints. The intellectual independence should always be pursued, and this implies for the professionist the continue verification of the absence of external constraints on his work. Moreover it involves moving away from influences of any kind, moral, material, political, ideological, economic and also coming from the family, so that his activity is marked only to the full protection of global interests, in line with the general ethical and social principles.

3.9. For Knowledge

The Agronomist believes in permanent training, in order to offer high quality advice in his work. This is matter of public and professional dignity matter.

Training and professional development, not only represent an opportunity for the professionist to improve the quality of performance, but also an opportunity to enhance the peculiarity of profession. The lifelong learning implemented in some areas of the planet is a crucial point of the strategy, considering that the speed of technological change and scientific progress makes it essential to gain learning opportunities throughout life. The Agronomist recognizes that changes in the rules and the unstoppable progress of science and technology require constant updating, in order to ensure the highest quality of professional services; the Agronomist considers training and lifelong learning as a means to keep up with scientific progress, a necessary extent to maintain his job safe and effective.

3.10. Membership Obligations

The Agronomist ensures solidarity and fellowship among colleagues all over the world, promoting cooperation and mutual aid, at a professional, social and familiar level.


The spirit of fellowship is born from belonging to the same community, sharing the feeling of mutual consideration and common sense. The spirit of fellowship has undoubtedly positive values as it leads to the collaboration between colleagues and to a mutual aid, provided that it does not end with becoming a more important value than the needs of the majority of citizens. An important aspect is the respect of others’ professional opinions. The differences should never become occasions of friction on personal terms, but they provide opportunities for civil confrontation of opinions and to mutual enrichment.

4. Conclusion

Sustainability rests on the principle that must meet the needs of the present without compromising the ability of future generations to meet their own needs. Starving people in poor nations, obesity in rich nations, increasing food prices, on-going climate changes, increasing fuel and transportation costs, flaws of the global market, worldwide pesticide pollution, pest adaptation and resistance, loss of soil fertility and organic carbon, soil erosion, decreasing biodiversity, desertification, and so on.

Sustainable agriculture is an alternative for solving fundamental and applied issues related to food production in an ecological way. While conventional agriculture is driven almost solely by productivity and profit, sustainable agriculture integrates biological, chemical, physical, ecological, economic and social sciences in a comprehensive way to develop new farming practices that are safe and do not degrade our environment. Considered for a long time as a soft, side science, agronomy is rising fast as a central science because current issues are about food, and humans eat food.

The agronomist, while offering advanced technical solutions, raises our ethical responsibility and obliges agronomists to always address their work toward a social progress. To optimize the production process within the agri-food chain, inspired by principles of providing a healthy and nourishing food, meeting the needs at a global scale, reducing food waste, ensuring safety of production, health and wellbeing of final consumers.

The agronomist must believe in permanent training, long life education system to provide update information and advices. To preserves the “territory and culture” value and promotes local identities promotion, trough rural land and its traditions conservation.

References


[20] The Universal Chart of the Agronomist has been inserted in the Milan Expo 2015 Chart.


