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ON THE NECESSITY OF BUILDING A SUSTAINABLE ECOLOGICAL AGRICULTURE

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Abstract

Despite many genetic interventions performed throughout the world to eliminate hunger, the devaluation of land and the crises in the supply of foodstuffs required by all humans for living, can be regarded as a product of the agricultural model currently being implemented. This is because in this model all natural farms are regarded as a 'manufacturing shop'. Problems caused by these 'manufacturing shops' cause foodstuffs to become more processed and increasingly more synthetic. This results in encountering 'manufactured risks' in environments where feeding problems frequently arise. In other words, neither healthy feeding nor healthily getting filled is possible with the consumed foodstuffs. Diseases structure themselves even further in places where health fails to prevail. In this context, a sustainable future does not seem possible in environments where disease has been made structural for all living things. In this study, the general characteristics of the currently implemented agricultural model is primarily presented and the consequent threats are criticized, the ways in which this model could develop a resistance and balance in itself is presented and a general outline is drawn for the importance of agricultural products and building a sustainable ecological agriculture. In this general outline, attention is drawn to realizing an environmental, economic and political sustainability in a harmonic integrity.

Keywords:

Sustainableecological agriculture;
Manufactured risk;
Ecological footprint;
Integrity;
Sustainability.

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1. Introduction

Genetic interventions in agriculture to eliminate hunger, depending on the continuous devaluation of nature today, constitutes the cause of the most important crises in ecology in general and in the supply of foodstuffs required for living by all humans, in particular. The current agricultural model basically advances with extreme mechanization, uses extreme chemical inputs, encourages mono culture, causes extreme release of carbon gases and destroys diversity. Hence, although more foodstuffs are produced in agriculture today than ever before in history, billions of people are hungry, very malnourished, get poisoned and get ill from food [1]. Naturally, conversion of most agricultural lands into agricultural enterprises and management thereof in a business logic have irrefutable impact on the extreme growth of such a hazard. Natural production on agricultural land gives way to a fabrication production, however fabrication production also brings unexpected problems[2].The leading problem is that the produced fabrication products are man-made synthetic products similar to vegetables, fruits, meat or eggs, rather than a product of nature [3]. In short, we are faced with system and mechanism where manufacturing replaces natural agriculture, farming and animal husbandry. This is because, in such a system and mechanism, foodstuffs are continuously processed, spread, adulterated and second quality foodstuffs are released to the market as a result of business logic, as in high quality products [4].

As is known, processed fabrication goods cause 'manufactured risks' on food safety. In this context it can be asserted that by consuming products produced in fabrication environments fulfilling the requirements of business logic, actually all life in general and as part of nature, our lives in particular, are becoming extinct. Accordingly, attaining productivity for all life and for our lives as part of nature makes it inevitable to take certain alternative measures to eliminate problems caused by the agricultural model implemented in the agricultural sector. With this model, it is possible for both all life and our lives, as part of nature, to become productive, without becoming extinct through consumables. Otherwise, it is inevitable for all life to surrender to business logic. Hence, today fabrication production fails to prevent the ever-increasing hunger and unhealthy feeding in the world with processed products. This is because, as a result of processing, nutritional values of foods we have to consume are far from what is required.

In this context, it can be asserted that the basic functions of a sustainable ecological agriculture are to 'not only produce foodstuffs enabling continuation of human life and generation, but also to produce raw materials for non-agricultural sectors, provide healthy labor force, constitute an element of psychological balance and finally, to finance development'[5]. Accordingly, it is possible to assert that agricultural products obtained from a sustainable ecological agriculture 'are products with highest added value that can create very significant mobility in both the economy and non-economic fields' [6]. Applications in the agricultural sector in Brazil provide us with very important ideas in this regard. For example, in Brazil the agricultural sector was primarily regarded as a strategic sector to mobilize the agricultural potential of the country. For this purpose, steps were taken with vision by implementing a successful land reform in Brazil; the future was considered and the agricultural needs of the world were determined and conscious production was performed[7]. In short, all developments and advances in agriculture achieved in Brazil were realized by taking into consideration components of sustainability. Accordingly, sustainability is not possible in an ecological agriculture performed without considering the basic components of sustainability. Therefore, components of sustainability must primarily be presented in order to realize a sustainable ecological agriculture.

The concept of sustainability basically has four important components. Futurity, the first of these components, addresses a major concern today about welfare between generations and the welfare of future generations. The second one, equity, refers to fair distribution of economic benefits and burdens among generations. The third component, global environmentalism, defines the global aspects of ecological problems related to depletion or use of natural capital. The fourth and final component biodiversity considers protection of the biodiversity in the ecological system and the protection methods[8]. In this context, continuity of sustainability depends on passing its components to the future, in balanced stability. Otherwise, if balanced stability among components recedes, two types of costs, in the form of 'depletion of resources' and 'pollution' inevitably arise, depending on the growth of the scale of the economy that fails to grow and which has boundaries within a certain ecosystem. And this is evidence that a non-economic growth actually impoverishes rather than enriches, by destroying ecological capital that is more valuable than mad-made capital [9].Therefore, it can be asserted that ecological agricultural

practices that can transfer the basic components of sustainability to the future in a balanced manner have vital impact. In sustainable ecological agriculture, the classification of Gliessman is usually taken as reference to set its framework and reach a definition. According to Gliessman, the following criteria have to be considered for a sustainable ecological agriculture:

- Use of inputs should be reduced to increase system efficiency,
- More sustainable inputs and applications should replace existing ones in agricultural system,
- Systems based on ecological principles should be redesigned,
- Ties between producers and consumers should be re-established, in order to support the socio-ecological transformation of agricultural ecology and the food system,
- Social aspects of agricultural ecology should be set forth [10].

In this context, sustainable ecological agriculture is an alternative agricultural practice using renewable energy resources together with waste management, in order to reduce pressure from climate change, global population growth and carbon emissions, and to ensure the health and rule of food safety [11].

From this aspect, ecological agricultural practices can be regarded as an approach that integrates the sustainable agricultural production system by keeping in mind the balance between humans, environment and economy [12]. In this approach, ecological agriculture is also usually referred to as 'revitalizing agriculture'. This is because ecological agriculture is based on the knowledge for managing the complex dynamics between plants, animals, water, land, insects and other micro fauna in order to sustainably produce crops and farm animals. This way, an economic return is achieved not only in land, labor force and capital, but also in other production factors such as water and energy. Cooperation between farming organizations, agricultural communities and other communities in charge of forest management, wetlands, natural life and infrastructure should not be underestimated in spreading the positive impacts of environmentally friendly agricultural practices on a regional scale and obtaining the achievements healthily [13].

In short, sustainability of ecological agriculture must be taken into consideration together with its 'environmental', 'social', 'economic', 'political', and ‘ethical’ aspects [14]. Otherwise, it does not seem possible for agricultural activity units that ignore its employees and is not open to local economic development and cooperation, to correctly grasp biodiversity in the context of

environmental sustainability [15]. Thus, sustainable ecological agriculture achieving its true identity depends on overcoming these obstacles. Otherwise it is not possible to achieve the gains expected from sustainable ecological agriculture.

2. Sustainable Ecological Agriculture Applications And Possible Gains

Protecting soil health is the primary gain that can be achieved in places where sustainable ecological agriculture is successfully implemented and high efficiency is obtained. Protecting soil health requires ecological use of lands in accordance with ecological principles, and especially 'organic agriculture'. In this context, it may be asserted that for protecting soil health, organic agriculture applications have the potential to make significant contribution by serving the ecosystem in a number of ways.However, protecting soil health is dependent on complex processes based on temporal and spatial bio-physical and bio-chemical interaction. If this process can be managed effectively, then all food resources can be used efficiently for agricultural production. This shall minimize food loss [16].

Therefore, organic agriculture has to be carried out based on a certain principle to minimize loss, while on the other hand achieving maximum gains for all living organisms. This principle states that organic agriculture must be carried out in a manner dependent on ecological processes, cycles and systems. Therefore, “agro-ecological methods” are primarily used in organic agriculture, to ensure eco-functional concentration. Contribution is thus made to the efficiency and nutritional value of the products to be obtained [17]. It is necessary to mention two important studies in this regard. The first has utopic and the other has concrete features. Although the 'Ecotopia' by Callenbach is a utopia, it is actually a criticism of current applications. Another study by Kellog and Pettigrew, indicate example applications that may be taken as model on a more concrete level.

In Callenbach's 'Ecotopia', plastic materials are fully obtained from biological resources. One of the purposes here is to produce plastic with a technology that is low cost and does not generate various kinds of pollution. The other is making all these biologically soluble, in other words decomposable. This means that they can return to fields as fertilizers that shall feed new products and if necessary, turn once again into plastic. In the study, it is expressed that Ecotopians named

this system as 'permanent' system [18]. However, it is also possible to find concrete counterparts of the situation that can be described as abstract and utopic in 'Ecotopia'. For example, in Germany plastic materials are produced from compressed starch. In other words, these plastic materials are buried to the ground for decomposing, after the products contained are consumed. Within approximately 90-120 days, the plastic materials buried to the ground turn into an active substance with features that improve the soil.

Another concrete example can be given from 'vermicompost' applications. It can be asserted that vermicompost is a method for decaying food residues and converting them into rich nutrients with the help of worms. Worm manure is obtained with this method. This worm manure is very rich in terms of nutrients and microbiological life. Especially brandling worms (EiseniaFetida) are one of the worm types most widely used in 'vermicompost'. The most important feature of this type of worm is that in contrast with normal worms that prefer mineral based materials, such as soil, they only live in environments rich in terms of nutrients, such as compost [19]. Fertilizers thus obtained are used both to improve soil and as reinforcing materials serving to increase the quality of the efficiency [20].

Ecological agricultural practices also play an important role in terms of *constructing the ecological integrity of lands*. This is a political issue. Therefore, in recent years, in regions where imbalances caused by global climate changes were eliminated and agricultural adaptation was achieved against climate change, attention was drawn to ensure that ecological integrity of agricultural lands were made sustainable, in order to sustain ecological agriculture [21]. A more sustainable future is conceived where natural resources are balanced with sustainability of agricultural systems, in particular, on lands. In such a conception, impacts of variations in land use, on the dynamics of land, are continuously taken into consideration and sensitivity is shown. It is assumed here that unless certain sensitivities are complied with and balances are not established, certain types of spatial agricultural lands shall be lost [22]. Hence there are many negative examples in this regard.

Therefore, there is need for developing strategic policies that may convert these negative examples into positive. Three policies that may achieve this in general, are proposed. These policies may be summarized under the following topic:

- Policies emphasizing the relations between the biosphere and social welfare should be carried and their importance must be underlined,
- Regulations should be created to pave the wave to flexible and innovative cooperation for sustainability,
- Policy steering should be demonstrated in practice, in order to make sustainability functional in the context of social and ecological flexibility [23].

Thus, ecological farming carried out by achieving ecological integrity of lands, not only remains a biological basis for constituting hope for managing the usable resources of the rural poor [24]. But also provides resistance to farmers against especially ecological, social, economic and dynamic conditions and events [25]. As a result, in both cases significant increase in efficiency is achieved in applications that ensure improvement and enrichment of land, on one hand, and ecological agriculture costs are reduced as a result of these applications, on the other. Thus, farmers start to regard and perceive ecological agriculture carried out by ensuring the ecological integrity of lands, as an investment [26]. Today the sustainability of this investment is supported through ecological agricultural innovations more than new technological models [27].The successes and gains achieved by farmers from Zaragoza, by implementing the strategies they proposed to develop their own ecosystems, can be assessed in the context of a type of ecological agricultural innovation. This is because, as a result of the applications, both soil healths were preserved and food and feed production was diversified [28].

Ecological agricultural practices are also vital in terms of *achieving sustainable stability for food safety and rule*. This is also a very important gain. The issue of food safety can be considered as one of the most serious problems that many countries frequently debate and fear encountering in the future. This is because the problem of food safety has the potential of causing problem-creating impacts. For example, due to fabrication, foodstuffs consumed do not have the required nutritional values today. This means that 'we get full' but 'do not get fed' when consuming these foodstuffs. In short, we are sure neither of the authenticity of the foodstuffs we consume, nor whether we have a healthy and balanced diet with them. And this indicates a reduction in the

required resistance level in the immune system that all living things must have. Thus diseases are invited and diseases are even made chronic. In other words, the health of all living things deteriorates with agricultural practices executed in countries that do not consider the health of soil and have not undertaken to ensure the ecological integrity of lands. There is a second danger that awaits countries that face such deterioration. This new emerging threat is related to the deterioration of country resources. In short, each advance made to achieve health, means new debts.

In this context, a meaning of food safety and rule emerges, that goes much beyond protecting and sustaining the nutritional value of foodstuffs. This meaning describes the sustainability of life in a healthy and holistic manner. Some countries have admirable efforts for alternative ecological agriculture in this regard, in other words against the current agricultural model that ravages the world and reinforces poverty. For example, in Norway, the efforts under the "Climate Change Compatible Agriculture" initiative of the Government are receiving considerable support. The Norway government is organizing the initiatives in this regard under a project title and considers that it shall make a global contribution. The aim of this project is actually to ensure that the expanding inconformity between supply and demand does not become a source of serious concern for food safety in the future. In this context, the project focuses on the preservation of biodiversity, agricultural development, and food safety [29]. In another study, agricultural research, agricultural training and their roles and significance are discussed in detail and are proposed as a solution, to prevent any vulnerability in food safety in the future. Also the necessity of developing a comprehensive food safety and bio-energy policy, encouraging suitable land use planning, ensuring balance and harmony between food safety and bio-energy development, are emphasized. It is thus expressed that that it shall be possible to produce sufficient food to meet increasing world demand, otherwise major uncertainties shall be encountered regarding food safety in the future [30].

More balanced and healthy feeding, thus, *healthier transfer of generations to the future* becomes possible with ecological agricultural practices. In this sense, it can be asserted that ecological agricultural practices are an investment to the entire living world in the nature, in general, and to humanity in particular. Such an investment can be expected to have an impact that generates

added value at local, regional, national and international scales. In this sense, the Norwegian Government's project supporting entrepreneurship can be considered as an example where expectations became real. It is possible to make an assessment also for Turkey, in the framework of the social state understanding. For example, in Turkey providing, incentives, supporting projects, allocating funds, aggregating villages, encouraging urban village projects and constructing ecological villages is in question. All these applications have a special meaning for "balanced diet and a healthy generation". It is possible to describe this through a successful example. *Van*, a city in the Eastern Anatolian Region, has a continental climate. However, attempt was made for the urban village project to produce 'kiwi fruits', which grows in tropical climate, in *Van*, which has continental climate and successful results were achieved. In short, microclimate areas were created even in continental climate and a tropical fruit was successfully grown. Considering in terms of critical situation sampling, the conclusion can be reached that this can be easily implemented anywhere in Turkey. Thus, unhealthy consumption is prevented for kiwi, an imported fruit, prior to maturing and reaching its real nutritional value and also foreign currency outflow is reduced. Therefore, investment in ecological agriculture is an investment on all living things in nature, in general, and on humanity in particular. This should also be taken into consideration as an added value generating gain.

3. Discussion

No gain on the world can last forever according to the basic ideas of classical economists. In this sense, the current agricultural model that is organized through different networks does not have sustainable gains either. This is because the functioning of the system has marketing tendency based on continuous scarcity. Scarcity in a market system is not an objective phenomenon related to the natural world, but a function of the will and means of capital, in other words, of the aims that steer production and their facilitating technologies [31]. And this function generally moves together with privatization in general and mass privatizations in particular.

Privatization in the general sense, essentially prepares a suitable basis for achieving a template that provides the anti-community individualism and egoism to the consumer market [32]. Mass privatization, in support of this, supports social exclusion with methods derived from price freedom. At the end of this process, we encounter people that have been excluded from

privatized places and spaces, in other words, those subject to emotional isolation [33]. In short, the system gains a power that balances itself at higher levels by continuously breaking resistance and causing imbalance. However, the system also has a potential to destroy itself in its own operation. In other words, it is not possible for the current agricultural model to make itself sustainable in the living world that it is destroying. Comparison of energy use and waste production rates between developed and developing countries can give us an idea in this regard. For example, the USA consumes energy twice as much as those living in Germany, France and Britain, 50 times as much as Guatemalans, 100 times as much as Vietnamese and 500 times as much as Chadians. According to research results, it has been determined that USA produced 10 times more waste energy than the following countries in the ranking [34]. This indicates that the gap between the 'ecological footprint' of humanity and the capacity of the world to support human life is increasing steadily. Then, the condition for healthy functioning of social life depends on reducing the size of the ecological footprint at a large rate [35]. In other words, humanity has to take the environmental science of the planet seriously, impose upper limits on and if necessary, reduce raw material consumption [36]. Schumacher offers a proposal that 'production for mass rather than mass production' should be carried out [37].

However, a creative opposition culture that can provide serious resistance and power in the society is required in order to realize the proposal of Schumacher. When the requirements of an opposition culture are met in the society, it may be expected that 'resistance shall foster creating and creating shall foster resisting' stronger. When such a thought is experienced by conversion into habits in a wise manner, it shall become possible to both act consciously and to propose different strategy [38]. Such an expectation requires a learning organization that re-arranges itself on its own [39]. The importance of a learning organization arises more from the enabling of a bio-political struggle over the form of life. It prepares a suitable ground especially for creating new bio-regions, settlements, public spaces and these new types of society [40].

In this sense, a learning organization can be expected to generate ‘a positive impact also for an applicable modern farming art’ [41]. This positive impact can be claimed to manifest itself most evidently by establishing an alternative resistance and balance in mitigating manufactured risks caused by the current agricultural model. In other words, it both prepares and contributes to

infrastructure of the necessary and sufficient conditions of carrying out a sustainable ecological agriculture. Thus, when it comes to food safety and rule, the primary aim is to explain the safety and superiority of food production at local level [42]. Attention is especially drawn to the integrity and inseparability of many social relations and social spheres related to agricultural production [43]. However, the impacts of food safety and rule are not limited to the local and traditional. This issue requires considering as "the ripple effect created by a stone thrown into water". In other words, the issue of food safety and rule can go beyond its limits at when appropriate and when the time comes. Hence, examining ecological agriculture practices in the world, it can be asserted that the impacts are valid not only for the ecological, social and economic sustainability of farmers and all rural communities, but also in terms of ensuring food safety of population growing at regional, national and international scales [44]. Thus, an example is provided that may be taken as a model. In this sense, being on the world agenda with an example that may be taken as a model should be considered as an important gain, because it has a constructive impact rather than a destructive one.

4. Conclusion

Oscar Wilde said '[n]owadays people know the price of everything and the value of nothing'. Unfortunately, very serious difficulties are encountered regarding not knowing the value of something in the modern world. This is because exchange value replaces use value. In other words, products consumed over exchange value have commodity values. This in turn means that the consumed product is not a need in the true sense. An alternative productive structure that can make life in nature sustainable is needed against such a system and mechanism. This productive structure can be constructed only through attempts and applications that can make ecological agriculture sustainable.

Hence, there has been a shift to alternative ecological agricultural practices in many countries uncomfortable with the practices caused by the current agricultural model in the world. Ecological agricultural practices can be regarded as an alternative approach that is a resistance and balance against the current model, thus eliminating the risks. The agricultural sector can be expected to achieve a sustainable character with the help of this alternative approach. For this, primarily soil health must be preserved and the ecological integrity of lands must be ensured. Thus, food safety and rule can be achieved, thus more balanced diet shall be provided and it shall

become possible to raise healthy generations with which we can transfer culture to the future. Otherwise, it is inevitable to encounter the problem-creating effects and crises of the current model. For example, despite the genetic interventions to eliminate hunger in the world, hunger is growing even more. This is because in the current agricultural model farms are used as 'manufacturing shops' that devalue land. This makes disease a 'manufactured risk'.

Thus, when land itself is considered as a production factor, focus must be placed on ‘producing and sustaining health’ rather than disease. This is because countries that prefer current agriculture model create disease by devaluing land and endangering its health, thus deteriorate the health of those on the food chain and gain a disciplining control. In this sense, foodstuffs are used as ‘a deterrent weapon’. At this point, ecological agriculture has content not only as an instrument valid for production of healthy foodstuffs, but also a content exceeding this. In other words, ecological agriculture is a subject of 'politics'. This is because it is subject to power relations. Even this issue provides a concrete idea on the necessity of ecological agricultural practices. In this sense, the more that ecological agricultural practices are diversified in terms of type and degree, the more service shall be provided to the nature in general and to humanity in particular. This in turn should be regarded as an investment with important gains.

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