

Organic farming and the sustainability of agricultural systems. La agricultura ecológica y la sostenibilidad de los sistemas agrícolas

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ABSTRACT

The craving for a practical agribusiness is all inclusive, yet settlement on the most proficient method to advance towards it stays slippery. The degree to which the idea of manageable agribusiness has any functional significance is examined. Maintainability is considered comparable to natural cultivating - an area filling quickly in numerous nations. The job of guidelines and the utilization of manufactured agrochemicals, the ideal level of independence of horticultural frameworks, and the size of creation and exchange of rural products are completely viewed as with regards to this conversation of supportability. Practical agribusiness gives an equivalent load to ecological, social, and monetary worries in horticulture. Agrarian maintainability lies on the rule that we should address the issues of the present without compromising the capacity of people in the future to address their own issues.

Keywords: Organic farming, Self-sufficiency, Agrochemical

RESUMEN

El anhelo de una agroindustria práctica lo incluye todo, pero la decisión sobre el método más eficaz para avanzar hacia ella sigue siendo resbaladiza. Se examina el grado en que la idea de agronegocios manejables tiene alguna importancia funcional. La mantenibilidad se considera comparable a la del cultivo natural, un área que se está llenando rápidamente en muchos países. La función de las normas y el uso de agroquímicos fabricados, el nivel ideal de independencia de los sistemas hortícolas y el tamaño de la producción y el intercambio de productos rurales se consideran plenamente en esta conversación de sustentabilidad. La agroindustria práctica da una carga equivalente a las preocupaciones ecológicas, sociales y monetarias en la horticultura. La mantenibilidad agraria se basa en la regla de que debemos abordar los problemas del presente sin comprometer la capacidad de las personas en el futuro para abordar sus propios problemas.

Palabras clave: Agricultura orgánica, Autosuficiencia, Agroquímicos

INTRODUCTION

The idea of supportability lies at the core of the discussions that presently exist over the utilization of the planet's normal assets, yet there is no agreement on its importance notwithstanding its instinctive allure. This

paper centers around practical agribusiness, despite the fact that there is still no agreement on this more explicit part of sustainability. Some have contended that, for instance, natural cultivating and supportable horticulture are interchangeable, others see them as isolated ideas that ought not be compared. The connection between natural horticultural frameworks and rural manageability is along these lines inspected in this paper. The justification behind the emphasis on natural horticulture is the fast improvement of the natural area in Europe and North America. Natural cultivating, as is talked about underneath, has a long history however its abrupt height from relative indefinite quality merits a thought of its turn of events and nature. As verified over, the focal point of the paper is prevalently European and North American, which isn't to degrade the meaning of improvements in the Southern Hemisphere yet rather to keep the paper sensibly focussed.

OBJECTIVES OF THE STUDY

- To know concept of sustainable agriculture.
- To study the principle aims of organic production and processing
- To study degree of isolation of sustainable systems
- To analyse the scale and productivity of sustainable systems

REVIEW OF LITERATUR

With regards to agrarian creation, Ikerd (1993) characterizes a feasible farming as "fit for keeping up with its efficiency and helpfulness to society for a really long time. It should be ecologically strong, asset rationing, financially reasonable and socially steady, monetarily aggressive, and naturally sound".

Endeavouring to show up at a more exact, functional meaning of supportable farming is incredibly risky, incompletely in light of the fact that there is such a reach and number of gatherings associated with the discussion. This isn't is business as usual, as there would seem, by all accounts, to be little point in supporting a non-practical farming, thus all pertinent gatherings are battling it out in the reasonable camp. Indeed, even the substance organizations can guarantee that ranchers should buy their agrochemical items to work on their monetary manageability. In this way, the discussion over how to accomplish manageability is tormented by crucial debates and conflicts over which components of creation are adequate and which are not.

The mind-boggling nature of the interrelationships between farming creation and the regular habitat implies that we are a long way from knowing which techniques and frameworks in various areas will prompt supportability. This is by all accounts a vital issue in the discussion, and leads one to ask, how lengthy ought to an agrosystem act economically to be viewed as practical, and how might supportability be surveyed? It is very hard to decide if certain horticultural practices are economical or not. It is just by and large that practical methods can be really distinguished. The ID of advances as feasible today is sketchy, since such recognizable proof depends on speculations in regards to the supportable administration of regular assets, keeping up with their useful limit through time. This infers that a consistent course of observing and re-examination is required. Indeed, there have

been not many endeavours "to describe the maintainability of explicit agrarian frameworks" (Hansen and Jones, 1996).

The methodology took on here rejects a way to deal with manageability that spotlights on the portrayal and advancement of feasible cultivating rehearses independent of the socio-useful highlights of the cultivating frameworks in which they are utilized. Accordingly, supportability can't be related with a specific arrangement of cultivating practices or techniques (Ikerd, 1993), since the capacity of a specific innovation to act as economical, will for the most part rely upon the quirks of the setting wherein it is utilized. Vtally, frameworks that are supportable "for one rancher or homestead at one particular moment may not be maintainable for one more rancher or homestead on some other occasion" (Ikerd, 1993)

In spite of there being an expansive agreement among supporters of feasible horticulture that the regular way to deal with agribusiness is improper, there are huge contrasts in regards to the sort of cultivating rehearses which should be created to move toward manageability. There is a far more noteworthy level of understanding in regards to the issues related with regular agribusiness, than the procedures expected to manage them.

The emphasis here is on natural cultivating, and especially its relationship with the idea of supportability. There are various purposes behind this accentuation. The first is that natural cultivating pre-dates any remaining ways to deal with "harmless to the ecosystem" horticulture (Scofield, 1986). Second, it is a quickly creating farming area in numerous nations, as the figures refered to above for the EU and North America demonstrated. The explanations behind this extension are various and there are varieties across nations. Customer interest has filled in light of rehashed sanitation panics, creature government assistance worries as well as more broad worries with respect to the effect of modern horticulture on the climate. Makers have likewise been drawn in view of ecological worries as well as by the potential wellbeing effects of utilizing agrochemicals and, as is examined in Section 3, by the financial matters of natural creation comparative with regular farming.

THEORTICAL FRAMEWORK

Sustainable Agriculture and the Management of Natural Resources

Whenever the creation of food and fiber corrupts the regular asset base, the capacity of people in the future to deliver and thrive diminishes. The downfall of antiquated civic establishments in Mesopotamia, the Mediterranean locale, Pre-Columbian southwest U.S. furthermore Central America is accepted to have been firmly affected by normal asset corruption from non-supportable cultivating and ranger service rehearses. A practical horticulture approach tries to use regular assets so that they can recover their useful limit, and furthermore limit destructive effects on biological systems past a field's edge. One way that ranchers attempt to arrive at these objectives is by thinking about how to exploit existing normal cycles, or how to plan their cultivating frameworks to fuse significant elements of regular biological systems. By planning naturally incorporated agroecosystems that depend to a greater degree toward the inside cycling of supplements and energy, it isn't unexpected imaginable to keep a financially feasible creation framework with less possibly poisonous mediations. For instance, ranchers

focusing on a more elevated level of ecological supportability should think about how they can diminish their utilization of poisonous pesticides by offering normal cycles as a powerful influence for restricting nuisance populaces. This could occur, for instance, by establishing hedgerows along field edges, or ground covers between columns, subsequently giving natural surroundings to bugs and birds that go after the bugs, or by establishing more assorted mixes of yields that befuddle or redirect bothers. Keeping a serious level of hereditary variety by preserving however many harvest assortments and creature breeds as could be expected under the circumstances will likewise give more hereditary assets to reproducing protection from sicknesses and bugs.

RESULT AND DISCUSSION

What is meant by sustainable agriculture?

A portion of the advancements in present day agribusiness that have prompted questions in regards to the drawn-out suitability of current creation frameworks are summarized by Hodge:

Agribusiness has come to draw the sources of info which it utilizes from more far off sources, both spatially and sectorally, to infer an expanding extent of its energy supplies from non-sustainable sources, to rely on a smaller hereditary base and to progressively affect the climate. This is especially reflected in its weighty dependence on synthetic composts and pesticides, its reliance upon sponsorships and cost help and its outer expenses like dangers to different species, ecological contamination, territory annihilation and dangers to human wellbeing and government assistance.

Organic farming: Natural cultivating is a creation framework which evades or generally bars the utilization of artificially intensified manures, pesticides, development controllers, hereditarily altered life forms and animals' food added substances. To the greatest degree conceivable natural cultivating framework depend upon crop pivots, utilization of yield build-ups, animal composts, vegetables, green fertilizers, off ranch natural squanders, biofertilizers, mechanical development, mineral bearing rocks and parts of organic control to keep up with soil usefulness and tith to supply plant supplements and to control bug, weeds and different irritations.

Natural strategies can increment ranch usefulness, fix many years of ecological harm and weave little homestead families into more supportable appropriation networks prompting further developed food security assuming that they sort out themselves underway, confirmation and promoting. During most recent couple of years an expanding number of ranchers have shown indifference toward cultivating and individuals who used to develop are relocating to different regions. Natural cultivating is one method for advancing either independence or food security. Utilization of huge contributions of substance manures and poisonous pesticides harms the land and water intensely. The eventual outcomes of this are serious ecological results, including loss of dirt, decline in soil richness, surface and ground water pollution and loss of hereditary variety.

Natural cultivating which is an all encompassing creation the board framework that advances and improves agro-environment wellbeing, including biodiversity, organic cycles, and soil natural movement is thus

significant. Many examinations have shown that natural cultivating techniques can deliver significantly better returns than ordinary strategies. Huge contrast in soil wellbeing pointers, for example, nitrogen mineralization potential and microbial overflow and variety, which were higher in the natural homesteads can likewise be seen. The expanded soil wellbeing in natural homesteads likewise came about in impressively lower bug and infection occurrence. The accentuation on limited scope coordinated cultivating frameworks can possibly rejuvenate provincial regions and their economies.

Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, genetically modified organisms and livestock food additives. To the maximum extent possible organic farming system rely upon crop rotations, use of crop residues, animal manures, legumes, green manures, off farm organic wastes, biofertilizers, mechanical cultivation, mineral bearing rocks and aspects of biological control to maintain soil productivity and tilth to supply plant nutrients and to control insect, weeds and other pests.

Organic methods can increase farm productivity, repair decades of environmental damage and knit small farm families into more sustainable distribution networks leading to improved food security if they organize themselves in production, certification and marketing. During last few years an increasing number of farmers have shown lack of interest in farming and the people who used to cultivate are migrating to other areas. Organic farming is one way to promote either self-sufficiency or food security. Use of massive inputs of chemical fertilizers and toxic pesticides poisons the land and water heavily. The after-effects of this are severe environmental consequences, including loss of topsoil, decrease in soil fertility, surface and ground water contamination and loss of genetic diversity.

Organic farming which is a holistic production management system that promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity is hence important. Many studies have shown that organic farming methods can produce even higher yields than conventional methods. Significant difference in soil health indicators such as nitrogen mineralization potential and microbial abundance and diversity, which were higher in the organic farms can also be seen. The increased soil health in organic farms also resulted in considerably lower insect and disease incidence. The emphasis on small-scale integrated farming systems has the potential to revitalize rural areas and their economies.

A cutting edge meaning of natural cultivating given by Lampkin (1994), a legitimate source, expresses that the point is: "to make incorporated, sympathetic, earth and financially economical creation frameworks, which amplify dependence on ranch inferred inexhaustible assets and the administration of environmental and organic cycles and cooperations, in order to give adequate degrees of harvest, animals and human sustenance, assurance from irritations and sickness, and a fitting re-visitation of the human and different assets". One of the main compositions of the points and standards of natural cultivating is that introduced in the International Federation of Organic Agriculture Movements essential guidelines for creation and handling

(IFOAM, 1998); these are introduced in Table 1. As this assertion clarifies, the extent of the standards reach out past straightforward biophysical perspectives to issues of equity and obligation.

The principle aims of organic production and processing

- To produce food of high quality in sufficient quantity.
- To interact in a constructive and life-enhancing way with natural systems and cycles.
- To consider the wider social and ecological impact of the organic production and processing system.
- To encourage and enhance biological cycles within the farming system, involving micro-organisms, soil flora and fauna, plants and animals.
- To develop a valuable and sustainable aquatic ecosystem.
- To maintain and increase long term fertility of soils.
- To maintain the genetic diversity of the production system and its surroundings, including the protection of plant and wildlife habitats.
- To promote the healthy use and proper care of water, water resources and all life therein.
- To use, as far as possible, renewable resources in locally organised production systems.
- To create a harmonious balance between crop production and animal husbandry.
- To give all livestock conditions of life with due consideration for the basic aspects of their innate behaviour.
- To minimise all forms of pollution.
- To process organic products using renewable resources.
- To produce fully biodegradable organic products.
- To allow everyone involved in organic production and processing a quality of life which meets their basic needs and allows an adequate return and satisfaction from their work, including a safe working environment.
- To progress toward an entire production, processing and distribution chain which is both socially just and ecologically responsible.

Organic farming, regulation and sustainability: One of the parts of natural creation what isolates it from large numbers of the other option horticultural developments recognized above, is that it has a past filled with guideline. Tate (1994) clarifies that this is important "to keep up with the high moral norms of the natural development, to hold buyer trust in produce, to energize and uphold veritable natural ranchers, and... to give a premise to deal with natural produce across wildernesses". MacCormack (1995) notes, "not at all like 'manageable' cultivating rehearses, natural cultivating rehearses are obvious - indeed, natural cultivating rehearses are remarkable, for they are the only ones systematized as regulation. A total arrangement of affirmation methodology oversees natural cultivating, from the dirt to the eating table" (MacCormack, 1995). This set of experiences of guideline makes a conversation of what natural horticulture really is impressively simpler, since there exist distributed principles which makers should follow. In spite of the fact that there are

contrasts in these guidelines between different natural bodies and across public limits, these plainly characterized norms address an establishment on which discussion can be based.

There is no genuine question that reasonable horticulture and natural cultivating are firmly related terms. There is anyway conflict on the specific idea of this relationship. For some's purposes, the two are interchangeable, for other people, likening them is deluding. Lampkin's meaning of natural cultivating, cited above, discusses feasible creation frameworks.

Notwithstanding the assortment of meanings of natural cultivating, the overall arrangements in regards to what is important to create naturally are as an unmistakable difference to the discussions and contentions that fury with respect to the idea of horticultural manageability. Nonetheless, as Ikerd (1993) notes, "notice 'practical horticulture' and many individuals will think you are discussing natural cultivating. A few natural ranchers will concur. They imagine that natural cultivating is the main framework that can support farming creation long term" (p. 30). This perspective on an incredibly close on the off chance that not equivalent connection between natural cultivating and maintainability isn't general, and it ought to obviously be noticed that the tricky idea of supportability's definition and significance suggest that comparing it to anything is a fairly striking advance.

Hodge contends against those like Bowler (1992), who view natural cultivating as the main really practical sort of farming, battling that this is possibly evident if non-manageability is distinguished using non-inexhaustible assets, particularly inorganic synthetic substances. Contrary to this position, he expresses that: "... it should be problematic concerning whether natural cultivating, as at present rehearsed, can sensibly be viewed as feasible" (Hodge, 1993). Factors that Hodge uses to help his contention incorporate vulnerability with respect to nitrate misfortunes from customary and natural cultivating, especially considering the trouble in controlling supplement applications from natural excrements. Worries over the drawn out support of potassium levels in soils, particularly on dairy ranches, and the issue of soil disintegration are likewise referred to. The end drawn is that "it is in this manner an error to liken 'supportable' agrarian frameworks with 'natural' ones. A limitation on the utilization of inorganic synthetic substances is anything but an adequate condition for supportability, however it may not be a vital condition"

The trouble is that joining these more extensive worries into meanings of, and norms for, natural cultivating is problematical. Norms are definitely more ready to allude to denied inputs than to manage exact standards for the appraisal of whether makers and processors are acting in a way which is "socially" or "environmentally dependable". The meaning of this increments when one considers the gigantic extension of the natural area in progress in numerous nations, where the inspirations of recently changing over natural makers likely could be not the same as the 'customary' natural maker who related intimately with these more extensive standards.

This issue of the scope of thought processes that individuals might have for taking on natural strategies should be painstakingly thought of. While many taking on natural practices are doing as such for

way of life and more all encompassing reasons, the issue of higher market costs for natural merchandise can not be overlooked. Lampkin and Measures (1995) report, for instance, natural costs in the UK somewhere in the range of 50 and 100 percent above ordinary costs for grains and vegetables. It appears to be exceptionally likely that these financial variables are driving the change choice for some new natural makers rather than the past. In the UK, this changing profile of the new natural maker is an aftereffect of the quantity of laid out customary makers who are presently changing over to natural creation, something which the quantity of calls to the Organic Conversion Information Service (OCIS) reflects. With regards to the drawn out emergency in enormous areas of British farming the chance should consequently exist of makers becoming natural to seek after these expenses; their rationale may not be maintainability in its broadest sense, however advertising at its generally key.

The degree of isolation of sustainable systems: The principal issue is the manner by which expansive should the thought be the point at which one thinks about the maintainability of cultivating frameworks. For instance, can a homestead on which no engineered synthetic compounds are utilized, and which might be viewed as maintainable as far as its culturing and rotational practices, be economical assuming that it utilizes power produced from petroleum products or atomic power? Norms for natural food creation don't manage the manageability of fuel sources, and it is challenging to perceive how they could. Notwithstanding, one could contend that focusing on unmistakable, on-ranch, parts of yield and animals' creation for cultivating frameworks which depend on impractical energy sources is problematical. Expecting makers who try to manageability to produce their own power appears to be unreasonable (despite the fact that Amish people group don't associate with power matrices,

This issue of reasonable energy sources features a more broad point about the degree to which economical cultivating frameworks should endeavour to separate themselves from the remainder of 'impractical' society. For instance, considering that numerous option horticultural methods of reasoning embrace a re-visitation of the land, and a dismissal of huge scope, market-orientated creation in the urban areas, how much is contact, and all the more explicitly exchange, with this area OK. The utilization on homesteads of rural hardware, controlled by petroleum derivatives, to create merchandise to sell back to 'unreasonable' society might be seen as compromising such cultivating frameworks' manageability.

MacCormack (1995) centres around how much cultivating frameworks are shut while recognizing natural and reasonable agribusiness. He contends that maintainability "infers an objective of 'shut framework' cultivating, implying that homesteads approach independence and require minimal external information". It is on this premise that he guarantees that "numerous natural makers keep thinking about whether any ranch framework can at any point be practical in the unadulterated sense. All things considered, natural frameworks actually require development, soil the board inputs, handling, transporting, trucks, airship cargo, all of which use oil, not typically delivered on ranches" (MacCormack, 1995).

The issue of exchange regard of agrarian maintainability evaluation is turning out to be progressively significant concerning natural cultivating. As the interest for natural food develops (the UK as of now imports 70% of its natural products of the soil), so the worldwide exchange natural items grow. A straightforward assessment of the natural produce range in a British store shows that natural vegetables are being travelled to the UK from east and southern Africa and somewhere else in the southern half of the globe. Regardless of whether the practices utilized on-ranch were acknowledged as praiseworthy, the ramifications as far as energy use and discharges of an Earth-wide temperature boost gases are very huge. This features one more issue of significance with regards to supportability evaluations which is the fitting degree of estimation (ranch plot, ranch family, watershed, locale and so on) An appraisal at the plot and homestead family level of the creation framework used to deliver natural vegetables in Kenya, for instance, may show an incredibly manageable creation framework. An evaluation of the food miles (the distance items travel among maker and buyer) and energy utilize once these have been travelled to the UK available to be purchased is probably going to give altogether different bits of knowledge.

The scale and productivity of sustainable systems: The ability of a farming system to sustain those people who work within it indefinitely, need not be the sole test of sustainability. The issue of providing food and fibre for the non-agricultural population needs also to be addressed. If sustainable agriculture necessarily implies small-scale, more labour-intensive farming, then does this require a large-scale return to the land, and an end to much of today's industrial and manufacturing production as such large urban populations could not be maintained in the context of this form of agricultural production?

The answer here is uncertain, but it is undoubtedly mistaken to simply equate sustainable agriculture with low-yield farming. However, this issue of productivity and sustainability features heavily in the literature, Zilberman et al. (1997) comment "While organic farming and traditional crop rotations may have a significant role in a sustainable future, we do not believe that the keys to sustainability are the technologies of the past...we cannot turn the clock back and still feed the current human population". Avery, a former agricultural analyst for the US Department of State, is one of the most forceful proponents of this view. His report 'Saving the Planet with Pesticides and Plastic: The Environmental Triumph of High-Yield Farming' (Avery, 1981) counterposes "high-yield farming" with organic farming, where the latter represents a serious threat to biodiversity because, in his view, the lower yields it generates would cause large areas of species-rich wildlife habitats to be lost to cultivation: "the public has been told that the organic approach to farming is kinder to the environment. The public has not been told that its low yields would force us to destroy millions of square miles of additional wildlands" (Avery quoted in BCPC, 1997)

There may be many definitions of sustainable agriculture, but very many of them stress that such a system must be able to "provide for the food and fiber needs of society, must meet the needs of the current generation,...must be capable of maintaining its productivity and value to human society" (Ikerd, 1993). In industrialised countries conversion to, for example, organic farming is commonly associated with lower yields than

with conventional agriculture. Even if one accepts this for the developed world, the situation in developing countries is rather different, with many producers farming at relatively low levels of intensity. In this situation, organic techniques can lead to yields increased threefold and more (la Prairie, 1996), and the possible generation of agricultural surplus for trade. Some people's vision of a sustainable agriculture may entail a "patchwork" countryside of small holdings and a greatly increased rural population. Sustainable agriculture is not viewed in this way by others, and so the issue of productivity and how these food and fibre needs are to be met, is one of the great issues of debate in the area.

The point is that when the discussion of sustainable agricultural production occurs, some clarity regarding the scale of productivity involved, and how closed or open the system should be, in terms of energy and markets for example, would be helpful. To some advocates of, for example, organic and biodynamic farming, a return to small-scale production, small communities and a return to some form of spiritual link between farmer and the soil is precisely what they advocate. To others who utterly reject such notions such a considerable reorganisation of production is not envisaged at all, rather sustainable agricultural systems much more similar to today's are imagined. This relates directly to the often-neglected aspect of sustainable agriculture: its social organisation.

It seems that although sustainable farming systems are now advocated almost universally, there is great disagreement regarding even the basis on which systems should be judged. Whether farms should be self-sufficient, the degree to which they should trade with the rest of society, the question of energy sources and whether sustainability requires a return to small-scale, labour-intensive agricultural production.

There seems to be little benefit in the followers of various alternative agricultural schools of thought claiming that they represent the true path to sustainability. This is primarily because the view that sustainable agriculture varies in both time and space, is only capable of being identified in retrospect, over an uncertain time period, leads to sustainability being viewed as a process.

CONCLUSION

This paper has focused in on farming supportability, and its relationship to different option agrarian methodologies. It has, intentionally, not offered any new meanings of manageability or reasonable agribusiness. Feasible practices will differ both transiently and spatially and can really be distinguished by and large. It isn't just an issue of devices and data sources, however the setting wherein they are utilized. This raises the chance of supportability being thought about so obscure an idea that it has minimal significance and ought to be disposed of. Social, monetary, and ecological manageability are firmly interwoven and fundamental parts for a really practical horticulture. For instance, ranchers confronted with neediness are regularly compelled to mine normal assets like soil ripeness to earn barely enough to get by, despite the fact that natural corruption might hurt their livelihoods over the long haul. Exclusively by making arrangements that incorporate social, ecological, and financial interests would social orders be able to advance more feasible agrarian frameworks.

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