

Organic Farming in the World, and case study of Morocco: Achievements, Drawbacks and Future Perspectives.

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Abstract

The concerns of the environment degradation and the consumer's awareness about food quality had increased in the recent years. The use of pesticides and synthetic fertilisers have always been criticised and pointed out by environmentalists as a source of many health problems caused to humans, and wildlife. The conventional agricultural systems are therefore regarded as practices responsible for such problems and jeopardizing the sustainability of production systems and the preservation of natural resources that are essential for future generations. Organic agriculture is presented as one of the alternatives to the current production systems. Organic agriculture is developing rapidly and is now practiced in more than 120 countries of the world. World statistics show that organic farming is practiced in a large number of countries around the world. The surface of land allocated to this type of agriculture is increasing, but at different rates, depending on the country. Its share of agricultural land and farms continues to grow in many countries. Each country can be considered as a special case, regarding the importance of organic agriculture, the strategy it adopts by its government to develop this sector, the relative weights of local consumption versus export of organic products, ...etc. However, we had classified countries into three major groups. The first group is composed of developed countries, where internal consumption of organic products is higher than the quantities produced. The second group corresponds to industrialized countries where the production of organic products is higher than the internal consumption. The third group is composed of developing countries. The major characteristic of this group, to which Morocco belongs, is the absence of national certification bodies and the total dependence on foreign markets to commercialise organic products in the absence or non significant interior demand. This paper intends to: (i) give an overview of the current status of organic agriculture around the world, the major tendencies world wide, (ii) characterize the status of this type of agriculture in Morocco, and (iii) identify the main constraints to its development in Morocco, and (iv) make some suggestions on how to develop this sector so it can primarily benefit to farmers, to the community where they live and to the country as a whole.

Key words: Organic farming, world, Morocco, current status, achievements, drawbacks, recommendations.

1. Background

Farming in the Developed world and in some farms in the Developing world, is becoming highly productive. However, several emerging health, environmental, and economic problems associated with conventional farming practices threaten its sustainability. The concerns of the environment degradation and the consumer's awareness about food quality had increased in the recent years. The use of pesticides and synthetic fertilisers have always been criticised and

pointed out by environmentalists as a source of many health problems caused to humans, and wildlife. Concerns about conventional farming have led to interest in alternative farming methods that may lower health risks, protect farm resources, reduce environmental damage, and improve long-term farm profitability and competitiveness. The conventional agricultural systems are therefore regarded as practices responsible for such problems and jeopardizing the sustainability of production systems and the preservation of natural resources that are essential for future generations.

The recent scandals related to the mad cow disease and more frequent food poisoning are supposed to trigger more interest. The shift has been propelled by factors ranging from consumer concern about pesticide residues on food to farmers' desire to cut costs. Such alternative agriculture, in order to address all the drawbacks of conventional agricultural systems, should sustain abundant biological and cultural diversity and enhances land, animal and human health. In the absence of a comprehensive evaluation of the advantages of organic versus conventional agriculture, Brangeon and Chitrit (1999) reported that several indicators are in favour of the former. The strengths of organic agriculture consists mainly on the generation of more jobs, the preservation of natural resources, more diversified agricultural production systems, more biodiversity, preservation of local communities and of cultural diversity, and more income for farmers, the reinforcement of the feeling of mutual benefits between consumers and producers: the formers will be willing to pay more for naturally grown food, being aware of the positive impact of the additional price they are paying on the well-being of rural or urban communities of growers. This implies the existence of a sensitising campaign among potential consumers to be planned, supported and executed by both government agencies and NGOs.

Organic agriculture is presented as one of the alternatives to the current production systems. World statistics show that organic farming is practiced in a large number of countries around the world. The surface of land allocated to this type of agriculture is increasing, but at different rates, depending on the country. Though the high potential for the development of organic agriculture in Morocco, this sector is still minor, disorganized and far away for playing the role it should play in the economic development of the country. This paper intends to give an overview of the current status of organic agriculture around the world, the major tendencies world wide, the status of this type of agriculture in Morocco, and to make some suggestions on how to develop this sector so it can primarily benefit to the farmer, to the community where he lives and the country as a whole.

2. The practice of organic agriculture and the major tendencies world wide

Organic agriculture is developing rapidly and is now practiced in more than 120 countries of the world. Its share of agricultural land and farms continues to grow in many countries. Furthermore, it can reasonably be assumed that uncertified organic farming is practiced in even more countries (Willer & Yussefi (Eds), 2007). Organic farming exists in many countries. According to available statistics, the surface allocated to certified organic farming is respectively, 11.8, 6.9, 5.8, 2.9, 2.2 and 0.9 million hectares, respectively in Australia/Oceania, Europe, Latin America, Asia, North America, and Africa (Figure 1). Oceania and Australia include Australia and New Zealand as well as smaller countries like Fiji, Papua New Guinea, Tonga and Vanuatu. In 2005, the International Trade Centre (ITC) and Organic Services carried out the study Overview of production and marketing of organic wild products (Willer & Yussefi (Eds), 2007). This study shows registered areas of about 62 million hectares of organic wild collection. The largest collection areas are in Europe and Africa.

We should mention however that these figures represent official statistics about certified organic agriculture, and don't mention vast areas of Africa, Asia, and Latin America, where many commodities are produced without any external inputs, such as fertilizers, seeds, and pesticides.

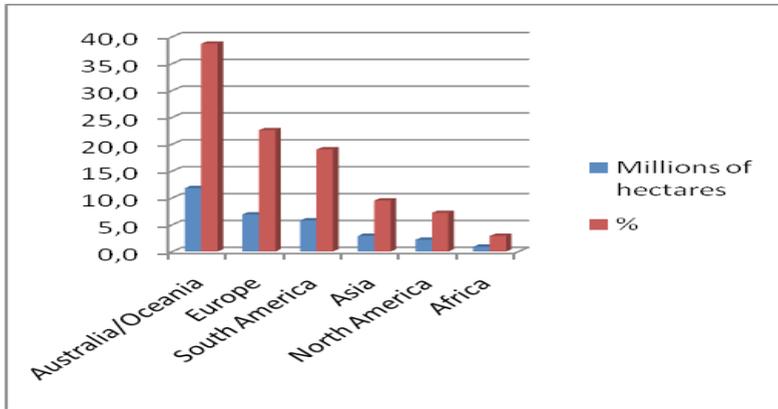


Figure 1. Distribution of acrages devoted to certified organic farming in different regions of the world. Source: Adapted from: SOEL-FiBL Survey 2007, Graph: Minou Yussefi, SOEL

Europe has the highest ratio of land devoted to organic farming over the total arable land. This constitutes 3.9 percent of the agricultural area. It can reach 50% in the mountainous regions of Austria and the South of Italy. The country with the highest number of farms and the largest organic area is Italy. The supremacy of Europe will be probably maintained in the future since the annual conversion rate is about 28%. Compared to the previous survey 2004, organic land increased by almost 510 000 hectares (+8 percent) in Europe as a whole and by 490 000 hectares (+ 8.5 percent) in the European Union (Willer & Yussefi (Eds), 2007). The conversion to organic agriculture is also increasing at higher speed in Canada and in the United States of America. In North America almost 2.2 million hectares are managed organically, representing approximately a 0.6 percent share of the total agricultural area worldwide.

Organic agriculture is becoming a common practice in many countries of Latin America, but it is in Uruguay, Mexico, Argentina, and Brazil, where it is mostly developed.

In Asia, the certification process is still made by foreign organisms from the USA, Europe and Australia. However, organic rules have already been established in a number of Asian countries, including India, Japan, Korea, Philippines, Taiwan and Thailand. A major increase of organic land has taken place in China, where nearly three million hectares of pastoral land were recently certified IFOAM (2006). India and Japan, which have their own structures, developed their own certification. If we make exception of India, there is no serious tentative we are aware of in Africa or Latin America to implement national or regional certification of organic products.

If we look into details, each country can be considered as a special case, regarding the importance of organic agriculture, the strategy it adopts by its government to develop this sector, the relative weights of local consumption versus export of organic products, ...etc. However, El Hardouze (2001) classified countries into three major groups:

i. The first group

It is composed of developed countries, where internal consumption of organic products is higher than the quantities produced. Despite the increase of acrages devoted to organic farming, the demand is increasing at higher rates. This group is also characterized by a high number of consumers of organic products with a high buying capacity. The needs for organic products

in these countries surpass their capacity to produce them within their borders. The demand for organic produce is increasing because of the increasing awareness by the population for the need to preserve the environment and to consume a healthier and safe food. This group is composed of Western Europe, United States of America and Japan.

The governments of the countries belonging to this group encourage the development of organic farming and other alternative agricultural production systems, by offering substantial subsidies to farmers. The subsidies are especially important during the conversion period that lasts for about three years, because of the higher risks for the farmers during this period and the drastic drop in yields and revenues that follow the changes from conventional to organic agriculture.

Convinced of the strategic role research is playing in all sectors, these countries are allocating substantial financial resources to research in all areas of organic agriculture, from basic and applied research to reaching the farmer and educating the consumers through outreach programs.

ii. The second group

This group corresponds to industrialized countries where the production of organic products is higher than the internal consumption. The countries representing this group are mainly Australia, Canada, Italy and Spain. Spain is actually exporting about 2/3 of its production to the neighbouring in Western and Central Europe. In general, the production of organically grown products is taking place in the southern regions of these countries while it is in the north where the demand for these products is important. This is due to the gap between the more industrialized north and the farming-oriented south regarding the average income.

While the three countries mentioned: Spain, Canada, and Italy are characterized by the relative limited interior demand for organic products, which constitutes their major weakness, the reasons behind the expansion of organic agriculture are quite different among this group (Table 1). To illustrate these differences let's cite the cases of the three countries cited above and Canada. The rapid development of the sector in Canada is due to the availability of extensible arable land, the importance of the incentives offered by the government to farmers converting to organic agriculture, the relative low level of diseases and insects caused by the cold climate characterizing this country, and the geographic proximity to a big market for organic products in the United States. The development of organic agriculture in Italy and Spain are encouraged by high demand of neighbouring European countries for organically grown products. However, Italy is characterized by a higher number of traditional farms, the importance of the eco- and bio-tourism. This country has launched a strategy aiming to increase internal consumption by encouraging the use of exclusively certified organic food in restoration business and in school restaurants.

iii. The third group

This group is composed of developing countries. The major characteristic of this group is the total dependence on foreign markets to commercialise organic products in the absence or non significant interior demand. This is mainly due to low incomes of the population and doesn't imply that the populations of these countries are not aware of the risks of consuming low quality food, and this doesn't mean the lack of interest in the encouragement of safe, sustainable, and environmentally sound agricultural systems. This group can be represented by Madagascar, Kenya, and Morocco.

The low degree of intensification of cropping system, which means low use of chemical fertilizers and pesticides, makes the conversion to organic farming shorter. Theoretically, the cheap and abundant human labour could be regarded as strength because it reduces one of

the main sources of production costs. However, the cheap labour could be unfortunately a limitation because low incomes mean low buying capacity of the population on average, which explains low internal demand for organic products.

The factors mentioned above, should make organic products grown in the developing countries more competitive compared to Europe, North America, Australia or Japan. This could have been the case if these countries have their own certification systems and have full control over the destiny of their products. This is not unfortunately the case because the commerce of inputs, the certification, and the export is totally under the control of foreign organisms.

Table 1. Strengths and limitations to organic agriculture (OA) development in some countries (Adapted partially from El Hardouze, 2001)

Country	Factors in favour of organic agriculture (OA) development	Factors not in favour of organic agriculture development
France	<ul style="list-style-type: none"> -High internal demand for organic products. -The French government offers incentives and subsidies during the conversion period and after. 	<ul style="list-style-type: none"> -Demand is greater than domestic supply for many products. -Low technical support for farmers due to insufficient training offered to extension specialists in OA. -Lack of information on the products and organic farming in general. -Producers need to be more organized. -The country is importing substantial quantities of organic products because the demand is higher than the production.
Belgium	<ul style="list-style-type: none"> -The state offers good incentives and subsidies to farmers specializing in OA. -Producers are more organized compared to France. 	<ul style="list-style-type: none"> -The country imports organic products to cover increasing internal demand. -Many farmers, interested in conversion are said to be interested in the level of the subsidy per hectare only, for the short term, but do not look at the longer term.
Italy	<ul style="list-style-type: none"> -High % of population practicing agriculture. -High number of traditional farms. -Expansion of bio tourism. -A clear strategy adopted by the country to promote organic agriculture. -A high demand for organic products in the neighbouring European countries. 	<ul style="list-style-type: none"> -Small internal demand for certified organic products. -Current organic standards limit fertilizer use, placing fields at risk of nutrient depletion.
Spain	<ul style="list-style-type: none"> -A high demand for organic products in the neighbouring European countries. -The number of organic farms increased more than twelve-fold from 1994 to 1999. 	<ul style="list-style-type: none"> -Exports are making up more than 80% of the organic food produced each year. -Limited internal demand for certified organic products due to high prices, lack of marketing and adequate distribution channels, and extremely low consumer awareness.

U.S.A	<ul style="list-style-type: none"> -The first producing and consuming country of certified organic food. -Perpetual increase in internal consumption of organic food. -Arable land is not a limiting factor. 	<ul style="list-style-type: none"> -Lack of harmonization of standards and acceptance of equivalence for market development.
Canada	<ul style="list-style-type: none"> -Arable land is not a limiting factor. -Low occurrence of attacks by insects and diseases due to cold climate. -The state offers incentives and subsidies to farmers practicing O.A. -Increased levels of research and development, and the provision of special extension services, and of financial supports for the transition process. -The proximity of Canada to the U.S market. 	<ul style="list-style-type: none"> -Low internal consumption of certified organic products. -Supply of produce is low and distribution systems are undeveloped.
Australia	<ul style="list-style-type: none"> -The sector of organic agriculture is well organized. -A large array of organic products is grown in the country. 	<ul style="list-style-type: none"> -Lack of information and knowledge on principles and methods of organic agriculture. -Lack of information on procedures of certification and required documentation. -Low internal consumption of organic food. -Uncertainty of supply, quality and price. -Lack dedicated infrastructure and of developed markets for handling organic produce.
Madagascar	<ul style="list-style-type: none"> -Arable land is not a limiting factor for expansion of OA. -Hand labour is available and cheap. 	<ul style="list-style-type: none"> -The largest part of the produced organic food is exported. -Lack of market information, such as products demanded, required qualities, prices, potential importers and market size. -Lack of knowledge in production, certification, processing and export continues to inhibit growth.
Kenya	<ul style="list-style-type: none"> -The country has prepared a good base for the development of OA. Universities are developing a curriculum for courses in organic agriculture, and invested in continuing education and outreach. 	<ul style="list-style-type: none"> -Low internal consumption of organic food due to low level of local consumer awareness. -Marketing and access to markets is lacking.

Contrasting with the other two groups, the countries belonging to the third one don't invest in research and extension and have no clear strategy in terms of agricultural policy in general and in the development of alternative agricultural systems in particular, and are characterized by high occurrence of illiteracy among its population. This results in low technological knowledge of farmers to deal with this new-old approach of farming. Instead of elaborating strategies taking into account their natural resources, comparative advantages such as cheap and abundant labour, low level of alteration of ecological systems, ... etc are leaving this vital and promising sector between the hand of few national and foreign investors whom are interested in rapid and ephemeral financial gains at the expense sometimes of mid-term and long term benefits for the community of farmers and for the country as a whole.

3. The current status of organic farming in Morocco

Since the political independence of Morocco in 1956, the successive governments have elevated the agricultural sector to the first rank among its development priorities. The objectives declared by the more recent government could be summarized grouped in two main categories:

i. Economic objectives:

- Work towards making the agricultural sector more competitive preparing the country to meet the new challenges of the globalisation of economy.
- Diversification of commercial partners and the opening of new market opportunities for Moroccan products.
- The improvement of farmers' income and standard of living.

ii. Social objectives:

- Contribute to the food security of the country.
- Reduce or slow down the widening of the gap between the rich and the poor within Moroccan population.
- Contribute to the preservation of natural resources.

These priorities as defined by the ministry of agriculture in Morocco are among the measures to be taken by the state so the agricultural sector can play its role in a true integrated development plan. However, we don't believe that Morocco, as it is the case for other developing countries, had secured funds and promulgated laws and taken practical and courageous decisions to allow this to happen.

The status of organic agriculture in Morocco, which development in Morocco will contribute to reach partially all the objectives specified above illustrates our previous judgment. In fact, Morocco has all the ingredients necessary for the development of this type of agriculture, such as:

- Low use of chemical fertilizers and pesticides (less than 20% of cereal acreages are treated with herbicides), this means that a large amounts of this commodity is already free of all the banned chemicals in the certified organic agriculture, and that no conversion period is needed, all it will take is a marketing strategy. Much acreage of fruits and nuts had never been treated chemically, and the only fertilizers used have been always manure.
- Long growing season, with high solar radiations make possible the growth of any type of crops in Morocco, if water is available.
- The proximity of Morocco to a major market in West and central Europe.
- The abundant and very cheap labour, making Moroccan products highly competitive.
- The high integration between crop production and livestock in a large number of farms around the country allows the farmer to satisfy a large part of all his needs in manure.

The practice of organic agriculture as newly defined, and according to specific routine of management techniques, is relatively new in Morocco. It started in early nineties with the initiative of some European investors encouraged by all the advantages we specified above and that Morocco offers. The evolution of acreages devoted to organic agriculture was slow at the beginning, relatively more rapid after, but if the current constraints from the sector is suffering (cf. drawbacks and perspectives) persist, the future doesn't look too promising, unless the state takes measures to invigorate the sector.

According the EACCE (2007), and to our proper investigation, the acreages where certified farming is practiced (Table 2) increased from 200 ha in 1997 to 5 955 ha in 2007.

Table 2. Acreages devoted to certified organic farming in Morocco for 2006-2007 growing season (Acreages certified by ECOCERT, the main certification body operating in Morocco)

Crops	Acreages (Ha)
Olives	1 330
Citrus	184
Legumes	510
Aromatic and medicinal Plants	187
Caper	193
Roses for perfume	30
Saffran & vervain	21
Argan oil (extracted from spontaneously growing tree)	3 500 ¹
TOTAL	5 955

⁽¹⁾: Estimated acreage for 2006. The surface for the 2007-2008 was estimated to be higher than 10.000 ha.

Besides crops and fruit trees, we can add forest trees, such as argan, where about 3 500 ha is used to extract oil, and about 2000 ha of wild medicinal and aromatic plants.

Because of the difficulty to get information on farmers practicing organic farming from the certification organisms, the exact number of farmers certified to grow organic crops, fruits, spices, and medicinal plants is unknown. The organic farming producers are either Moroccans or Europeans, advised by European or Moroccan technicians.

Table 3. The distribution of farmers practicing organic farming in Morocco

Region	Legumes	Citrus	Olives	Aromatic & medicinal plants
Haouz ¹	****	*****	**	***
Souss-Massa ¹	****	**		**
Skhirat ²	*			
Azemmour ²	*			
Saïs ²			*	
Beni Mellal ²		***		
Taliouine ²				*

¹Our survey in the region; ² EACCE (Unpublished data).

The main areas where certified organic farming is practiced are mainly the Haouz, Souss-

The main areas where certified organic farming is practiced are mainly the Haouz, Souss-Massa, Tadla, Skhirat, Azemmour, and Saïs.

The quantities exported knew some highs and lows, but there is a tendency towards a slow growth of the export market (Figure 2). The products exported are dominated by legumes and citrus. The exports totalized about 7000 tons in 2007 (EACCE, unpublished data).

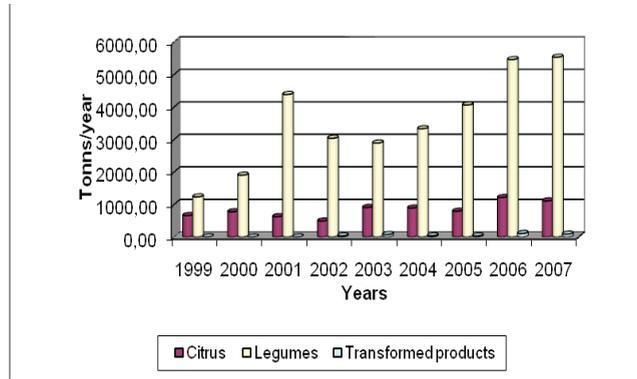


Figure 2. Evolution of Moroccan annual exports in organic products (tons). (Source: Adapted from DPV-MAPM, EACCE data, unpublished data)

The main products exported are citrus, fresh vegetables such as tomatoes, courgette, potatoes, sweet and hot peppers, eggplant, green peas, onions, carrots, garlic and cucumbers, fresh fruits such as olives, melon, and wild collection products, such as argan oil and spontaneous medicinal and aromatic plants.

The small quantities exported and the slow growth of the export market are partially due to low yields as a result of lack of technical know-how, the complexity of the certification process. However, the main reasons are to be incriminated to a short period during which the European market is open to Moroccan products and the absence of a vision by Moroccan authorities, which are supposed to illuminate the path and negotiate better deals for farmers. The European market is indeed open during periods where it is impossible to satisfy the European consumer by relying only on European production or that from prevailed countries such as Turkey or Israel. This situation doesn't rule out the shared responsibility by the farmers themselves. The latest are disorganized and each one of them is acting alone, thinking he is making a better deal with foreign partners by hiding prices and the clauses of the contracts he signs. We were also surprised by the fact that farmers hide even banal technical information from each other.

According to EACCE (unpublished data), the main countries importing Moroccan organic products are France, England, Germany, Hungary, Slovakia, Spain, Sweden, Switzerland, and USA.

4. The main constraints to the development of certified organic farming in Morocco

Despite progressive developments and access to seemingly growing international markets, the evolution of the organic sector in Morocco is facing major constraints. In addition to the lack of vision and the absence of any strategic planning by competent authorities within the Ministry of Agriculture, we can add a few other constraints limiting the development of this alternative, sustainable and promising type of agriculture, which, in fact, is not new to most Moroccan farmers. Most farmers in marginal lands and in the mountains are in fact practicing non-certified organic farming. The following are the major constraints:

i. Difficulties experienced by farmers during the conversion period.

These difficulties consist mainly on the lack of know-how, due to few trained professionals in the field, allowing them to execute the technical advice specified in the notebook of expenses

(“cahier de charges”) to be conforming to European rules. The Moroccan farmer has difficulties to adopt new approaches of farming he is not familiar with and for which he was not prepared. During this conversion period, yields are lower than earlier years, the farmer should sometimes invest in new equipments or bear the burden of the increasing needs in hand labour. This increase in costs and lower yields are not unfortunately compensated by higher prices, because the products are not commercialised as organic products during this period.

ii. The absence of Moroccan certification system

To export their organic certified products Moroccan farmers should satisfy the European certification specified in the decision made in June 1991 (CEE n 2092/91). According to this decision, made of 16 articles and 6 annexes, many conditions are to be satisfied during the production, processing and storage of organic products if these products are to enter the European Union market. The article n 11 imposes to the countries that are willing to export their organic products to European Union (EU) to have a certification process at least equivalent to that in application in countries within EU.

In response to this decision the administration charged of plant protection, and frauds repression (DPVCTRF), and the autonomous organism of control and coordination of exports (EACCE) were charged to elaborate a certification policy equivalent to that in Europe. A certification project was submitted to EU in 1993, but even if Morocco is not still included in the list of countries on the so-called «Positive List», the 1991 EU decision was revised twice to allow imports of organic products from Morocco and from other countries outside the EU, respectively until 2002 and 2005. However, to do so these countries should document that the products were produced under the control and supervision of European Certification Organisms. The Moroccan certification legislation is still under elaboration at this moment. According to the ministerial notice, the DPVCTRF will be charged of control during the production process, while the EACCE will be charged of control during conditioning, transformation and export.

Moroccan farmers have to pay services to European certifying organisms. The amount depends on the organism of certification and on the size of the farm.

iii. Technical constraints and lack of organic production inputs

The surveys we conducted recently in the Haouz and Souss- Massa regions (Denguir, 2001 and El Hardouze, 2001), showed the lack of technical references in terms of crop management in both regions. This is mainly due to the lack of national research programs to generate information responding to the needs of these farmers. The most problematic issues the farmers have to deal with in organic farming are:

a. Crop selection and planting dates. Farmers don't know which crops they can grow and during which period, so they can have access to foreign markets and benefit from interesting prices during the longest period.

b. Management of fertilization. In organic farming the use of synthetic fertilizers is partially or completely banned. Instead farmers should replace this conventional source of nutrients by naturally occurring compounds. Most farmers we surveyed in the Haouz and Souss-Massa region in 2001 (unpublished data) use manure, but most of them have no livestock on the farm or not enough to produce their needs in manure. So, in order to satisfy the crops demand in nutrients by applying purchased compounds such as Actif+, a natural organic fertilizer based on non pathogenic bacteria; Patentkali, a compound based on 28% potash and 8% magnesium, and 4-8-10, made of 4% natural nitrogen, 8% P₂O₅ from animal source and 10% K₂O, 3% MgO, and 20% organic matter. Most farmers practicing organic farming pointed out the high prices they pay for these imported compounds and the difficulties they are facing to get them on time. We should mention that these inputs are expensive partially because they are not

exonerated from import taxes.

c. Weed management. Because the use of synthetic herbicides is totally banned in organic farming, weed control consists mainly on:

- The use of preventive methods such as crop rotation, cleaning of field borders, planting of smother crops as a manure and for weed control,
- The rely on cultural methods such as delaying planting dates, transplanting instead of direct seeding, higher crop density, more competitive varieties, false planting, solarisation, mulching, composting of crop residues to kill weed seeds, filtration of irrigation water to prevent new infestations...,
- The adoption of hand weeding, mechanical and thermal control.

As it is the case in other Mediterranean countries, weed flora is particularly abundant in Morocco. According to our survey (unpublished data), most Moroccan farmers don't get proper equipment that would allow them to reduce weed population, and use few of the preventive methods mentioned above (none of the farmers surveyed in Souss-Massa use solarisation for weed control). Because most Moroccan farmers rely mainly on hand weeding, and since weeding made manually requires abundant and difficult to manage hand labour, the cost of hand weeding is therefore high, making weeding one of the important source of expenditure in organic farming.

d. Diseases and insects management.

The number of products that are allowed for use to control insects and diseases in organic farming is limited, which explains the high yield losses and poor quality due to limited control by the certified products compared to products the farmers used to apply in the past. The situation may improve in the future as farmers will gain experience in implementing an integrated programs to control insects and diseases based on preventive, cultural, and biological methods. However, this doesn't rule out the need for basic and applied research in plant protection to elaborate new and economic integrated strategies adapted to Moroccan conditions to deal with all crop enemies while respecting the certification requirements.

e. Organic seeds and seedlings.

Seeds and seedlings used in organic farming are not always certified. In this case, the farmer should proof the absence of the seed on the Moroccan market. If this is actually allowed by EU regulations, this won't be the case later. This means that Morocco has to invest in certified seed production if he is willing to continue exporting to the UE.

iv. Difficulties to export Moroccan organic products

We already showed that the evolution of the export of Moroccan certified organic products is slow. We don't see any signs of improvement in the near future if the producers don't get together to defend their interests, and if the Moroccan government doesn't help them elaborate better marketing strategies and to identify new markets and new distribution chains to reach more consumers within and outside Morocco. The few opportunities that are still open for Moroccan products may vanish, with the continuous progression of organic products in the Mediterranean countries members of the EU. In addition to the constraints mentioned above, we can add infrastructure problems for regular agriculture, which makes segregation of organic production even less likely.

5.Future perspectives

As it looks like in the present time, Morocco didn't take practical measures to promote organic

agriculture at large scale. The situation is becoming urgent, because of the rapid changes occurring in this sector in neighbouring countries in Europe and Africa.

Morocco has no other alternatives as to implement its own certification process. This certification process should however avoid any wrong doing in order to gain trust from other foreign authorities and consumers inside and outside Morocco. This means that competent and an independent certification body should be independent and shouldn't tolerate any fraud.

Morocco should put in place a strategy based on comparative advantages by promoting organic products that are difficult to grow elsewhere or that are labour intensive. Morocco would have difficulties to be competitive with more industrialized countries for crops that can be highly mechanized.

The government and producers should study the international market of organic products, so they will identify new markets, countries with higher demand, and periods of high demand for each product. Moroccan products should be on exhibits at international agricultural fairs. There is also a need to promote the consumption of organic food in Morocco itself. Moroccans have been always interested in consuming naturally grown products, called "Beldi".

There is an urgent need to elaborate an outreach program that is specific to each potential producing area within Morocco. The main regions to be targeted are the mountains of the Middle and High atlas, the Rif and Pre-Rif, the Haouz, Souss-Massa, and the plains of the Atlantic coast. A particular attention should be given to developing this type of agriculture in marginal lands (medicinal plants, animal products, neglected and alternative crops), and the mountains where the Moroccan government didn't invest much to improve the know-how of the population and its standard of living. Many crops are produced in these regions without any chemicals; they only need to be certified as organic products. This implies the encouragement of applied research in areas of plant nutrition based on organic fertilizers and cover crops, plant protection based on an integrated approach combining biological measures, bio pesticides, and cultural methods.

Because of the scarcity of organic fertilizers and bio pesticides and their high prices on the Moroccan market it is becoming urgent to offer incentives for the private sector to make these products more available and affordable. This can be reached through the exoneration of these products from import taxes, and the promotion of their production in Morocco.

The Moroccan government should think about offering incentives for farmers to grow organic crops, as it is the case in many regions of the world where farmers get substantial subsidies during the conversion period and beyond.

No progress can be made in any sector of the economy without an organization of producers, and agriculture in general and organic farming in particular doesn't make an exception. Farmers investing in organic agriculture should be strong by an organized association defending their common interests within the country and negotiating better deals for the import of organic inputs and export of their products.

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