

Capitalizing on the Competitive Advantage of Sustainable Agriculture in Egypt Sekem and Soil & More – a partnership for sustainable development

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ABSTRACT

Soil & More International BV further developed existing composting technologies towards a methodology to produce high quality compost at large scale, which has been successfully validated and verified as an emission reduction project through TÜV-Nord, an UNFCCC accredited certification body. Apart from its facilities in India, Mexico and South Africa, Soil & More established jointly with Sekem a project in Egypt where annually about 110,000 tons of compost are produced and almost 100,000 tons CO₂e are reduced. Through the revenues of the carbon credit sales, the compost is subsidized and can be made available for a broader market and land reclamation projects. In addition, through the development of carbon and water footprinting services, growers but also other stakeholders of the organic supply chain, are now able to quantify and communicate their footprint and capitalize in the market.

1. Introduction

According to latest FAO numbers the worldwide average availability of arable land per person reached 2137 m² per person in 2007 where it was 4307 m² per person in 1961. This is of course caused through the rapid growth of the world's population from 2 to almost 7 billion people in the last 50 years. But due to non sustainable agricultural practices such as over fertilisation, intensive monocultures etc.. each year about 12 Mio. hectare of fertile top soil are lost which only speeds up this trend. Only synthetic fertilizers and the related nitrous oxide emissions contribute with almost 8% to global warming. The entire agricultural sectors emissions accumulate to 30% of the global greenhouse gas emissions taking into consideration the CO₂ released through the deforestation which is necessary to compensate the loss of arable land due to erosion caused by non sustainable farming. In development countries the agricultural sector consumes more than 70% of the available fresh water sources, while specifically in these regions, potable water is one of the scarcest resources.

Climate change, food and water security, biodiversity animal welfare, jobs, education, peace all these issues are directly or indirectly linked to agriculture, meaning irresponsible agricultural practices present a threat to our natural as well as socio-economic environment. On the other hand, adapted and sustainable farming methods have the capacity to tackle those issues by not only maintaining but developing our planets most vulnerable resources.

Sensibilised through recently published reports of all leading business consultancy firms such as McKinsey, Boston Consulting Group, Ernst & Young etc. many large scale global players such as Walmart, Nestlé, Unilever, Starbucks, Tesco, Carrefour, Rewe discovered that more and more consumers start to care about the environmental and social footprint of a product: fair, organic, CO₂, water. The challenge for the organic movement is to identify and develop the differentiation criteria, the uniqueness of the sustainable excellence of an organic product compared to the often single issue sustainability claims for multi national corporations.

The Sekem initiative in Egypt and Soil & More International BV took the lead and developed a scaleable project and business model where the competitive advantage of sustainable agriculture regarding climate change, water management, soil fertility and food security can be measured and proven.

2. Sekem – an Egyptian Initiative

In 1977 the Sekem initiative was founded by Dr. Ibrahim Abouleish, about 60km northeast of Cairo in the Egyptian eastern desert. His vision of integrating economic, cultural and social activities into a holistic, sustainable development project was anchored from the very beginning in the principles of biodynamic farming.

Since then, more than 400 small and medium sized growers joined the Egyptian biodynamic association and supply Sekem's processing companies with high quality biodynamic raw materials. Under the Sekem Group, the following 8 companies were established. Atos, produces plant based pharmaceuticals, food supplements and health care products. Naturetex, manufactures ready-made garments primarily for babies and school children. Libra manages Sekem's own farms and composting facilities. Mizan produces grafted vegetable plant seedlings, Lotus processes herbs and spices for teas and food and cleans, sorts and packs a wide range of cereals. Hator manages the supply-chain of Sekem's fresh fruits and vegetables and Isis produces a wide range of foods and drinks, specifically for the local and regional market. From the beginning it was the intention to develop a local organic market in Egypt for which today represents almost 70% of Sekem's turnover. During the last 30 years, Isis became a well known brand in Egypt, available in most local retail chains and health food shops. The quality and values communicated through and associated with the Isis brand represent Sekem's vision: it stands for healthy food, environmental friendliness, professionalism and state-of-the-art performance, fairly traded and produced, supporting sustainable development from soil to the consumer.

Apart from its agricultural and commercial activities, the Sekem Development Foundation was established, which is the umbrella organization for all Sekem's cultural activities such as a kindergarten, a school, a hospital, a vocational training centre, an education centre for handicapped and underprivileged young children, the Heliopolis Academy and Heliopolis University. Beside the 2,000 employees working in Sekem's companies, directly benefiting from these services, about 45,000 people from the neighboring villages have access to these educational and health care services provided by the Sekem Development Foundation. The recently established Heliopolis Academy and University carries out research and development projects and trains students on sustainable development in the field of medicine, agriculture, arts, economics and engineering.

For its comprehensive efforts, Sekem was awarded with the Right Livelihood Award (Alternative Nobel Prize) and was rewarded as an outstanding social entrepreneur at the World Economic Forum for being a sustainable business model for the 21st century. Also locally and regionally Sekem advises various public and private institutions in the field of sustainable development, specifically on agriculture.

In order to realize its development targets, Sekem recently developed about 1500 hectares of plain desert on the Sinai peninsula, in one of the oases in the western desert and in the Nil valley in upper Egypt. For the first time in Sekem's development history, new projects are developed and managed decentralized, spreading the vision and experience of Sekem in the region.

Including these new land reclamation projects, over 4,500 hectares are now cultivated in Egypt applying biodynamic farming methods, providing healthy and environmentally friendly food primarily for the local market but as well for export markets in Europe, USA, Asia and Africa.



Agricultural Production at Sekem

Cultural Activities at Sekem

3. Soil & More International BV

Soil & More International BV was established early 2007 to advise on, establish and manage medium to large scale composting facilities in the developing world.

Soil & More was founded initiated through Eosta, a Dutch trader for organic fruits and vegetables, as more and more suppliers of Eosta continued to ask for more and better quality compost for their own organic farms but also for the neighboring conventional farms. During the last years, more and more conventional, large-scale growers, facing decreasing yields due to depleted soils from intensive chemical fertilizer applications got interested in this approach and started to ask for this high quality compost. Through its technical assistance to grower programs Eosta always facilitated technology transfer to growers also in the field of composting and soil management but this rapidly increasing demand went beyond a technical assistance capacity – Soil & More as a separate company was established.

The composting technology Soil & More applies is based on Dr. Ehrenfried Pfeiffers controlled microbial composting methodology (CMC) which tackles various challenges. Applying a unique compost inoculant in an aerated, controlled microbial compost process, the different input materials, mainly farmyard wastes such as greens, wood and manures are decomposed and transformed into a stable humus complex within 6 – 8 weeks. This high quality compost product provides the plants with all required nutrients and micro-elements. Due to the special humus structure the water holding capacity of the soils is increased up to 70% which is an important added value for growers in arid and semi-arid areas. Initiated through the inoculant, the final compost contains millions of micro-organisms, a tightly knitted soil-food-web, creating a natural immune system for the plant, acting as natural predators against most known soil born diseases and other pathogens. This disease suppression is one of the outstanding unique selling points of Soil & More's compost. As stated below, various studies did prove that soils, enriched with compost not only have the capacity to reduce soil emissions but to actually act as a carbon sink as these soils store carbon.

Besides the compost production and selling activity, Soil & More submitted its composting technology for approval as an emission reduction methodology to the concerned United Nations authorities. Following this, Soil & More's initial partner project at the Sekemfarm in Egypt, was taken through the entire cycle of assessment, 3rd party validation and verification required for emission reduction projects. Finally this project, implementing Soil & More's composting technology was approved by TÜV-Nord Germany as a greenhouse gas emission reduction project according to the guidelines of the UNFCCC. Soil & More was the first company who has developed a technology for this type of composting that qualifies for generating carbon credits.

That means Soil & More can offer a cooperation model for the production and sales of high quality compost but provides at the same time a technology which qualifies as a emission reduction methodology under the regulations of the Kyoto protocol, generating an additional income stream for the project, as the CO₂e emissions reduced, can be sold as carbon credits to offset companies and products emissions.

So far, Soil & More has established composting facilities with Sekem in Egypt, with Fairtrasa in Mexico and with Reliance in South Africa, to produce and sell high quality compost to small, medium and large-scale farms. All three projects are successfully registered as emission reduction projects. Together with its local partners Soil & More annually produces worldwide over 200,000 tons of compost and by doing so, avoiding more than 150,000 tons of CO₂e per year. Additional projects are under development in Brazil and India.

Since early 2008, Soil & More offers as well carbon footprinting services to agricultural producers, processors, traders and retailers around the world: AlnaturA, Dole, Dovex, EOSTA, IFOAM, Lebensbaum, Ritter Sport, Sekem, Weleda to mention just a few. Like the carbon credits obtained from organic composting, also the carbon footprints carried out for above mentioned companies and organizations are certified by TÜV-Nord according ISO standards, the WRI/WBCSD and PAS2050 guidelines. Since mid 2009, Soil & More is working on its first water footprinting assignments. In order to maintain and further develop these innovative products and services, Soil & More cooperates with various leading research institutes such as Louis Bolk Institute, FIBL, Heliopolis Academy and other experts dedicated to the topic of soil science, composting, emission reductions and footprinting.

4. Composting, emission reduction, footprinting – joint efforts for sustainable development and responsible competitiveness in the agricultural sector

Sekem and Soil & More took the initiative to capitalize on their regional and international experience and developed and implemented a business model, where they jointly offer products and services in the field of composting, soil, carbon and water management to a broader audience.

As one of the first, the jointly managed composting facility at Sekem was validated and verified as an emission reduction project by TÜV Nord from Germany. Since May 2007, Sekem's composting facility annually avoids about 60,000 tons of CO₂e. These carbon credits are used to offset the carbon emissions of a wide range of regionally produced agricultural products, generating a second revenue stream for the composting business, allowing Sekem to further develop and offer the compost at competitive market prices.

Currently there are 2 large scale composting facilities operational in Egypt, managed by Sekem and Soil & More which produce about 110,000 tons of compost and generate about 100,000 carbon credits per year.

At the same time Soil & More's standardized carbon footprinting methodology was implemented on several agricultural supply-chains, assessing the products carbon footprint and highlighting emission reduction potentials. So far a full product cycle carbon footprint assessment has been carried out for the following products of Egyptian origin: Beans, Citrus, Cotton, Flowers, Fresh & Dry Herbs, Grapes, Peppers, Potatoes, Tomatoes and Strawberries. Others are in progress. More and more large scale conventional farming businesses decided to gradually replace their synthetic fertilizer application with compost in order to lower their products carbon footprint. High quality compost has proven to be the more competitive agricultural input compared to chemical fertilizers, which not only force farmers in to dependency of multi-national companies but especially in times of rising oil prices turn out to be an in-efficient solution as application rates increase while yields are not improving proportionally.

Sustainable soil management became the key factor for long term competitive farming strategies. Healthy and vital soils promote healthy plants, stable and increasing yields, secure income, food production, considerably reduce the amount of water needed for irrigation and produces healthy food for healthy people.

Together with the Dutch Louis Bolk Institute, Sekem and Soil & More experts carried out a study on carbon sequestration and storage in organically managed soils on reclaimed desert farms in Egypt. Through continuous compost applications, the carbon stocks in the assessed soils accumulated to over 26 tons of carbon per hectare over a period of 30 years compared to the originally plain desert at neighboring sites. In line with other studies already during the first 5 years a rapid increase of carbon stocks was discovered. This small scale research project has proven the assumptions made by most of

the leading climate change institutions that adjusted soil management is a major solution to mitigate climate change.

Currently this pilot trial is being scaled up towards more farms, incorporating the analysis of a change in the water holding capacity, also comparing carbon stock and water holding capacity development in organically managed soils with the once of conventional farms.

Soil & More and Sekem were asked to contribute to Egypt last competitiveness report with a chapter on the performance of Egypt's agricultural sector regarding climate change.

More and more medium and large scale agricultural producers and exporters receive from their overseas importers and retailers the request to transparently communicate and reduce their carbon footprint.

Sekem and Soil & More now consult these companies in order to comply with these new environmental regulations which became an issue of competitiveness and market share. In order to remain competitive and to secure future market shares the trend is clear, development towards sustainable agriculture.

Soil & More and Sekem's joint initiative has been identified and acknowledged to be a scaleable solution to prove the capability of the agricultural sector to remarkably contribute to the mitigation of climate change. Both Sekem and Soil & More are now advisors in several committees such as COP15, the World Future Council, Seal the Deal etc. on the topic of agriculture and climate change.

Together with their worldwide partners in the organic agricultural movement, Soil & More and Sekem did and will continue to implement this concept and promote and communicate the importance of healthy soils to contribute to sustainable soil fertility and food security, the mitigation of climate change and the reduction of water usage in agriculture on producer and consumer level. The related social-economic benefits are clear.



Compost Production at Sekem and Consultancy



Land Reclamation in Egypt: Inauguration Event, Compost application and first harvest after 14 months

5. Conclusions

Our current agricultural activities are one of the main reasons for climate change, water scarcity, food insecurity, migration and other socio-economic problems but the sustainable farming offers a wide range of solutions to these challenges. Organic farming has been pushed for years to be a solution for a niche market, accessible only for a selected group of people who can afford to buy organic products. In times of peal oil, climate change, water scarcity, soil erosion and insufficient food supply, the question is not which agricultural system provides the cheapest food today, where all environmental costs are still externalized, but the real question is which system is able to provide healthy food on the long run, guaranteeing stable yields, low emissions, less water consumption in marginal areas where the population growth and demand for food is the highest? It is time to act for the organic movement. There are measures to assess, reduce, improve and communicate our footprint beyond carbon and water. In times of shrinking resources it's not enough to sustain the planet, we need to develop the resources in a sustainable way and organic agricultural offers various solutions to do so. It is possible using existing tools such as CDM, carbon and water footprinting, sustainability reporting. None of these tools are perfect or complete, but they are good enough to start and to be further developed.

It is of utmost importance to promote and communicate success stories, organize educational events and practical training workshops to further spread the concept and know-how and to allow development partnerships to happen.

Together with its worldwide partners, Sekem and Soil & More currently produce over 200,000 tons of compost per year and avoid 150,000 tons of CO₂e annually. That's not enough. The know how is there. The only way to success is to setup cooperation's between private sector companies, governmental and non-governmental organizations and the civil society, the consumer to secure further product development, implementation and marketing. The environmental and socio-economic challenge is there as well as a consumer willing to support. It's time for partnerships.

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