

A colonization through seeds in the oases of Tunisia

By Kobe Hautekiet and Myrah Vandermeulen, in collaboration with Meriam Aissaoui and Olfa Hanneche

We are in Chenini, the only maritime oasis in the world, near the city of Gabès in Tunisia. For centuries, agriculture has been an essential part of the oasis. The Oasis agriculture in three 'floors' created a microclimate: palm trees (the highest floor), fruit trees such as pomegranates as second floor, and finally the cultivation vegetables on the ground surface. Together this formed a balanced system. Moreover, the local varieties of crops were well adapted to the Tunisian climate. Water was abundant, provided by natural springs. Farmers had no shortage of raw materials, nor of seeds, which they themselves produced year after year by reserving plants and land for seed production. In this way, they provided the entire region with food, and they lived well. This was life in the oasis, until not so long ago.



On his land in Chenini, Amm Salah dries plants for seed production. (Photos by Myrah Vandermeulen)

The city of Gabès is now one of the most polluted places in Tunisia (at the service of industrialisation and economic development), mainly due to the [Group Chimique](#), which processes phosphate into pesticides and dumps its waste into the sea. Industry and agro-industry are causing a shortage of water, so that farmers in the oasis are now obliged to pay for irrigation - previously unthinkable. Small farmers are being forced out by agro-industry, and the introduction of hybrid seeds increased their dependency, bypassing local seeds. Some experience the current situation as a new wave of colonization: an agricultural colonization with seeds. Others call it '*une guerre des semences*'; a war over seeds.

Effects of colonisation

Dependence within Tunisian agriculture, for example because of export-oriented trade and colonial power relations, is nothing new. During the French colonization (1881-1956), the *colons* looked down on local, traditional knowledge. Farmer-settlers were attracted with promises about Tunisia's natural wealth, while colonial agricultural schools served the objective of making the most efficient use of the country's resources. The colonization had an enormous impact on Tunisian agriculture, both physically (e.g. the immense increase in vineyards) and psychologically (the undervaluation of traditional knowledge). Even after the colonization, local *savoir-faire* (know how) is still seen as inferior.

Introduction of hybrid seeds

After Tunisia's independence in 1956, the state embarked on a modernisation project with a focus on industrialisation and urbanisation. The postcolonial state promoted a 'Green Revolution', promoting mechanisation and industrialisation of agriculture, at the expense of the small farmer. The neo-liberal structural adjustment programmes (in the 1980s and 1990s) contributed to this. Once again, the focus was on 'modern' agriculture. Capital was invested mainly in export-oriented agribusinesses. The increased competition over resources would have

a huge impact on the oasis.¹⁷ The arrival of the agro-industry thus marked the beginning of the end of the balanced oasis system.

Moreover, with the arrival of agro-industry, 'hybrid' seeds were introduced, starting in the 1960s and more so from the '80s and '90s on. These improved seeds were initially offered to farmers free of charge, with promises of higher production and less work. A first harvest did indeed provide the promised quantity. The second year however, the production was considerably less, and the third year the seeds didn't yield anything. This is because hybrid seeds, while combining the best qualities of two parent plants, are unable to pass these qualities on to the next generation. Farmers therefore cannot reproduce these seeds themselves, and are obliged to buy new quantities. This is how farmers fell into the trap of dependency, and how local varieties systematically disappeared.

Agriculture and state today: ban on local seeds

The revolution of 2011, despite her origins in rural discontent and her call for dignity and bread, did not bring much improvement in the relationship between small farmers and the state. Trust is lacking, because the state has never worked for the small farmer. To the contrary, the (implicit) ban on selling local seeds demonstrates this yet again

In a small shop in the centre of Gabès, where the greenery extends to the outside, a seed-seller tells us about the evolution of his shop and the use of seeds. Previously, when seeds were simply exchanged among farmers, there was no need for shops like his. Afterwards, in the years following the emergence of seed shops in the 1960s, these shops mainly sold local varieties. Today, however, the seller is no longer allowed to offer local seeds. The law obliges him to sell only seeds from the official catalogue, which contains only patented, mostly imported varieties. This way, the state confirms the existing dependency relationships. The seller himself criticizes this and emphasizes the advantages of local varieties. Nevertheless, he respects the will of the

.) -- Carpentier, I., & Gana, A. (2017). Changing agricultural practices in the oases of southern Tunisia: conflict and competition for resources in a post-revolutionary and globalisation context. *Oases and Globalization*, 153-176.

major players and the law - after all, he has to support his family. It gives the man "*mal au coeur*" (heart pain).



Seed shop in the Souk Jara, in the centre of Gabès.

In addition, the Ministry of Agriculture favours large agricultural companies. In order to attract investors, drilling for groundwater in the steppe— while it used to be forbidden – is now allowed to agricultural companies. In order to be allowed to drill (up to 200 metres deep), the investor must have a certain amount of capital and land at his disposal. This condition excludes small farmers whose oasis water sources are drying up, as a result of this policy. Protecting the oasis is not a state priority. Today, the 'modern' agro-industry is largely in the hands of investors from other regions who, in contrast to traditional agriculture, put profit before the local community. They therefore focus primarily on exports, at the expense of local food sovereignty.

The role of the state is ambiguous. This is clear, for example, from the contrast between the Ministry of Agriculture and the Ministry of the Environment, which are often diametrically opposed to each other. The first ministry promotes agro-industry, the second sustainable agriculture and local varieties.

In the spotlight: Amm Salah and his traditional knowledge (*'savoir-faire'*)



Amm Salah demonstrates his know-how.

Part of our research was a visit to Amm Salah: Chenini's most famous farmer, who is quoted in [articles](#) and starring in several [documentaries](#) as well as the film '[Couscous](#)'. The brave farmer of 79 years old, always with a red *Chechia* on his head, is a regular guest at agricultural conferences, where he goes to talk about his work and to exchange seeds. Salah only cultivates with local seeds, produced by himself. Under his hat, he guards his unique treasure of 'savoir-faire'. The pride he feels shows from the exhibited portraits and certificates, and the tour around his garden he offers us.

All crops on Salah's plots are local varieties. Where his way of working used to be the rule, this is now unique. Despite his limited income, Salah resists the call of hybrid seeds, his main motivation being the love for his profession and the valorization of traditional knowledge. He emphasizes the advantages of working with local varieties: they are better adapted to soil and

climate and thus provide more stability. Moreover, the quality of its products is better than that of imported seeds. Of this we were convinced after tasting his fresh lettuce.

Through word-of-mouth advertising, both consumers and farmers hear about Amm Salah. During our visit, several neighbours came by to buy vegetables. Smiling, they told us how at least they can be sure that these products are really organic - although without any official label like the ones existing in Europe. Farmers too regularly pass by here. They come from different regions to find seeds that they no longer have at their disposal. Salah keeps all these seeds in his storeroom (a true treasure room!). For Amm Salah, swearing by local seeds has also become an ideological choice - a conscious rejection of dependency relations in agriculture. The crucial question is whether his model, a model from the past, could also be a model for the future?



Amm Salah working in his colourful garden.

Motivations for the shift towards hybrid seeds

The discussed agricultural shift did not happen overnight. In addition to state interventions, several other factors also pushed farmers towards hybrid seeds.

Market pressure

Varieties were traditionally planted according to the seasons. Today, however, the market no longer has patience for this. Throughout the whole year there is pressure to produce according to demand. Hybrid seeds can be planted at any time and are therefore suitable for market demand, in contrast to local seedfast varieties (with an infinite reproductive cycle) that are seasonal in nature.

In addition, consumers are increasingly focused on the appearance of fruits and vegetables. Hybrid seed fruits meet these aesthetic requirements. Aisha, a local teacher who told us about her experience as a consumer, emphasizes the difference between the past and the present: "The presentation is nicer now, but inside the fruit rots more quickly".

Reduced labour costs

Hybrid seeds require less labour, because they are harvested faster. "You can harvest imported, hybrid seeds after only 70 days," says Hédi Hamrouni, a farmer from Chenini, "while it takes 4 months for local seeds". Also, as the chemicals that come with hybrid seeds reduce weeds, farming becomes less labour-intensive. Hiring labour is no longer necessary, especially when working with seedlings. A result is that fewer people get into this work and its specializations, and valuable knowledge is lost.

Pollution

Pollution from the phosphate plant also forces farmers to use hybrid seeds. In Chatt Essalam, a farmer whose field is less than 500 metres from the factory, tells us about the impact on his harvest. "*C'est comme si on jouait au lotto*": when the wind is wrong and the poisonous factory clouds blow towards his field, that field can go from green to yellow, or black, in one night. This

forces him to re-sow, often out of season, and this is only possible with nonseasonal hybrid seeds. Moreover, in order to have a good harvest, these farmers are forced to use chemical substances. It is ironic that the pollution of the factory obliges them to pollute their fields even more with pesticides. They are forced into a dirty vicious circle.



Groupe Chimique Tunisien, right next to farming fields.



Two brothers in Chatt Essalam explain us their situation.

Consequences for life in Chenini

Farm life in Chenini has changed enormously in recent decades. Local knowledge, including knowledge about seed production, was lost. Farmers are dependent on corporate seed sellers and chemical products. Small farmers were pushed out of the system, or forced to scale up. A differentiation between farmers took place, with a few growing at the expense of the others. The small farmer who survived, did so as a part-time farmer and has a second job elsewhere. Those who oppose agricultural industrialisation and continue with local seeds are rare. They barely make a living.

Because of these difficulties, young people are moving away and land is left fallow. The remaining farmers are perhaps the last generation to work here; after them, the land will fall to agro-industry, or will degenerate.



Dead palm trees caused by draining palm juice.

Consequences for ecology

From an ecological point of view, the use of hybrid seeds is disastrous. This because of the prescribed use of chemical nutrients and pesticides. The seeds were created for cultivation in for example North America, and therefore not adapted to Tunisian soil and climate. A whole range of products is needed to make this work. We see this at the seed shop in Gabès: in addition to the cans of seeds from the Netherlands and the USA, the containers of pesticides (including the ubiquitous Monsanto) stand out. The products on display confirm that imported seeds never come alone, but always in 'packages' with the necessary chemical substances.

The abundant use of chemicals causes soil salinization and groundwater pollution. Moreover, monocultures and hybrid seeds are very vulnerable. They are created in laboratories and are

therefore not adaptive to changing climatic conditions. And this while - in view of climate change - the need for a resilient agricultural sector is only growing.

In the spotlight: Ammar Hamrouni and the combination of local and hybrid



Ammar shows us a (hybrid) lettuce on his field in Chenini.

Ammar Hamrouni is an organic farmer. Already when he was little, he worked the land together with his father and mother, and now he lives on his driver's pension and his agricultural produce. Ammar has a penchant for local species, but out of necessity he works with both local and imported seeds. Hybrid plants can be harvested twice as fast, with more profit. He buys hybrid seeds among others for specific non-local vegetables that are very much in demand, such as beetroot. He also works with seedlings, which saves time and effort. However, his hybrid plants, such as salads, do lose quality, and he has to buy additional seeds every year.



In his house, Ammar keeps a big collection of dried local seeds.

Ammar talks about local varieties that were lost, including a particular cabbage with a very high yield. He has been trying to find this variety; but so far he only has the memory. He exchanges local seeds that he has secured with other farmers in the area. "And that is at the same time how I advertise my vegetables," he laughs. Like Amm Salah, he sells his seeds through word-of-mouth advertising. Organisations like the *Association De Sauvegarde De l'Oasis De Chenini* (ASOC, see below) also buy from him. Yet he doesn't think his clientele will continue to grow. There is hardly any encouragement to work with local seeds, not from civil society, nor from the state.

In his garden we see a banana tree, which surprises us as we hadn't seen any before. Ammar tells us that Chenini used to be full of bananas. However, bananas require a lot of water. The current water shortage is an additional cause for the loss of local varieties, including melon and peach varieties. We are also told that in the 1970s, farmers themselves destroyed peach trees

to replace them with hemp plants, to meet the enormous demand from Libya. The loss of varieties is clearly also facilitated by the growing focus on export markets and market demand.

The future is unclear. Ammar's children do not work in the field and have left Chenini. "With another job you earn 10 times more". A long time ago, 50 farmers came together to buy this land from some French occupiers. Their descendants (including Ammar and his brothers) are still the owners. What will happen to this shared family inheritance? Is Ammar the last generation?

Sensibilisation initiatives

The greatest challenges for the rural community around Gabès are the disturbed oasis ecosystem and the dependency in which farmers find themselves. Now that we have identified the problems, it is time to search for solutions. How can traditional agriculture be prevented from disappearing from Tunisia? How can the exhausted oasis be saved?

One of the negative consequences of 'modernization' is the disappearance of traditional knowledge. This savoir-faire is essential to maintain the possibility of alternative agriculture. This is why it is crucial to make older and younger generations aware again of the importance of local varieties and sustainable agriculture. Different organizations in Chenini are dedicated to this.

[AFCO](#) (Association Formes et Couleurs Oasiennes) focuses on raising awareness among young people through education with art projects. AFCO wants to give them the necessary knowledge and motivate them to work the land again. The sought change of mentality goes hand in hand with a more sustainable agricultural sector.

[ASOC](#) (*Association De Sauvegarde De l'Oasis De Chenini*) works on the protection and restoration of the oasis. The organisation was founded with the aim of recognising Chenini's oasis as a national patrimony. It remains to be seen, however, whether UNESCO's approval will

be obtained before the disappearance of the oasis itself. ASOC supports traditional agriculture, including the use of local seeds, and organises training sessions on ecological agriculture. By now, almost every farmer in the region has passed by ASOC at least once. ASOC itself preserves local fruit varieties in their *Jardin de la Biodiversité*.



The oasis for which ASOC and AFCO are fighting.

For ASOC, helping farmers is a means towards the end of protecting the oasis.¹ This is precisely why some farmers show a certain distrust of the organisation, as they see its priorities do not lay with them. Moreover, there are no farmers represented on the board of ASOC. Ammar Hamrouni is of the opinion that the management of ASOC knows nothing about agriculture and is too bureaucratised. According to Ammar and a few others with whom we spoke, ASOC needs to work more closely together with the farmers themselves.

¹ This is a priority that can be criticised. AFCO aims to protect the oasis, and does not always put the welfare of the farmer first - although this is usually linked. For example, they sometimes give seeds of local varieties to farmers without informing the farmer about the crop in question, thus misleading farmers 'for the benefit of the oasis'. Nature is placed above mankind. But isn't the human-nature contradiction outdated by now?

National Gene Bank

The Tunisian [National Gene Bank](#) (BNG) is part of the Ministry of the Environment and promotes the valorisation of local varieties. This objective is very different from the priorities of the Ministry of Agriculture, which prohibits the sale of seeds outside the official catalogue and thus de facto criminalises the sale of local seeds. The Ministries work very separately from each other.

The BNG is working on a catalogue of local varieties in order to formalize them as to fit within the policy of the Ministry of Agriculture. It receives help from local associations (including AFKO). The aim is that local seeds can soon be sold in official shops. At the moment, farmers can already ask the BNG for seeds. They do not have to pay for this, but return the same amount of seed the following year. This way they can keep seeds at the bank.

There is a lot of potential in the Gene Bank, but one of the obstacles is the lack of trust among farmers. For obvious historical reasons, trust in state institutions is rather rare in Tunisia. In addition, farmers themselves must approach the BNG, which only has an office in Tunis. This can be too much of a barrier. To realise its potential, therefore, an alternative strategy is needed, with more budget and manpower, so that the BNG itself can go to the farmer.

In the spotlight: Zakaria Hechmi - plan for the future?



Zakaria tells us about his life in Chenini, and his motivation to teach the youth the value of agriculture.

Zakaria is one of the farmers who, in accordance with the work of these associations, wants to work with local seeds. Frustrated by his previous job, he decided to dedicate himself into farming, in the footsteps of his father. He followed various trainings, and went to work. Zakaria has a son to support; income security therefore is an important motivation. Nevertheless, he manages to work mainly with local seeds, inspired by the argument that *"imported seeds are like drugs"* - once you are addicted... Together with his father at the time, Zakaria did not believe the fable of the big importers, who tempted farmers with free seeds and pulled them into a circle of dependence. He describes this history as a *'guerre aux semences'* - a war on seeds.

Zakaria is driven by a personal love for the trade, but also by the goal of obtaining better quality for himself and for the consumer. Another motivation is to pass on knowledge. Hence his passion to receive and teach students and schools. In the future, Zakaria wants to use even

more of his land and time for the production of local seeds. The story of Zakaria is a possible blueprint for a sustainable future for Chenini.

ALECA Free Trade Agreement

This sustainable future requires major, profound changes. Otherwise, the efforts of individuals and associations will remain without result. Yet the Tunisian state does not alter its priorities. On the contrary, talks are being held on a free trade agreement between Tunisia and the European Union: [ALECA](#) (*Accord de Libre-Échange Complet et Approfondi*). This accord would facilitate free access to the Tunisian market for European companies and would most likely be at the expense of the small Tunisian farmer. Dependence would only increase and food sovereignty decrease, while the opposite is necessary for the survival of farmers, local varieties and oases.

Free trade agreements fit within the dominant food regime that strives for food security through market forces, large scale monocultures and modified seeds.² However, [large-scale agriculture](#) is not the only, nor the best way to feed the world, as is increasingly asserted. A reversal of priorities is needed, and a possible alternative is the principle of food sovereignty. This principle puts independence and fair food distribution first and strives for a sustainable balance between the survival of local farmers and the protection of the living environment.

Food sovereignty, and seeds as public good

'Food sovereignty' is primarily about self-sufficiency. But, it goes beyond that. Food sovereignty is about autonomy and control over local/regional production and consumption. It is about considering access to food and land as a human right. In this way, the movement behind food sovereignty formulates a sharp criticism of current market forces. As a model, food sovereignty is opposed to the dominant corporate food regime, with its focus on export and large scale, and

2 McMichael, P. (2014). Historicizing food sovereignty. *Journal of Peasant Studies* 41(6): 933-957.

states that small-scale, sustainable agriculture can feed the world better than industrial monocultures.³ This is certainly true if we look at the long duration.

A Tunisian organisation dedicated to this is [OSAE](#) (*Observatoire de la Souveraineté Alimentaire et de l'Environnement*). Although in Tunisia half of the population is fed by foreign products, according to OSAE the country has enough resources, labour and knowledge to provide for itself. It is absurd for Tunisia to export its own high-quality products in order to import basic products such as couscous, which is a traditional Tunisian staple. Consequently, OSAE is asking [not to sign the ALECA agreement](#) and to instead invest in Tunisian agriculture.

Control over seeds is an essential part of food sovereignty.⁴ Seeds, as an essential resource for agriculture, are a [symbol of freedom](#). They must be public good, not patentable commodities, in order to avoid that seed giants like Monsanto claim ownership rights. Farmers must be able to reproduce, exchange and store seeds themselves. The placing of a [genetic lock](#), in order to make seeds sterile, is such a principle from the agricultural industry that is being denounced within the food sovereignty movement. Finally, information on useful technologies and strategies should be freely available.

3 Ibid.

4 Kloppenburg, J. (2010). Impeding dispossession, enabling repossession: biological open source and the recovery of seed sovereignty. *Journal of agrarian change* 10(3): 367-388.



Bees in Ammar's garden

What are we waiting for?

Organisations such as OSAE, but also ASOC and AFCO, oppose the current destructive agro-industrial system and offer an alternative with their focus on local seeds, small-scale environmentally friendly agriculture, and the principle of food sovereignty. But also individual farmers such as Amm Salah, Ammar Hamrouni and Zakaria Hechmi are part of this important movement. With their perseverance they give shape to alternatives. Working with local seeds is an essential component.

What lessons can we learn from this? In what ways can these Tunisian farmers inspire the much-needed global transition away from agro-industry with its one-sided focus on profit maximization, and away from (market) dependence? Have we not yet reached a tipping point? The state should assume its responsibility by prioritising the safeguarding of ecosystems and the promotion of local varieties (e.g. through subsidies for small farmers).

If the intrinsic value of people, life and biodiversity is not enough to convince us, Tunisian farmers also show that sustainable, small-scale agriculture is more resistant to - and contributes less to - global warming. Should we wait for the complete loss of the unique oasis of Chenini, and many other valuable ecosystems elsewhere in the world, as a result of global warming, before taking alternatives seriously? Or, do we start the (seed and food) revolution now?



Zakaria is working on alternatives for future generations.

Author's note

This article is based on fieldwork performed in the oasis of Chenini from 9 to 15 April 2019. This happened in a team with Meriam Aissaoui, Olfa Hanneche, Kobe Hautekiet and Myrah Vandermeulen. This collaboration between two Tunisian agricultural engineers and two Belgian political scientists gave us a unique perspective. With the help of Meriam and Olfa, all interviews and focus groups went very smoothly. We would like to express our gratitude to them, as well as to all the interviewees (farmers and others) who made time for us.