

## Chickpea: Linking soil fertility and market demand in Ethiopia



Ethiopia is ancient and enduring but recently major landscape scale changes are transforming the face of the country. “Three years ago, when you drove past, the countryside did not look like this. All these darker brown squares are where chickpea has been harvested,” explains Tsedeke Abate, Scientist at ICRISAT-Nairobi. “You can really see how much acreage is being devoted to chickpea today. Ten years ago this was all mostly teff. “Teff, a small-grain cereal, is the primary ingredient of injera – the bread that accompanies almost every Ethiopian meal. “What we are seeing is a shift from cereals to legumes on a large scale and it is the market that is responsible for this,” Abate says.

Unlike other countries where farmers routinely clear rangeland or chop down forests to turn them into new farms, Ethiopian farmers do not have that option. Most arable land is already in use. So if farmers are to make a better living from their existing resources they must find options

that pay better. Chickpea is one such recently discovered opportunity. A few years ago, all the legumes combined were grown on about 10–12% of a farmer’s land in central Ethiopia. Today legumes represent about 50% of a farmer’s land.

### **Market demand, variety adoption, and soil fertility**

A farmer for 26 years, Temegnush Dhabi in East Shewa has recently been doing things differently. “I always grew chickpea, but the traditional varieties,” Dhabi says. “But for the last four years I have been growing the modern white chickpea varieties. There’s no question in my mind. I will keep growing these new varieties.”

The new varieties of chickpea Dhabi is referring to are kabuli chickpeas rather than the smaller-seeded brown desi varieties. There is a huge worldwide demand for kabuli chickpea, characterized by its white color and large seed





*From cereals to legumes – this shift in Ethiopia's farmers' priorities is reflected by the landscape as the golden pieces are replaced with more and more of the darker brown representing harvested chickpea.*



*All smiles: Temegnush Dhabi shows off an ox bought with money she earned from chickpea sales.*

size. In fact, the market for chickpea is so well defined and specific that farmers can earn a premium of about USD 1000 dollars per ton more for growing the kabuli chickpea. It is the very real possibility of earning this cash that has made Ethiopian farmers adopt the new varieties.

Dhabi is so convinced that she is willing to devote more than half of her farm land to chickpea. Besides the actual profits, Dhabi finds chickpea is much easier to grow and harvest compared to teff. She has also noticed the soil fertility benefits to growing legumes. “My wheat and teff now grow well in a rotation and I don’t have to use as much fertilizer,” Dhabi says.

In January at the beginning of the season the price of chickpea was around 11 Ethiopian Birr (ETB)/kg or USD 0.61. But Dhabi says she knows she can earn more later on in the year. She plans to leave her chickpea in sacks stored at home. She will sell them at a later date when the market is not flooded with chickpea and the local traders will offer her a better price.

Dhabi is one of close to a quarter of a million farmers in sub-Saharan Africa and South Asia who are benefitting from the Tropical Legumes II project. Since 2007, the project, funded by the Bill & Melinda Gates Foundation and implemented by a number of members of the CGIAR Consortium and national partners, has been working towards improving the livelihoods of smallholder farmers through enhancing the production and productivity of legumes and providing the right training and information.

“The project works in a very holistic manner. Ethiopia is a great example of that,” Abate says. “We connected all the value chain players together – farmers, traders, exporters, importers. And the market was there. It all came together and completed the circle.”

### **From field to market: the rest of the chickpea chain**

From fields around Ethiopia, chickpea is bulked and transported by farmers or traders to be



### **Rooted in science**

Many market-based solutions have a solid foundation in science. In order for chickpea producers in Ethiopia to capture the profits of the export market, they have to grow a variety of kabuli chickpea that marries market requirements with the growing conditions in the country. Enter ‘Arerti’ – a kabuli variety with a name that means “not afraid of drought”.

“Arerti is a variety that has improved resistance to disease as well as drought,” says Ganga Rao, Scientist at ICRISAT-Nairobi. A series of tests, on-farm demonstrations, as well as training conducted by the Ethiopian Institute for Agricultural Research (EIAR) through the Tropical Legumes II project determined the potential of Arerti for the project sites and served as a vehicle to introduce farmers to the variety. “Arerti has increased farmer’s yields from around 600–700 kg per hectare to around 800–1600 kg per hectare,” Ganga Rao says.



sold at local markets or to small companies who handle the export. The export market demands kabuli chickpea whereas the local Ethiopian consumer prefers the desi variety, which is known for its taste. Gebeyehu Melesse is both a farmer in the city of Gondar and a shop owner in Casa Nchis, a small neighborhood in Ethiopia's capital Addis Ababa. The tiny shops with bags of grain crowding the already narrow streets bear the prices for each type of chickpea – ETB 17 for desi and ETB 20 for kabuli (USD 1 = ETB 18).

“I sell much less of the kabuli variety than the desi variety in my shop,” Melesse says, underscoring the fact that the farmers produce chickpea primarily for the export market. “But more people are now buying the kabuli varieties than before,” he adds.

As chickpea makes its way from rural to urban areas it begins to increase in price – compare for example Dhab's ETB 11 to Melesse's price of ETB 17. This price reflects the costs of transport as well as any cleaning and grading that may have



*Gebeyehu Melesse in his shop in Addis Ababa, Ethiopia.*

been carried out. The chickpea changes hands in a varying number of transactions as small traders sell to larger brokers who bulk up the chickpea into more desirable amounts for export companies who need to trade in high volumes.

### Seeds that pay

The large-scale adoption of a new variety means that a lot of seed must be made available to farmers. In anticipation of this need, the Tropical Legumes II project trained selected farmers in the correct methods of seed production. Bedilu Mamo is a newly-trained seed producer in Memhir Hager village. Mamo is pleased with the performance of Arerti. “The variety is really good for drought conditions,” he says. “There is a lot of demand for this seed.” Mamo has produced 3.5 tons of Arerti seed to sell. “I expect a minimum of 30,000 Birr (USD 1700) from the sale of seed this year,” he says smiling. Mamo plans to first pay for the school fees for his children. “The rest I will save and reinvest in better technologies and my farm,” he says.





*Women sort and clean the chickpea at the assembly line at ACOS.*

### **The two export extremes**

An example of one of the smaller export companies is the family-owned Choksi Agro-trading. They work with anywhere from 100 to 200 brokers who source the chickpea for them. Choksi Agro-trading exports about 15,000–20,000 tons of chickpea per year. “Our biggest destination for kabuli chickpea is Pakistan,” Vinod Choksi, the owner of the company, says. “From Pakistan some of it is even re-exported by truck to Iran. We also sell directly to the UAE. India is another big market at the moment as there is a scarcity of chickpea there. India buys from us and then Bangladesh buys from India.”

By contrast ACOS Ethiopia is one of the largest chickpea export companies in the country. Established in 2005 Acos mainly supplies chickpea to the EU. “There is a big canning industry in the UK, Spain, Germany and Italy. A newer market is the USA and Canada and we are also exploring options in the Middle East,” says Kassahun Bekele, Manager and Co-owner of ACOS.

“Our approach is different from that of the other exporters because of the volumes we deal with,” Bekele says. ACOS’ premises look remarkably similar to a factory assembly line and large volumes of chickpea are moved efficiently on conveyor belts. From silos that can hold 1000 tons of grain the chickpea is rigorously treated for pests and even x-rayed to detect any live insects that may be lurking within the grain. Machines that sort by color and size segregate the grain into different qualities. The cleaned and graded chickpeas are then transported to the EU via Djibouti at the end of a process that takes 20–30 days.

“There is no real time constraint with the canning industry,” Bekele says. “They need a constant supply of chickpea around the year. Our problem is that we cannot really supply such a huge demand as yet.” ACOS is working to increase their network of traders and they are also exploring the option of contract farming with farmers in order to ensure a consistent supply of chickpea. As the demand for chickpea continues unmet, Ethiopian farmers are well positioned to earn better incomes and improve soil fertility on their limited lands.