

Report on business opportunities for cooperatives and young entrepreneurs for the use of mobile grinders for grinding services and feed production

Rudiger, U.¹; El Ayed, M.²

¹Resilient Agricultural Livelihood Systems Program (RALSP), International Center for Agricultural Research in the Dry Areas (ICARDA), Tunis, Tunisia

²Office de l'Elevage et des Pâturages / Livestock and Pasture Office (OEP), Tunis, Tunisia



*Small-scale feed grinder to improve the quality of roughage feed.
(Photo: Zied Idoudi, ICARDA)*

© 2018

CGIAR is a global partnership that unites organizations engaged in research for a food-secure future. The CGIAR Research Program on Livestock provides research-based solutions to help smallholder farmers, pastoralists and agro-pastoralists transition to sustainable, resilient livelihoods and to productive enterprises that will help feed future generations. It aims to increase the productivity and profitability of livestock agri-food systems in sustainable ways, making meat, milk and eggs more available and affordable across the developing world. The Program brings together five core partners: the International Livestock Research Institute (ILRI) with a mandate on livestock; the International Center for Tropical Agriculture (CIAT), which works on forages; the International Center for Research in the Dry Areas (ICARDA), which works on small ruminants and dryland systems; the Swedish University of Agricultural Sciences (SLU) with expertise particularly in animal health and genetics and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) which connects research into development and innovation and scaling processes.

The Program thanks all donors and organizations who globally supported its work through their contributions to the [CGIAR system](#).



This publication is licensed for use under the Creative Commons Attribution 4.0 International Licence. To view this licence, visit <https://creativecommons.org/licenses/by/4.0>. Unless otherwise noted, you are free to share (copy and redistribute the material in any medium or format), adapt (remix, transform, and build upon the material) for any purpose, even commercially, under the following conditions:



ATTRIBUTION. The work must be attributed, but not in any way that suggests endorsement by the publisher or the author(s).

NOTICE:

For any reuse or distribution, the license terms of this work must be made clear to others.

Any of the above conditions can be waived if permission is obtained from the copyright holder.

Nothing in this license impairs or restricts the author's moral rights.

Fair dealing and other rights are in no way affected by the above.

The parts used must not misrepresent the meaning of the publication. The Livestock CRP would appreciate being sent a copy of any materials in which text, photos etc. have been used.

Editing, design and layout—(Organization Name)

Cover photo—Caption (photo credit: Organization Name/Name of photographer).

ISBN:

Citation: Name(s) of author(s). Year. Title of the document. Organization name (type of document – Research Report, Discussion paper etc.). City, Country: Organization name.

Patron: Professor Peter C Doherty AC, FAA, FRS

Animal scientist, Nobel Prize Laureate for Physiology or Medicine—1996

Box 30709, Nairobi 00100 Kenya
Phone +254 20 422 3000
Fax +254 20 422 3001
Email ilri-kenya@cgiar.org

ilri.org
better lives through livestock

ILRI is a CGIAR research centre

Box 5689, Addis Ababa, Ethiopia
Phone +251 11 617 2000
Fax +251 11 667 6923
Email ilri-ethiopia@cgiar.org

ILRI has offices in East Africa • South Asia • Southeast and East Asia • Southern Africa • West Africa

Contents

1. Background

2. Materials and Methods

3. Results

3.1 Entrepreneurs - case study

3.2 Comparing business cases of entrepreneurs and cooperatives using grinders

3.3. Two cooperatives - case studies

4. Conclusion

Report on Business development for pellet or feed mash producing cooperatives or enterprises, including youth and women in Tunisia

1. Background

In 2019, The CRP livestock “Feed and Forages” has introduced in Tunisia the technology of mobile grinders which can serve for feed mash or compost production as well as simple grinding of feed like straw and hay to reduce feed wastage.

ICARDA donated twenty (20) mobile grinders to 11 young entrepreneurs and 9 farmers associations in Northern, Central and Southern Tunisia.

The grinders can chop and grind materiel like cactus cladodes and fruits, small olive branches and leaves, straw, hay, date kernels, cereals, faba beans etc. and work with both, 380 V or PTO powered by a tractor. Production capacity per day varies between 1.5 and 10 t, depending on the materiel to be chopped. This locally manufactured machine costs 3.000 TND (1.050 US\$) per unit.

Low cost feed supply is a major constraint for small scale livestock farmers in Northern, Central and Southern Tunisia, in particular during summer. Through grinding of locally available feed, feed loss will decline as no selective feeding takes place, digestibility and nutrient intake will be increased, and productivity gained.

The young entrepreneurs contributed with 10 % (300 TND) and use the machine to develop their feed and / or compost business. They either produce and sell the final product or they provide grinding services to farmers.



Using the mobile grinder to empower young entrepreneurs to develop their business in Tunisia. (Photo: Udo Rüdiger, ICARDA)



Small-scale feed grinder to improve the quality of roughage feed. (Photo: Zied Idoudi, ICARDA)

2. Materials and Methods

It is important to mention that the development of the business using grinding machines has been undertaken through different steps including:

- ✓ Field investigation and characterization of small farming systems components. This leads to the identification of technical gaps which can enable transformative change in the farm system we are working on. We mainly focused on crop-livestock system, as the focus of our program is mainly on “feed and forages”.
- ✓ Identification of any available and affordable technical solutions currently existing in the market. If this is not the case, we then go for:
- ✓ Co-design and co-development of an affordable technical solution which can be relevant and accessible to small farmers. Small farmers are usually involved in this design stage.
- ✓ Sub-contracting machinery manufacturer (who mainly developed the design) given the budget thresholds,
- ✓ Testing and piloting the developed machines at the farm level, through field and demonstration days while monitoring its robustness in addition to any feedbacks from farmers and other technical partners,
- ✓ Once the previous step is validated, we then proceed with the distribution of a small number of machines to a network of farmers and farmer’s cooperatives. A business plan is further developed to provide more evidence about the usefulness and profitability of the machines. Only farmers and cooperatives who are willing to partly (financially) contribute to the price of the machine are considered.

3. Results

3.1 Entrepreneurs case study

After seven months of using the machine, one of the eleven young entrepreneur Hathem, based in Chebika, Kairouan managed to obtain a turnover of 58.800 TD (20.500 \$) and a gross benefit of 11.200 TD (3.900 \$) through the production and sale of compound feed (1/3 barley, 1/3 maize, 1/3 faba beans). In addition, he offers grinding services with which he gained 2.100 TD (730 \$) in the same period. He rents a small shop with his counterpart to carry out both services, where he had to pay fixed costs for rent and electricity of 3.150 TD (1.100 \$) for the seven months, thus leading to a net benefit per month and person of 725 TD (250\$). Not bad for a start. The young entrepreneur Hathem intends to purchase a grinder with greater production capacity.



Hathem preparing balanced farm feed rations by using the grinder. (Photo: Udo Rudiger, ICARDA)

3.2 Comparing business cases of entrepreneurs and cooperatives using grinders

Tab. 1 : Entrepreneurs and Cooperatives using grinder for service and / or sale of a product

Name and place of entrepreneur/coop	Mefthahi Saddam, Sbitla, Kasserine	Adel Ben Amor-Tozeur	Cooperative El Maraàï, Douz	Cooperative Green, Kef
What is your product?	Grinding service and Animal feed	Grinding service	Grinding service	Grinding service
How do you operate it (380V and/or tractor)	380 V	380 V	380 V	380 V and tractor
What ingredients do you grind?	Barley, straw, old bread, soy, maize	Dates by-products, barley, luzerne, straw, palm leaves	Dates by-products, barley, luzerne, straw, palm leaves	Orge barley, faba beans, hay, straw, wheat, sorgho, cactus, olive branches
When did you start your business?	August 2019	September 2019	July 2020 (no access to 380V and magazine)	July 2019
At which price do you offer your service / product	Grinding Service: -straw bale: 2TD/20kg -old bread: 1TD/bag Product: -animal feed:0.8DT/kg	220 Dt / T (200 kg/ h)	20 DT / ton	20 DT/day renting fees
Number of person employed (temporary or permanent)	No one	Family members (temporary)	One permanent (450 DT/month), incl other tasks than grinding	No one
What benefit do you make per day/ ton?	Grinding Service: -straw bale: 1.5 TD -old bread: 0.75/bag Product: -animal feed:0.1DT/kg	190 DT/ton	No benefit intended	20 DT/day
How many kg / tons have you already sold/grinded?	Grinding Service: -30 tons Product: -5 tons	52 tons (42 t auto-consumed and 10 t service)	300 kg / day (average) 9 ton / month	22 clients x 1.5 days = 33 days
Total Benefit	Grinding service -1,500 TD Animal feed -500 TD	Grinding service: 1,900 TD	Grinding service: No benefit, only service for members	Grinding service: 660 DT
Number of clients	Grinding service: 40 Animal feed: 5	Grinding service: 6	Grinding service: 60 members of cooperative	Grinding service: 22 members of cooperative

The above table shows how different grinders are used by individual entrepreneurs and cooperatives. Number of beneficiaries vary between 6 and 60; grinded materiel varies according to agro-climatic zone and available vegetation, total benefit between 0 and 2,000 TD for the production period, and

grinding service charges vary between 20 TD/day and 220 TD/ton. The different charges depend on the objective of the grinding service (just providing services for members of cooperative without intention to obtain benefit or intended benefit) as well as the feed supply situation in the region (very scarce in the south).

3.3. Two cooperatives - case studies

The grinder also serves farmer cooperatives and associations to provide services to their members and generate income to their organization. Every organization develops its own management strategies for the use of the grinding machine. For example, the cooperative SMSA Ettouen in Siliana, North-West Tunisia, with 120 members uses three different business models:

- i) If you are a member **without a tractor** you can ask the cooperative to come and chop your feed **at your farm** using the cooperative's tractor and driver. In such a case you pay 30 TD / hour (approx. 10 US \$). This includes tractor rent, tractor drivers wage and petrol.
- ii) If you are a member **with a tractor** you can use the grinder with it **at your farm** but you have to pay 25 TD / day (8.3 US\$) for the cooperatives grinder technician (operating the grinder with your tractor) and 15 TD / day (5 \$) for the cooperative as renting fee for the grinder which is used for maintenance of the machine. Petrol charges are at farmer's cost.
- iii) You can also use the **cooperatives tractor** and grind your materiel **at the cooperatives warehouse**, bringing along your feed to chop. In such a case you pay 3 TD (1 \$) per 100 kg irrespective of its origin (barley, hay, straw, etc)

The SMSA Ettouen has served so far 40 members of their cooperative and employed one person on part time, depending on the demand. The objective of the cooperative is rather to provide services to their members and attract new farmers to join, than making benefit with the machine. So far, the model i) has been mostly requested.

The farmer organization SMSA Serj – Weslet in Ouslatia, Central-West, Tunisia has only 46 members but focuses also on service providing for non-members to create revenue for the organization. They estimate a total of 100 farmers in their region being interested in this new service. Their only business model is similar to model i) of SMSA Ettouen, but price composition is different. They charge 30 TD (10 \$) for grinding 1 ton of cereals or 25 TD (8.3 \$) for one hour chopping of straw, hay, olive branches, cladodes, etc. In addition, they charge the farmer 2 TD per kilometer as the cooperative will send a tractor driver using the coops tractor plus the grinder to the farmer. The cooperative pays 4.5 TD (1.5\$) / hour to the tractor driver. They are operating this small side business for six months and estimate their monthly net benefice at 150 TD (50 \$).

4. Conclusion

The different examples prove that the mobile grinder technology can be used to develop an income generating activity for farmers, entrepreneurs and cooperative. It can be used to produce and sell a product like animal feed or compost or to provide paid services. Some cooperatives use it rather as an additional service for their members to stimulate membership than making additional benefit.

Farmers feeding chopped feed benefit in multiple ways. They have up to 40% less feed wastage, gain time and through better digestibility better absorption of nutrients, hence better productivity and income. For example, a farmer pays 1.5 TD for grinding one bale of straw worth 6 TD. He invests 25% of the straws value when paying for the grinding service but gained 15% of the straw value through reduced wastage; not to mention the gain he obtains through better absorption of nutrients.