



Use of conservation agriculture in crop – Livestock systems (CLCA) in the dry lands for enhanced water use efficiency, soil fertility and productivity in NEN and LAC countries.



SCALING STRATEGY

Key elements

(ALGERIA)

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Scaling strategy Algeria

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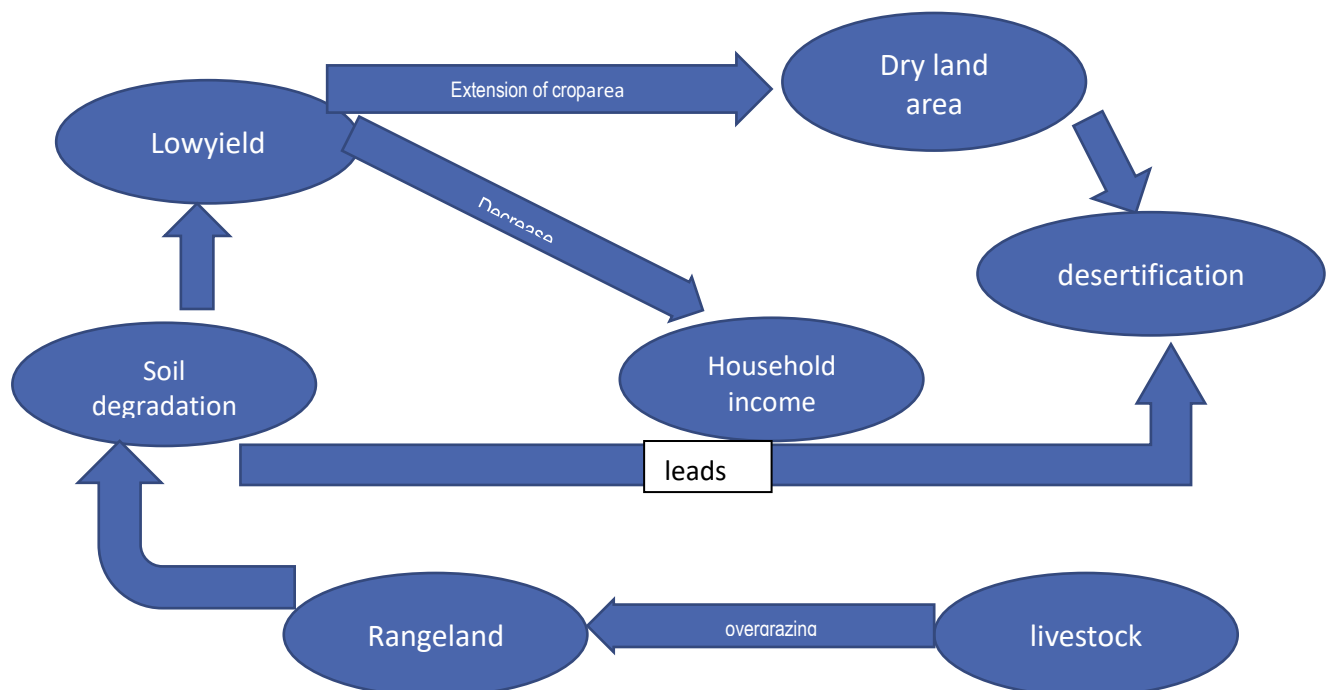
1. Problem definition

In Algeria, grains are mostly grown under rainfed conditions, with annual cropping between 2.9 million and 3.5 million hectares (MADRP, 2018). However, only one third of this area receives an average rainfall exceeding 450 mm / year.

In fact, the climate of Algeria is characterized by low and irregular rainfalls in space and in time and also by torrential rains of high intensity ($I > 100$ mm / h) which are very frequent in autumn when the vegetation is low (Arabi and Roose, 1989 quoted by Zaghouane, 2006). This exposes the northern part of Algeria to severe land loss phenomenon with an average annual specific erosion of between 2,000 tons / km² and 4,000 tons / Km² (Demmak, 1982 quoted by Zaghouane, 2006). Added to these climatic constraints farmers are using bad agriculture practices (intensive tillage) which affect the soil fertility.

In the project regions situated in rangelands, the main issue is the soil degradation induced by the livestock (ovine) overgrazing, water and wind erosion and no adapted tillage. These parameters induce a decrease in yields and therefore lower the income of the households. To palliate to this situation the farmer extends the crop area which accentuate furthermore the soil degradation and leads to desertification.

To this effect conservation agriculture with the integration of livestock is an alternative to the conventional agriculture to preserve soil fertility. It aims to make better use of agricultural resources through an integrated management of the soil, water and biological resources, combined with limited external inputs. It contributes to environmental conservation and sustainable agricultural production by maintaining an organic cover of the soil. No-tillage or minimum tillage, direct seeding, rotation of diverse cultures and maintaining the soil cover are important elements of the CA.

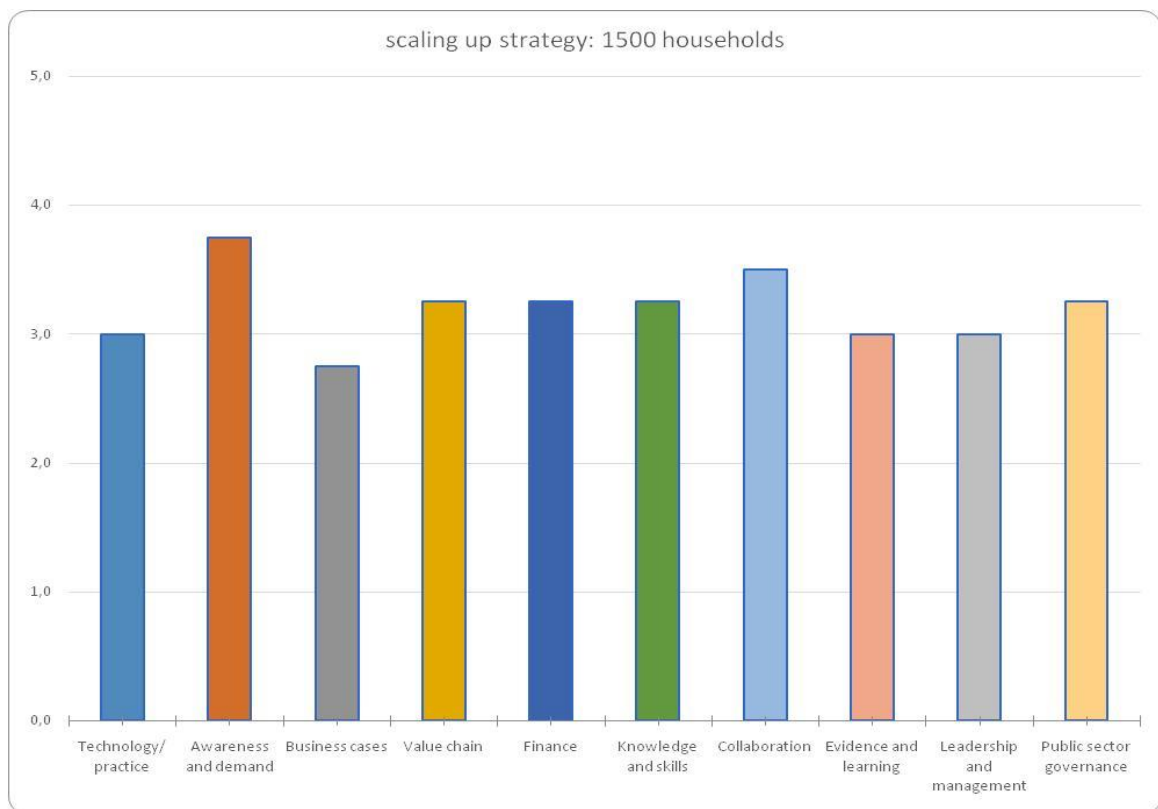


2. Responsible and realistic scaling ambition

By 2022, ITGC coordinator of the CLCA project in collaboration with livestock institute (ITELV), soil Institute (INSID), high commission of steppe development (HCDS), agricultural services (DSA), chamber of agriculture, association for CA (ATU), association for ovine livestock, cooperatives and PMAT (machinery enterprise) will facilitate the increase in adoption of CLCA in semi-arid areas of Setif, Oum El Bouaghi and M'sila from 600 HH to 1500 HH of middle farming systems (20-35 ha) in order to insure food security, gender equity and sustain natural resources

3. The scaling barrel/scoring

Analysis of the ten different scaling ingredients showed the following results:



Looking at the scaling ingredients analysis we can observe that there is no significant differences between the different elements. Nevertheless, awareness and demand was rated highest because the target groups have high access to information via demonstration sites, facebook, youtube, etc. Each segment of the target group have specific extension programs (e.g large farmers are given several varieties of seeds for multiplication, smallholders receive training from ITGC on how to produce farm seeds.)

Business cases are considered the poorest because of two major cases:

- i) **Non-availability of forage seeds at farmer level**
ITGC distributes pre-basic and basic forage seeds to seed multipliers to produce certified seeds in large scale. Purchase prices of seeds by the Government are too low to make it a sustainable business case for seed producers. Farmer prefers selling seeds on the local market for consumption as it is more beneficial. Therefore there is no private forage seed provider. The existing private seed enterprises don't find their benefit in the seed business.
- ii) **Insufficient availability of direct seeders**
There are two types of direct seeders commercialized in Algeria; the imported Semeato and John Sheerer seeder and the locally manufactured "Boudour" seeder. The imported seeders are too costly and not adapted to local conditions as they are too heavy. The cheaper local one is not produced in large quantity to make it available in the local market.

4. Strengths and weaknesses

As mentioned above the major strength is the awareness of national extension services and farmers of all category of the existing problematic; in particular the decreasing yield caused by poor soil fertility and inadequate soil management. Nevertheless there is an awareness difference according to the regions. In Setif the farmers are well aware of the problem as it is the first region in Algeria practicing CA (even before the project), in Msila is the beginning of awareness because they only learned of CA with the first phase of the CA project. In OumElBouaghi no knowledge about CA exists as it is a new project region.

Another strength is the advanced collaboration between the different stakeholders. Different institutions with different specialization like livestock, soil health, agronomy, water and agro-economy are collaborating to develop and scale the CA technology. Multi stakeholder platforms, like the CA association ATU in Setif with 92 members, composed of farmers, university, technicians, extension services, are meeting regularly and organize once a year a national CA workshop and a national CA day. Several CA farmers are part of a large farmer network (2.600 ha) which focuses on wheat quality improvement and fertilizer use, thereby spreading CA knowledge. Collaboration with the farm implement state enterprise PMAT contributed to the availability of direct seeders. PMAT provided one direct seeder (prototype Boudour) to the project for CA demonstration; an agreement was signed in July 2018 between PMAT and ITGC.

Beside the above mentioned weaknesses of poor business cases (forage seed production and direct seeder) the following other weaknesses can be considered:

- CA knowledge is not yet well established with the new CA partners. ITLV and INSID are new partners having started with the second phase of the project only. Even some newly recruited ITGC scientists have limited knowledge on CLCA package.
- Extension is mainly assured through traditional tools (demonstration plots, trainings, etc); new cost efficient technologies like sending of SMS are not used yet.
- There is no specific policy and encouragement by the MINAGRI for CLCA.

5. Key challenges and opportunities

The major challenges are the accessibility and use of improved forage seed varieties and direct seeders.

- i) **Improved forage seeds**
Marketing and commercialization of forage seeds is likely to remain a major constraint. Therefore the production and use of improved farm seeds is an opportunity to be developed further. A low cost small scale seed processing unit is available in neighboring Tunisia. The introduction of this unit to farmers is an opportunity to improve seed quality, enabling farmers to use their own produced seeds. They can act as service providers for nearby farmers. Local black smith can use the imported unit to produce a local version.
- ii) **Direct seeder**
The locally produced direct seeder “Boudour” has been tested successfully by technicians and farmers during and after the first phase. Six farmers and four cooperatives have expressed their interest in purchasing a Boudour seeder. The mechanization subsidy policy of MINAGRI provides a 30 -70% subsidy to farmers for all farm implements. The “Boudour” is part of it and is subsidized by 30%. PMAT has still 10 Boudour seeders in stock, ready to be sold to farmers.

6. Action points

The Scaling Scan has shown that there is no significant difference between the scaling ingredients. The action plan for 2018 will therefore tackle all areas.

- i) *Technology practice*
Since 2006 agronomical CA packages have been developed and tested successfully. The new integration of livestock (CLCA) needs further research and extension; in particular the development of alternative feeding practices is requested.
- ii) *Awareness and demand*
In order to create more demand and awareness different sensitizing activities are planned, eg for water use efficiency, livestock production in CLCA and forage seed production. CLCA video will be produced and broadcasted in social media. Technical SMS will be elaborated and send to farmers. Flyers on alternative feed production will be developed and distributed.
- iii) *Knowledge and skills; Evidence and learning*
To deepen the knowledge on CLCA packages, field days and trainings are organized. Pilot trainings on economic aspects of CLCA are given to test the feasibility of this topic. Exchange visits between Algerian and Tunisian CLCA farmers will help to enrich knowledge.
- iv) *Business case and value chain*
Organize the importation of one Tunisian seed treatment unit and support the business development around forage seed production. Support linking of PMAT to potential direct seeder buyers and support business around direct seeder (service providers)
- v) *Leadership and Management*

Coaching of 10 lead farmers in the whole CLCA package in the first year. Each lead farmer will coach 50 farmers. Each year another 10 lead farmers will be added to reach in total 1500 farmers with 30 lead farmers by 2022.

vi) Finance

Project partners ATU and DSA will support farmers in following administrative procedure to obtain the subsidy for direct seeders and other inputs.

vii) Public sector governance

Lobbying to introduce the forage seeds in the MNAGRI subsidy nomenclature

viii) Collaboration

Introduce the CLCA package into the already existing Innovation Platforms of MINAGRI

7. "scaling" Action Plan activities 2019

Activities	J	F	M	A	M	J	J	A	S	O	N	D	responsible	Output
<i>Technology Practice</i>														
Identify feeding alternatives under CLCA	x	x	x	x	x								ITELV	3 alternatives are proposed
Develop feeding rations under CLCA	x	x	x	x	x								ITELV	6 rations are developed
Develop CLCA packages adapted to semi-arid areas	x	x	x	x	x	x	x	x	x	x	x	x	ITGC	a technical reference is developed
<i>Awareness and Demand</i>														
Raising awareness on CLCA livestock management	x	x	x	x	x	x	x	x	x				ITELV	300 livestock farmers
Awareness on water management										x	x	x	INSID	3 field days
Awareness of production and use of forage seeds	x	x	x	x	x	x							ITGC	3 days
Awareness on the adequate use of CA packages	x	x											ITGC	10 days
Diffusion through medias (FB, website, radio, Senboula TV)		x	x	x	x	x	x	x	x	x	x	x	ITELV	FB weekly, 5 radio programs
Elaboration and diffusion of a CA video (Youtube, Website)		x	x	x	x	x	x	x	x	x	x	x	ITELV	1 video
Projection of videos related to CA (mobile cinema)									x	x			ITGC	2 projections
Develop technical SMS				x	x								ITGC	30 SMS for 300 farmers
Develop and distribute leaflets on the feed blocks and urea-treated straw			x	x									ITELV	3 leaflets elaborated; diffusion of 1 leaflet
Develop one page FB CLCA (Algeria, Tunisia)			x	x	x	x	x	x	x	x	x	x	ITGC, INRAT ¹	One FB created
<i>Knowledge and skills; Evidence and learning</i>														
Organize CLCA demonstration days (including seeds and livestock)		x	x										ITELV ITGC	6 demonstration days
Organize demonstration day on water management										x	x	x	INSID	3 demonstration days
Training for extension advisors on CLCA				x		x				x			ITGC	6 demonstration days
Training farmers on CLCA					x	x	x						ITELV	6 demonstration days
Training for farmers on water management										x	x	x	INSID	3 demonstration days
Training on (FBS) of CLCA package									x				ITGC	1 pilote training

Organize "farmer to farmer" visits in Algeria and between Tunisia and Algeria				x											ITGC	one visit in setif platform and one visit Tunisia/ Algeria (south/south)
<i>Business case and chain value</i>																
Provide a Tunisian type seed treatment unit									x	x	x				ITGC	One seed treatment unit is acquired
Business development support around seed treatment (service delivery)													x	x	ITGC	the machine is functional and installed at a farm
Support the commercialization of the Algerian direct seeder	x			x											ITGC	10 buyers of seeders are known
Support the development of business around no-till (service delivery) included business plan			x	x	x	x	x	x	x	x	x	x	x	x	ATU	Number of farmers served by the seeder
<i>Leadership and management</i>																
Support the existing networks	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Agriculture chamber	Workshops are organized
Coaching the lead farmers who supervise the neighboring farmers	x	x	x	x	x	x	x	x	x	x	x	x	x	x	ITGC	10 lead farmers are coached
<i>Finance</i>																
Support and monitor access to the subsidy (seeder)		x	x	x	x	x	x	x	x	x	x	x	x	x	DSA et ATU	10 buyers are monitored
<i>Public Sector governance</i>																
Lobbying to subsidize seed forages by MINAGRI		x	x	x	x	x	x	x	x	x	x	x	x	x	ITGC	introduction of forage seeds in subsidy nomenclature
<i>Collaboration</i>																
Integrate CLCA package into existing innovation platforms					x						x				DSA	2 meetings

¹ to be discussed with INRAT (Tunisia)