USE OF CONSERVATION AGRICULTURE IN CROP-LIVESTOCK SYSTEMS (CLCA) IN THE DRYLANDS

FOR ENHANCED WATER USE EFFICIENCY, SOIL FERTILITY AND PRODUCTIVITY IN NEN AND LAC COUNTRIES

IFAD Investing in rural people

ICARDA Science for resilient livelihoods in dry areas

CIMMYT International Maize and Wheat Improvement Center

IRESA Institution de la Recherche et de l'Enseignement Supérieur Agricoles

ITGC المعهد التقني للزراعات الواسعة

ASSESSMENT OF THE ANIMAL HEALTH SITUATION IN TUNISIA

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CLCA-II Project

Tunisia

Cover page figure caption. Integrated Crop – Livestock Systems under Conservation Agriculture in the site of Zaghouan – North Est Tunisia
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Introduction

Even if CLCA-II project is not specifically concerning animal health, this aspect could not be neglected in any of the projects targeting farmers. Indeed, the system approach is now the best one to adopt in order to guarantee a viable and even a sustainable development program. The direct relationship between any of the agricultural components and the animal health is frequently evident since development projects are dealing with a whole agro-ecosystem which is very complicated with very intense interrelations between crop and animal productions but also social, ethical, religious and even political influences. Even if the relation between any component of the agro-ecosystem and animal health is not evident, animal health issues are to be considered and resolved, to allow at least the targeted farmers to work in a comfortable environment and exteriorize his/her production and development capacities.

Neither the region nor the animal health context will be presented in this report because this information could be gathered from several other sources. On the other hand, we would not like to “dilute” the specific health point of view in other information. Copy and paste approach in a report will not provide any added value.

The objective of this report is to establish a global assessment of the major animal diseases/health issues hampering integration of crop and livestock in the different farming communities/project targets areas.

Methodology

In order to get the best view of the animal health (mainly small ruminants) status in the targeted farms of the CLCA-II project it was decided to have during specific field visits different approaches:

- ✓ Focus group meetings that were performed in locations: Fahs and Oued Ezzit (Zaghouan District) and Chouarnia El Krib, Chouarnia-Makthar, Laaroussa (Siliana District). During these meetings the frame of the visit was presented and the farmers were asked to provide, with no specific orientation by the team, spontaneous witnesses of the health issues in their regions.
- ✓ Specific visits to the farmers, the aim of these visits was to discuss with the animal owners and to get what is called in epidemiology "epidemiological excursion" targeting both the animals but also the barns and the general ecosystem in which the animals are present.

After these three activities (focus group discussions, discussion with specific farmers and visits to the farmers), a good image of the epidemiological situation of the dominant health issues in the region was established but also the most important issues preoccupying the farmers.

We did not perform any laboratory analyses for several reasons: the very high cost of such action, the time requested to perform such analyses but also the aim of this visit was not to establish the exact health situation of these farms but only sort out the main health issues and preoccupations of the targeted farmers.

Using only these simple indicators and performing targeted specific actions will lead to an important animal health promotion with small means. It is suggested that these specific actions could be performed during 2020.

Current situation

Reregistration of the data

All the visited farms have no registered date; it was roughly impossible de get information on the vaccine status of the animals. Even if the veterinarians (official or field) provide the farmers with a vaccination certificate, these certificates are generally lost. The farmers do not know against which diseases their animals are protected and when do these vaccines expire.

This is a big issue that could be resolved through the project in order to improve the data storage of all the targeted farms.

Prevalent diseases

The visited farms are suffering from several diseases that could be classified into:

Abortions: enzootic abortion was mentioned by several farmers and represents the most important health issue for all the farmers. This represents for them a real constraint because the causes of these abortions are never determined and the abortion rate is sometimes high.

Ringworm: even is this parasitic disease is easily treatable but the animals are kept with these lesions because several veterinarians ignore that in Tunisia, there is an effective drug against it in small ruminants.

Coenurosis is a frequent disease-causing death of infested animals; this disease represents an important problem for some farmers. The prevention of this disease needs a control of intestinal parasites in dogs.

Caseous lymphadenitis: this disease represents for several farmers one of the most constraints because it decreases dramatically the market value of animals when sold during the fest of sacrifice (Aid El-Adhha).

Mastitis: is present in some farms; the lack of hygiene is one of the most causes of this disease.

Lameness: even if this disorder is more present in cattle, we found in several flocks' sheep with lameness due in most of the causes to a problem in hoofs' trimming. The farmers do not know that small ruminant hoofs should be monitored and trimmed when necessary.

Chronic acidosis: some cases of this metabolic disorder was present, this again shows that the animal keepers do not have good knowledge in animal nutrition practices.

Suggestions

Relation between veterinarians and the breeders

The relation between the farmers and the veterinarians (field or governmental) is still very archaic and simple. When one animal is sick, the farmer calls the field veterinarian and when the administration get in touch with the farmers if it needs any information. This relation is restricted to vaccination program implementation and rare contacts.

A new model of relation could be established between both of them, the most important aspects to be considered in these relations are:

- ✓ Trust: there is a lack of trust between the farmers and the administration. Several farmers don't consider the administration as a partner in terms of animal health management.
- ✓ Availability: several farmers argue that the administration is not considering seriously their claims. A new approach of receiving these claims could be considered. The main aspect to be considered is that these claims could be registered anywhere so that a good traceability is assured.
- ✓ Implementation of a new method for identification of the farmers. This is very important since it will allow to get in touch with any of the farmers and consider them for any action.

It is important to notice that cell phones are not used for animal disease issues as it could be. For example, we suggest that in the frame of this project, we get in touch with one of the mobile operators in order to allow the field and the public veterinarians to send messages to the famers informing them that there is an imminent risk of enterotoxemia, that they could treat their animals against gastrointestinal parasites or ectoparasites.

On the other hand, farmers could be able to send messages to a specific message box concerning different issues.

Briefly, using the Information and Communication Technology tools available at ICARDA, the project could help to establish new modern effective sustainable bridges between the farmers and any other stakeholders (veterinarians, UTAP: Tunisian Union of Agriculture and Fisheries…). We suggest that this action could be performed during 2020; it will represent a very innovative achievement of the project.

The deliverable and its recommendations and lobby the CRDA's for a more intensive intervention of their animal health services to facilitate CLCA project, this shows the full integration of crop-livestock-animal health.

Sheep diseases

Enterotoxaemia

This disease is causing several death cases in the targeted farms; this could be explained by a lack of knowledge of the farmers about this disease because, it is a preventable disease.

Three actions could be implemented here:

i. Explain to farmers the importance of vaccination. Indeed, a big part of the farmers do not vaccinate their animals against enterotoxaemia.
ii. Explain to farmers (and to some veterinarians also) the importance of respecting the vaccination program (mainly the two primo-immunisation).
iii. Inform the farmers about the important of a correct food transition, from dry to wet season and vice versa. Even if the cause of this disease is more or less known by the farmers, they don't know the pathogenesis (the details about the mechanisms leading to the occurrence of this disease).

A workshop could be organised in order to explain for the famers these mechanisms so that they could understand how the regimen transition will leads to a decrease of the disease occurrence (even in the absence of any vaccination program).

These needs were raised by all the visited communities as a major issue for crop livestock production in their current system.

In the frame of the present project, field workshops could be organised and animated by both specialised persons but also local veterinarians. This mix of trainers will allow the local veterinarians to learn how to organise these types of workshops, transmit to them the teaching materials. This approach will ensure the sustainability of these workshops after the end of the project.

During the visits, the farmers expressed their high interest to any field days and even informed us that they are ready to take in charge all the logistic aspects.

Different arguments strengthen the arguments that there is an urgent need to sensitize and to train farmers on best practices to avoid and depict the health issues.

We suggest also involving the drug company selling the vaccine in Tunisia in the organisation of these field schools, this involvement will lead (again) to a sustainable action that could be continued even after the end of the project.

Acidosis

This metabolic disease was mentioned by some farmers in both cattle and small ruminants. This metabolic disease could induce even the death of the animals and high losses due to lameness. A Farm Field School/field days should be organised to explain basic principles for feed practices.

Caseous lymphadenitis

This disease was present in several farms with high frequency; it was also ranked as an important disease by the animal keepers. Due to several reasons, its control is difficult

because the bacterium is very resistant in the field and it has a very high infectious capacity. Moreover, when the farmers open the abscess to treat animal, they contribute to the contamination of the environment by the pus since poor biosecurity measures are taken and subsequently the dissemination of the disease.

There is a vaccine against this disease and the decision to either import or not this vaccine could be discussed with some veterinarian organisations, mainly, the “Chambre Syndicale Nationale des Médecins Vétérinaires Libres-Praticiens de Tunisie” (CSNMVLPT, National Syndicate of Private Tunisian Veterinary Surgeons) or “Conseil National de l’Ordre des Médecins Vétérinaires de Tunisie” (CNOMVT, National Council of Tunisian Veterinary Surgeons) in order to establish a Tunisian infection prevalence threshold leading to an acceptable benefit-cost ratio of vaccination implementation.

We suggest that the project organize, in collaboration with CSNMVLPT, CNOVT, ENMV, CNVZ and ICARDA a national meeting to discuss about this disease and the opportunity to vaccinate or not the animals.

Abortion episodes

Abortion syndrome represents one of the most difficult health issues in sheep. Indeed, this syndrome could be due traumatic (any traumatism), bacterial (*Campylobacter*, *Salmonella abortus ovis* mainly, Q fever, *Chlamydophilla*, *Listeria monocytogenes*, *Brucella melitensis*…), viral (border disease virus, Peste des Petits ruminants…), parasitic (*Toxoplasma gondii*, Neospora caninum…), toxic (several toxics cause abortion but the main frequent ones are insecticides), nutritional, iatrogenic, mycosis (mainly *Aspergillus*).

Making a distinction between all these causes is very difficult since clinical and pathological signs are frequently similar and even absent in some cases. The specific diagnosis needs a lot of investigations (mainly serological and sometimes molecular tests). Indeed, the veterinarians need to ask for a battery of tests that are sometimes not available in Tunisia or with delayed results (the laboratory could not open a whole ELISA kit for just few numbers of sera samples).

Sheep are naturally exposed to abortion, this is due to several factors, mainly the promiscuity and their huge grazing areas they are occupying leading to an increase of risk disease.

In Tunisia, there is not management standard for this syndrome, it other word, when a field veterinarian is facing abortion episode in one flock, he/she has no standardised attitude to take: declare the case, which samples could be collected? To whom it should be sent? Which gross lesions should be searched?

There are some recommendations that the project could implement:

- ✓ Train the farmers about biosecurity at two stages: to reduce (prevent) the occurrence of these abortions (promiscuity, disinfection, hygiene…) and after the occurrence of an abortion syndrome. The last could provide them with the measures to implement in order to (i) reduce the impact of the health issues (ii) the attitude to be taken.
- ✓ In the frame of this project, a policy brief could be sent to the Tunisian Ministry of Agriculture in order to explain that the absence of any active surveillance of abortion is a problem and suggest to create a laboratory for abortion surveillance under for example the supervision of the CNVZ (National Centre for Zoo-Sanitary Surveillance).

Indeed, there is now systematic declaration of these cases and this represents huge loss of information that could be then used in order to rank the most important causes of diseases, establish a threshold value for any pathogen and engage any suitable action for some abortion outbreaks.

Miscellaneous

As mentioned in the section problems, there are several other health problems in the visited sheep flocks. The project could encourage the famers to register all the health events even the small ones. The project could provide them with a small notebook with simple tables to be filled so that the registration of different events becomes betters.

Conclusion

The visits performed by the team of the project showed the presence of several persistent health issues in action region of the project.

Several of these health issues could be resolved (at least partially) through specific action that could be taken by the project. These actions could be done with a sustainable perspective of view. This approach will induce a persistent impact, not only in the targeted farm but also in the whole region where the project is acting. Indeed, as the veterinarians will be involved and teaching materials will be offered to them and farmers will themselves transmit the information (or technology or specific decision) to other farmers, the impact of these actions will be high. Moreover, the involvement of different professional organisations will guarantee both the success and the sustainability of these actions.

We predict that these actions will be successful since the farmers themselves are asking about this type of actions.

An action program could be established for 2020 in association with different professional organisations.

In conclusion, animal health action program needs to be adapted to each agro-ecological and bio-physical zone/region and to the specific needs of farmers for a full integration of crop, livestock and animal health.