Specific agricultural actions for extremely vulnerable families in Ethiopia



Introduction

In the <u>Wolayta</u> and <u>Kambatta</u> areas situated in the southern region of Ethiopia, over 85% of families live off agriculture and depend entirely on their farms' production. The average surface of family farms is very small: below half a hectare¹. Rural families practice mixed crop-livestock farming (agro-pastoralists), with mostly manual, rain-fed (no irrigation) agriculture, aided by animal power for well-off families, and using very few chemicals. The farmers of southern Ethiopia are fine gardeners who have been able to develop very productive agricultural systems to provide for themselves, on mountainous, steep-sloped grounds and increasingly small plots.

However, around 20% of families today face great difficulties in meeting their food needs. This is generally caused by a succession of small blows (health problems, death of a relative, loss of an animal, long drought, missed harvest due to illness...) which diminishes families' resilience. They are then caught in a downward spiral of poverty and decapitalization, which they do not manage to escape by themselves. For example, many families lost an important part of their tuber seedlings due to three years of drought between 2009 and 2012. They then found themselves unable to restart basic subsistence crops (such as short-cycle tubers). To survive, these families had to use their stock of Ensete², which diminished reserves. Their yield is no longer sufficient and they do not have the time and means necessary to restart agricultural crops for their daily diet and for the generation of revenues necessary to buy essential products. These families then have to leave the farm to offer their labour to neighbouring farms or leave the area for several months to work in state farms. As there are very few alternatives to family agriculture in the target zones, the revenues gained from these options are very low.

¹ In comparison, the average size of agricultural exploitations in France is superior to 80 ha.

² Ensete is a type of false banana tree which plays a key role in the diet of families in southern Ethiopia. Families eat the trunk while leaves are used as fodder.

These two diagrams show the effects of losing vegetative material (for example, losing potato seedlings or wheat seeds for the following season) and fertility.



Over the past few years, we have decided to develop tailor-made activities, taking into account the needs and constraints specific to these very poor families. To do this, it was essential to understand their difficulties, their story and the reasons which led them to be in this situation. Helping these families to escape this level of insecurity is complex and requires a fine understanding of context, as well as technical mastery, resourcefulness and time to experiment and find appropriate solutions with the families. For the past three years, we have worked to set up an integrated approach aiming to rapidly increase food and financial production of the family, to diversify these agricultural productions, and to preserve the farms' resources (soil, fertility and capital).

Two central questions are at the heart of our process:

- Showing that these families can, with limited and targeted means, restart diversified productions in their farms to obtain, in the long run, food and revenues necessary for survival. Today, we work with 320 highly vulnerable families.
- Secondly, finding levers to diffuse the most interesting practices on a large scale and allow a greater number of families to improve their resilience, including in the face of climactic hazards.

The necessity of a specific approach for these families

Between 2008 and 2011, the team put in place several activities specific to very poor families, to help them reconstitute their stock of vegetative material (Ensete, potato, sweet potato, taro, yam seedlings...) after late rains which had increased the bridging period. While these measures allowed the families to compensate with the loss of plants after long droughts and to reinstall new crops, they did not allow them to sustainably escape their situation. The other actions we led (anti-erosive structures, seeding autonomy, diversification) were addressed to all the families in a community, and, while aimed at the poorest, benefitted farmers who were more reactive, willing to innovate and generally less poor.

To invest in new activities, manpower, time and mental availability are required as well as social confidence, which families focused on survival generally do not have. Their preoccupation is to find, day by day, enough food and make enough money to buy staple items, which leaves little space to invest in new crops or practices. Many very poor families depend on other "richer" families who provide them with seeds and/or animal power in exchange for part of their crop. It is sometimes difficult to escape this dependency and to integrate new practices in their own farm as it is, little by little, cultivated by another farmer.

It was these realizations that led us to the idea that, to help these families efficiently, it was indispensable to develop adapted approaches, taking into account their difficulties and their specific constraints.

What characterises very poor families in the context of southern Ethiopia?

Of course, every family's story is different, but many things are constant characteristics of highly vulnerable households. Identifying these "poverty markers" is essential to find and better adapt the solutions offered to the needs and constraints of these families.

A vulnerable family is a family which suffers a food shortage every year. This period generally starts in January, when the family is forced to buy cereals on the market, and lasts till April, when the family relies mainly, if not only, on Ensete to eat.

The principal characteristics that we find in very poor families are the following:

- Share cropping of a large portion of the fields: an external person brings the seeds and/or the ox to plough the field, and crops are then shared with this person.
- A strong degradation of the Ensete crop's structure: with the disappearance of old Ensetes necessary for the generation of new seedlings.
- **The diminished state of the agricultural capital:** diminishment of livestock and reduction of the agricultural surface, with sometimes the mortgaging of some plots or the progressive abandonment of lands that have become infertile.
- The absence of conservation of vegetative material: the family does not manage to conserve seedlings or seeds necessary for the reproduction of crops (wheat, sweet potato, potato...) and loses its autonomy in seeding for the next season.
- The presence of plots of cereal which are risky and not profitable: for poor families who do not have access to animal power, the production of cereals is often done to the detriment of staple crops (home garden and Ensete) and increases the risk of debt and bridging in case of climactic hazards.
- **A double activity** (inside and outside the farm), and a large number of hours working outside the farm which reduces the commitment in the farm.
- A weaker diversity of crops than with richer families.

Objectives and considerations to work with the most vulnerable families

By understanding these characteristics and the constraints faced by these families, a certain number of considerations appear necessary in the search for solutions:

• The diversification, the spread of production and a better distribution of work times over the year: in the targeted districts in the southern region, the diversification of agricultural production is crucial to improve the food security of vulnerable families, in particular in a context of miniaturization of plots (doubling of the population in 35 years) and of growing discrepancies between available resources and food needs (mean rural density between 300 and 600 inhabitants/km²)³. Diversifying agricultural production reduces exposition to external risks, such as droughts and price volatility. It is also a key element to generate alternative sources of revenue, through new productions, but mainly through a better distribution of work time over the year. Another crucial element for very poor families is the spread of agricultural work over the year, by avoiding a concentration in time, such as is the case in the cropping of wheat or teff. These families, who cannot generate enough money and food through their farm, are forced to gradually find activities outside of the farm.

The time window for the preparation and sowing of wheat and teff fields being very limited between the off-season and the main season, it is difficult to grow cereals without using animal power to prepare the land (the amount of time to plough the same surface by hand is tenfold). For this type of crops (as opposed to home gardens), poor farmers are often dependent on families who own oxen for ploughing purposes. The diversification and complexification of crops based on manual labour proves to be the best option for these families to increase agricultural and fodder production and then on, the added value per unit of surface. For the poorest families, turning to other systems of cropping allow them to slowly diversify sources of revenue and to increase their resilience when faced with climactic hazards (late rains) and illnesses (for sweet potato, ginger...).

³ This is managed within the framework of the "reproductive health" activities

- The importance of acquiring small livestock and cattle (even shared): animals constitute a buffer saving in case of hard blows, they play an important role in the feeding and revenue of families (milk, butter, cheese, fattening) and also for the production of manure which plays an essential role in soil fertility.
- The necessity for families to establish a strategy to escape share cropping little by little and reduce dependencies and debts. Recovering control of the farm goes hand in hand with the end of shared production.
- The crucial role of some productions: in Wolayta and Kambatta, having tubers and Ensete plants during the bridging period is essential for the food security of families. Similarly, the possession of some coffee plants allows, without too much manpower, to count on a precious and stable source of revenue. Access to vegetative material, for families having lost their seedlings or to introduce new varieties (cassava, varieties of sweet potato more resistant to illnesses), is indispensable to (re)start key crops. Families will then have to rely on efficient practices to preserve seedlings and seeds in order to maintain crops from one season to another, even during droughts.
- The necessity to consider the farm in its entirety: families can be helped to recapitalize their stock of tuber seedlings or their Ensete plants but if they do not setup mechanisms to ensure the reproduction of seedlings, the problem may happen again in future droughts. Similarly, if alternatives to feed livestock during the dry season are not developed, the competition with Ensete in crisis periods will remain strong and continue to affect the ability of families to maintain their Ensete plantation through time. It appears necessary to consider the farm in its entirety and the complementarity of solutions, by working at the same time on cash and staple crops, on Ensete, on fodder, on soil and fertility... Some crops, such as fruit trees and coffee trees, will only be productive after a few years. Therefore, crops that will rapidly produce should be sown as well as those which will secure production and revenues in the longer term.
- Preserving land, restoring and maintaining fertility: the experience we have developed on the fight
 against erosion in Ethiopia has taught us that it is possible to rapidly increase and diversify agricultural
 production, while contributing to better preserving natural resources. The fertility of land in very poor
 families' farms is usually low: some households have been forced to abandon some plots which no longer
 grow anything. For these families, it is hard to think about increasing agricultural production without also
 considering the conservation of their land and the improvement of land fertility.

The approach and solutions offered by the team

In 2014, the three projects of support to family agriculture led by Inter Aide in partnership with the Ethiopian association RCBDIA⁴ supported **320 highly vulnerable families.** If the effect of some solutions (such as the use of fodder on anti-erosive structures) has been demonstrated⁵, others are yet to be confirmed and their impact will be specified over time with the farmers (see part on impact measure at the end of the document).

Identifying and selecting highly vulnerable families: for this aspect, the project relies on traditional groups called "Iddirs" which are local associations of mutual aid for the organisation of funerals and the transport of the sick. As Iddir officials live within the communities, they know the economic and social situation of each of the families and can indicate which ones no longer have the means to restart their agricultural production due to droughts and crisis periods. The support of the team is then based on a number of criteria defined in advance with the Iddirs:

- Families must own cropland (at least ¼ of a hectare),
- At least one member of the family must be able to work on the farm,
- The families must express a wish to change their situation, formulate their interest in working with the programme and commit to spending time working on the farm,
- The families must be selected by the community through the Iddir.

Listening, advising and supporting: the collaboration starts with a phase of listening and talking with the family, or the widowed wife in the case of single-parent households, to understand their story and constraints and define together how to redevelop the production activities of the farm.

⁴ RCBDIA : partner organisation created in 2006 by Ethiopian officials (current and former) of Inter Aide.

⁵ See a note entitled "Access to forage in the mid and highlands of Wolayta and Kambatta, Ethiopia" available on the Pratiques network: <u>http://www.interaide.org/pratiques/content/access-forage-mid-and-highlands-wolayta-and-kambatta-inter-aide-ethiopia-</u> 2012?language=en

Considering the farm in its entirety:

The support of the project is based on 6 very complementary aspects aiming to increase the food and financial resources within the farm, while improving the conservation and fertility of the soil:

- Improving and maintaining the production of Ensete due to its vital role in the food security of families.
- Increasing and diversifying the food production by favouring a spread of consumer goods over the whole year (cassava, taro, pulses, sweet potato, pumpkin, Pigeon pea...)
- Increasing the families' revenues with the production of cash crops in the short, medium and long term (fruit trees, sugar cane, pineapple, coffee...)
- **Developing an integrated production of fodder**, to rapidly obtain alternative revenues (sale of fodder, dairy products) and allow access to cattle and organic fertiliser. This new production is integrated on **anti-erosive structures and around fields** (grass-legume association).
- Protecting cropland by setting up vegetated anti-erosive structures, associating grasses and legumes, and recover degraded and abandoned land.
- Supporting the construction of micro nurseries for the introduction, multiplication and preservation of plant material.

Home garden

The following diagram illustrates how the recommendations affect the farm in its entirety:



a) Improving and maintaining the production of Ensete:

In many ways, Ensete occupies a crucial place in the agricultural systems of Wolayta and Kambatta: it is a vital food reserve allowing families and livestock to survive during the bridging period. Once it is planted, Ensete is resistant to hydric stress and constitutes the only source of food during long drought periods for poor families. Its leaves are also used as a last resort to feed animals. Furthermore, the plantation of Ensete surrounds the home garden and contributes in some ways to its existence: it concentrates an important part of fertility, contributes to providing humidity and acts as a physical barrier which protects the seedlings in the garden from the drying effect of the wind.

The availability of Ensete seedlings and maintenance of the cycle of production are generally synonymous with food security for rural families of southern Ethiopia. To maintain production, it is however indispensable to have plants aged at least three or four years old in order to produce suckers from the corm⁶ which will then serve to produce new seedlings. The principal challenge for poor families



is therefore to restore a sufficient stock of Ensete which they can use in cases of hard blows while guaranteeing the renewal of the production cycle.

The support of the project therefore consists in giving families corms for the production of new seedlings. The team is working with the Areka research center to introduce new varieties that are more resistant to bacteria which affect Ensete. We also support the families in the management of the Ensete plantation including the management of seedlings for reproduction. In parallel, the work done on fodder and tubers aims to reduce the pressure on Ensete during droughts and therefore avoids an over-exploitation when fodder and food are needed.

b) Increasing and diversifying the food production by encouraging a spread of consumer goods over the year

Families' access to vegetative material for basic food crops (mainly tubers) must be restored, new sources of food production which are interesting from an alimentary production and climactic point of view must be developed and families must be supported in the management and maintenance of these different crops. In practice, this means:

- Resuming cropping of tubers (sweet potato, taro, potato), as well as a local variety of cabbage;
- Introducing different varieties of sweet potato (medium altitude) and potato (higher zones) with different characteristics: maturation time, resistance to drought and illnesses, productivity, to spread risks linked to climactic hazards;
- Developing new cultures, such as cassava (low presence in areas where we intervene despite a very good resistance to drought), varieties of pulses and peas rich in protein (such as Pigeon pea, which has the advantage of being perennial and of producing during the dry season, or cowpea), as well as pumpkins.

For tubers, an important challenge is the conservation of seedlings during the dry season to maintain the crop for the next year. To do this, we have tested methods of seedling conservation with the families in micro nurseries in home gardens.

c) Increasing families' revenues by producing cash crops, in the short, mid and long term

Short term:	 Local spices and vegetable gardening: pepper, cabbage, garlic Fodder
Mid-term:	 Improved varieties of banana trees, sugar cane and pineapple (all these plants can be grown on the edge of a plot)
Long term :	 Fruit varieties : grafted mango tree (productive low-stem variety), avocado tree Coffee: new productive variety

Fruit trees (mango trees, avocado tree, banana tree) and coffee trees constitute a significant additional revenue source for families, which does not require much labour.

⁶ Corm : bulb-looking reserve organ

However, most local fruit species have a low yield which is often concentrated on a short period, with varieties little suited to commercialization. In collaboration with the Ministry of Agriculture, more productive varieties have been identified and multiplied by the team (and grafted in the case of mango and avocado trees) to then be planted in the farms of very poor families.



d) Developing an integrated fodder production to rapidly obtain alternative revenues (fodder sale, dairy products) and allow access to livestock and organic fertilizer.

The development of fodder production, whether by the vegetation of anti-erosive structures, the creation of productive hedges around fields or the set-up of permanent fodder plots, constitute one of the main innovations of the programs and appears very interesting for poor families in several ways:

- ⇒ The production of fodder is an answer to a major constraint for family croplands faced with a growing shortage of fodder in the dry season. This allows vulnerable families to better feed the livestock they own or are responsible for, with an impact on milk production. Even if they do not own animals, families have access to crops which are easily sold all year long and particularly in the dry period, allowing them to progressively meet the conditions necessary to raising an animal (sometimes shared).
- ➡ Technically, the multiplication of grasses introduced (Pennisteum Riparium, Purperium, Purperium x Americanum) is easy to do, by cuttings, and is therefore independent of external groups.
- The varieties of fodder offer a **good resistance to drought** and stay productive during the dry season. In addition to this, fodder can be cut whenever the farmer wishes to do so and brings an important source of revenue, at a time when there is little production in the field.
- ⇒ Fodder production is not time-consuming and seems compatible with the work calendar of farmers, even allowing a time gain compared to gleaning.
- ➡ Fodder cropping is a new practice in the area (see box below) which integrates well with traditional agricultural practices. The creation of productive hedges and the vegetation of antierosive structures increase the value of the non-cultivated edges of the farm, or spaces dedicated to soil conservation, with new perennial crops.

For example, the association of Pennisetum (fodder grass) and Pigeon pea (legume) on anti-erosive structures allows the preservation of land and rapidly brings new crops (peas and fodder), including during the bridging period, without creating a competition with current crops.



⇒ Finally, a better availability of fodder during the dry season (in parallel with the provision of young Ensete seedlings) contributes to reducing the pressure on Ensete in the bridging period and therefore restores the Ensete crops.

The integration of fodder cropping: five years ago, except for a few maize crops, no family cropped fodder. Women and young girls, who are generally in charge of feeding livestock, would spend up to two hours every day collecting weeds to feed livestock as well as wood for cooking. The overgrazing of the few grasslands and the divagation of livestock during the dry season contributed to worsening erosion problems. Livestock is, however, crucial to families: as a source of revenue, for the production of dairy products for consumption or cash, as a saving for hard times, and as animal power to plough fields before seeding... Yet a third of young bovines die before reaching a year old because they do not survive the dry season. The integration of fodder production of anti-erosive structures and around fields has proven very profitable: for poor families, fodder constitutes a new source of revenue, easy to sell and crop when needed, for families in a more stable situation, it allows them to increase the amount of livestock owned and the production of dairy products and to fatten animals.

For more information on fodder, a note is available on the "Pratiques" website: <u>http://www.interaide.org/pratiques/content/access-forage-mid-and-highlands-wolayta-and-kambatta-inter-aide-ethiopia-</u> <u>2012?language=en</u>

e) Protecting cropland to recover the use of degraded and abandoned land

The poorest families are generally more exposed to erosion, degradation and loss of soil fertility, as they cannot maintain their trees, Ensete and biodiversity. As their main preoccupation is to ensure the daily survival of their families, they generally do not manage to take measures to protect their land without external help.

By approaching the issue of soil protection in its entirety on the scale of a micro watershed with the traditional "Iddir" groups, the team realized the difficulties faced by families with little labour power. Thanks to the Iddirs, very poor families benefitted from the support of other families. Similarly, we encourage Iddirs to negotiate to receive institutional help to prepare poor families' plots.

f) Supporting the setup of micro nurseries for the introduction, multiplication and preservation of plant material:

The creation of family micro nurseries (less than 15m²) is also an innovation of the team. They facilitate the introduction and multiplication of interesting varieties by the families themselves, such as fodder grasses and legumes. The creation of surseries of cuttings of sweet potato in fertile and humaid spaces must be promoted (for example within the home garden or on the edge of the Ensete plantation) to bridge dry periods and ensure the maintenance of a minimum quantity of seedlings for the next season.



Widowed woman supported by the programme in Damot Sore

Multiplication of Ensete and fodder

Example of two families

A year after the support of the project, the changes we have observed in this widowed woman are considerable. She is in the picture below on the left, next to legume fodder plants (vesce and Desmodium) which she planted underneath her coffee trees. On the right, her daughter near an anti-erosive structure with Pigeon pea and fodder grass. Above on the right, a micro backyard nursery to multiply Desmodium (legume used as fodder) and preserve the reserve of sweet potato seedlings (right of the picture). According to this woman, the most beneficial effect of this project was the setup of a plot associated with the production of fodder, which she can cut when needed.





Mr et Mrs Lonsako's farm



Family backyard nursery, multiplication of fodder



A neighbour who appreciates the introduction of Pigeon pea (and puts some seeds in his pocket to produce them himself)



Anti-erosive structures with fodder, banana trees and Pigeon pea



Progressively, the plots are protected by plants which contribute to preserving the land and improve fertility, while constituting new sources for food and fodder. \hat{x}









First harvest of Pigeon peas after 6 months





This corm of Ensete was planted a year ago and the suckers will soon be able to be transplanted during the next rainy season.

