NO. 2

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF AGRICULTURE, HYDRAULICS AND
HALIEUTIC RESOURCES
REPUBLIC OF BURKINA FASO

THE STUDY ON THE SYSTEM TO ALLEVIATE THE LAND DEGRADATION IN BURKINA FASO
Second phase

EDUCATIONAL MATERIALS

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Preface

The present educational material has objective to make effective the activity of the agents and NGOs in charge of technical guidance for rural development within the framework of the population raising awareness and extension.
This educational material is composed of two parts that is to say: instruction materials (for the state-controlled service) and technical materials (for farmers).

In order to draw up these materials, documents collected have been subject to an analysis and we have gathered information liable to be used for the conception of the said materials whose development is foreseen within framework of the survey in the respective sectors and continued by the acquirement of educational material and by a verbal investigation of the concerned departments of the various ministries (Ministry of Agriculture, Hydraulics and the Halieutic Resources, Ministry of Animal Resources, Ministry of the Environment and the Setting of life, etc.), and by ONG such as CESAO (Center for Economic and Social Study of Africa) and INADES (African Institute for the Economic and Social Development) which possess a rich experience in development of teaching material.

And then as pursuing the analysis of the collected teaching materials, we proceed the drawing out of educational material while taking into account the suggestions of aforesaid departmentsand NGOs.

I. Generality

It is habitants living on front lines of the advanced of the land degradation who are directly responsible for the struggle against the land degradation. The changing from the exclusive production of resource to sustainable one is one of ways to alleviate the land degradation.

Instruction materials summarized the important points demanding the particular attention to the extension agents or the NGOs in activities of extension to the populations with the help of the technical materials. This chapter includes the following materials: techniques of agricuture, livestock farming, management, useing and forest resource conservation, agricultural soil conservation, improvement of the daily life, resources in water.

Technical materials are the supports when extension agents give explanations to populations for the extension. We paid attention to use a lot of pictures so that these supports are comprehensible to populations who cannot read, so that villagers alphabetized in local languages can discern the utility of their acquirements directly concerning literacy.

II Instruction materials

1 Field of agriculture

1-1 Rainy season crop growing improvement

(1) Sorghum

1 - Justification

The sorghum is the widespread cereal in the Burkina Faso. Currently one estimates 1.5 millions of surface hectare that are dedicated to him.
Its fashion usual of culture is well famous by the traditional practices in country mossi.

2 - Origin

The sorghum belongs to the family of the Poacés tribe of the Androponeaces, kind sorghum, two-colored species. Origin of Africa, it overflows extensively the moderate regions.

3 - Morphology

The sorghum is characterized by a system powerful root that explains largely its capacity to support some important risks concerning food in water.
The capacity of the sorghum understands a main stem accompanied by suckers descended of the adventitious buds development on the collar of the main sprig.
The number of suckers by foot varies so much according to the variable features that of culture conditions.

4 - Growth and development

One considers three phases in the cycle of the sorghum:

- the first goes from the seedling to the floral initiation.
- the second of the floral initiation to the pollination;
- the last of the pollination to the maturity.

As for the seed of sorghum is sowed in a humid land, it inhibits itself and inflates. If soil is hot (superior temperature to 20 C), germination takes place quickly.
In good condition the sucker begins 15 days after the seedling.
The sorghum is a h plant short days, it is to say that its flowering is only misled if in a cycle of 24 hours the length of the diurnal period is lower to a critical value.
The sorghum to resist constraints waters uses several strategies that one regroups in three big categories.

- the exhaust;
- the loop line;
- tolerance.

No genotype of sorghum can be lucid as universally resistant to the drought.

5 – Name scientific	SORGHUM SP
6 – Variety	Gnofing, Ouedzoure, Irat 2002, IC5V 1049 BFS, IRAT 174, S.29
7 – Cycle	80～90 days for cycles courts 100～120jours for the middle cycles More than 120 days for the long cycles
8 – Ecology	- The average rainfall= 500～1,200 mm of eau/ year - Soils = argil - sandy to middle consistence, riche humus and drain well - Place in the rotation = Second or third room in the cotton rotation - but - sorghum or cotton - sorghum - peanut
9 - Culture of the sorghum	- Preparation of soil = labor in beginning of rainy season (15～20 cm), Urea is planted 50kg/ha - Preparation seed = treatment to the insecticide help - fungicide - Seedling = June - 15 July after 20 mm of humidity - Measures out = 6 have 12 Kg/ha - Spacing: 0.80 x 0.40 m; 5～8 days / hole - Fertilization= Organization = 5t/ha all 2 years Minerals = 100 Kg NPK/ha 15 days biting seedlings - Starting = 8 days after the levee to avoid a concurrence between plantations - Weeding = 1st 15 days after the levee = 2nd 15 days after the 1st = 3rd to the demand - Chemical Weeding = possible to reduce the number of weeding - Furrow = 45 days after the seedling
10 - Harvest	October from December - Drying and beating after the harvest - Storage in grains or in panicles
11 - Yield	- Traditionally - 600～1,000 Kg/ha - Improved culture – 1,000～3,500 Kg/ha

(2) Cowpea

1 - Justification

The cowpea comes after cereals in the food regime of the Burkinabés;
It has a very big food value (what is worth him the nickname of poor meat);
It exists a walks carrier notably the neighboring countries;
Its production is easy and it exists varieties to high output;
The cowpea constitutes a culture of pension capable to replace cotton;
Its fade is an excellent food for livestock;
It improves the fertility of earths.

2 - Objectives

To promote the culture of the cowpea;
To increase incomes of producers.

3 - Advisable varieties:

- KVX 414-22-2 (thick grain, white);
- KVX 61-1 (grain middle, white stain of rose);
- KVX 396-4-5-2D (grains means, white).

Cycle seedling maturity: 70 days.

4 – Point of techniques

Zone of culture: 300~1,200 m
Type of soil: light sandy to limono - sandy
Preparation of soil: labor or weeding before the seedling
Seedling: date of seedling: Mid - July
2 seeds by poquet (not of demariage);
dose of seed: 15~20 Kg / ha;
spacing: 80 cm between lines, 40 cm between poquet
Manure: 100 Kg/ha of manure NPK cotton to the labor
Maintenance: 2nd sarclo-binage at 2 weeks after the 1st.
Treatment insecticides: produced recommend: Decis, Dimethoate, Endosulfan or a mix of these products.
Dose: l liter/ha to mixture to the advisable water quantity (about 35 days biting seedlings)
2eme treatment: to the formation of pods (10~15 biting days the 1st treatment).
Form of culture: advisable pure culture
Yield: 1.5 T/ha

5 - Results

- Producers master the culture of the cowpea better;
- The production of the cowpea increases;
- Incomes of producers increase.

1-2 Market gardening

1. Confection of pits composts and manufacture of compost

a) To choose a place to shade to put the barn yard manure in place;
b) To always implant the barn yard manure in a perpendicular way to the slope. Of preference to choose the quotes North - South;
c) Measurements of holes must be identical. They are the following:
   - Length: 3～4 m
   - Width: 1～1.5 m
   - Depth: 0.5 m

There are seven (7) determining elements in the success of the dating. It is about of:

➢ Foods

They are constitute everything that rots the straw for example, stems of thousand, the dead leaves, the centers, garbage of animals, etc.

➢ Water

During all the length of the dating the humidity must remain sufficient to permit the attack of celluloses by bacteria. Matters to stamp must give the impression of a humidity, of a sponge compresses that doesn't return water.

➢ Air

It is so that alone the aerobic fermentations are active; it is to say in covered heap (in enclosed atmosphere). It is necessary to plant 5 sticks on the barn yard manure: 2 on every width and 1 to the middle. They must be moving every three days and this opportunity is seized to verify the humidity.

➢ Ferments

They come from manure, of manures or borders of the old compost, of the earth and even of the microbial preparations (of activators).

➢ The weak basis

One sometimes use some primary rock gunpowder or merely of the earth in cover of the heap or in the heap (ashes).

➢ The earth

This addition in the heap or in cover in the heap is not indispensable but gives some superior results always. The operation is easy to mechanize.

➢ The cover

The sun is source of drainage of surfaces and variations of temperatures. These effects can be attenuated by the use of the straw, of the plant garbage and sometimes of the earth in cover.

Method of the replenishment and the turning of compost

a. The replenishment

1. To first water all the surface (the bottom of the hole) to keep an ambient climate;
2. To spread out a layer of straw (10 cm);
3. To spread out a layer of Burkina Phosphate to defect of the ash on the straw (1 cm);
4. To spread out a layer of animal garbage (about 4 cm of thickness);
5. To put following garbage a layer of earth (5 cm);
6. To water the again all.

The set of the thus done operation must have a thickness of 20 cm.
It is restarted several times until the obtaining of one meter (1m) of thickness. Either 50 cm in the hole and 50 cm out of the pit.
It is to note that the whole must be covered with the straw to protect compost against sunburns.

b. Turning (to See Fig.1)

II is made layer by layer. It is to say that the part situated out of the pit (①) is sent in the first place in the bottom of the following hole (②) and this every 15 days until the last (④). At the

end of 45 days compost so ready is empty and canned food to the shade (under a tree or the shade of a hangar). It can be uses from this moment.

To keep
To get good compost a minimum of 45 days is necessary. It is necessary to keep that every 15 days, the compost must be returns and so until its abduction of the compost at the end of 45 days. The gotten compost must be room to the shade and of preference under cover.

2. The seed bed

It must be installed of preference no far from a point of water often to the entry of the fence. Measurements of boards are the following:
- 2~3 m of long;
- 1 m of large;
- 0.25 m of depth.

It is always better to plan 0.60 m of space between boards to serve march feet, The spacing between the seedling is 0.20 m The depth of the hole to bury the seed is function of its size.

The drawing (to See Fig.2) n° ① is considered as boards prepared to receive seedlings. They must have of preference the North orientation - South.

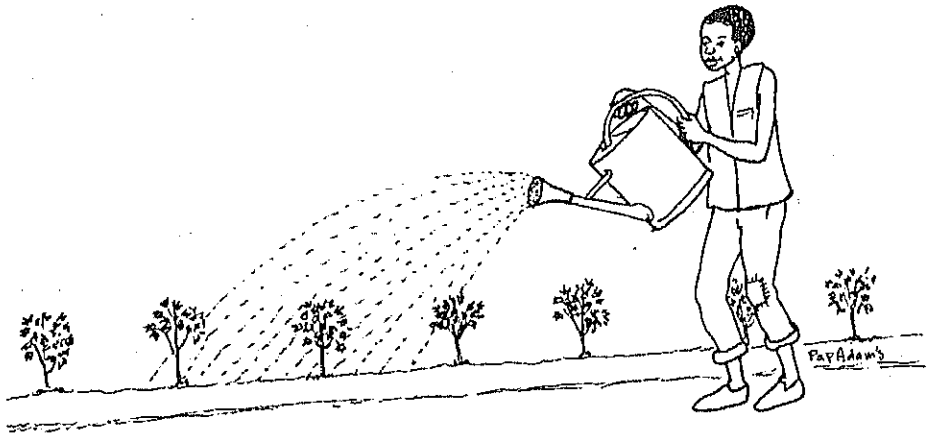
The drawing (to See Fig.2) n° ② gives an idea of that that must be boards after seedlings. They must be covered against the sunniness. Only it is necessary to keep that the small hangars to prepare must have heights that respect some norms. The height of the quotes is or rise the sun must be 50 cm and the one of the quotes West 30 cm.

➢ **LES TRAVAUX**

1. To sprinkle chaqe day, of prèfènce the evening, with a watering-can provided with one, apple with small trous.Eviter of dèterrer sowing by a watering badly fait.Diriger holes of apple to the top in order to eviter that the young seedlings lie down by the too powerful force of a direct jet.

2.To control the removal regularly sowing and to remove mulch as soon as the seedlings rise for to avoid quils slips by or etiolation.La levèe abnormally place one or two weeks after sowing and it is variable according to the species and of the climate.

3.Poursuivre daily waterings with a watering-can provided with an apple.



4.Enlever the bad grasses which are in competition with the seedlings for water, manures and the light and to break the surface crust which is formed on the surface of the ground, and which empèche a good penetration of water and air, by sarclo hoeings règuliers.

5. Contrtôler règulièrement the ètat phytosananitaire of the plans as a pèpinière and exècuter of the treatments as soon as one notes the first symptoms of attaques.Consulter the charts by species where the framing in case of doubt about the identitè of the ravageurs.

6.Vèrifier if the seedlings are prèts for the repiquage.La durèe as a pèpinière is very variable according to the species and of the climat.Se rèfèrer to the charts.

7.Un good seedling for road repair must be healthy and robust, to have several true sheets and of the healthy roots and well dèveloppèes.

➢ Rècolte of the seedings

1.Arroser the pèpinière the evening before pulling up, with a watering-can of 10 l.par? of pèpinière.L' pulling up of the seedlings of a pèpinière must be done with many care and of prècautions.II is necessary to leave the roots as intact as possible, of prèfèrence with a lump of earth autour.Un transplanting machine is very useful for this operation and èvite also to wound the tiges.Des cultures like onion and leek can be repiquèes with naked roots.

2.Eviter the drying of the seedlings arrachès by covering them with a jute trempè bag in the eau.Ceci will ensure also a certain freshness the intèrieur.Ne not to await avac too a long time the road repair which one will exècutera of prèfèrence the evening.

3. Preparation of the field and recording (to See Fig.3)

➢ The confection of strips

Strips must be placed in a perpendicular way to the slope. The length is x m and the width of 4 ~7 m according to the system of irrigation uses. It is counseled to plan a space of 0.6 m of large between strips to serve march feet. Another space of a width of 1 m is always let between strips and the fence to permit the coming and going and the certain material deposit.
The strip must be dug to a depth of 0.25 m let in this state during one week before the preparation for the recording. It permits an attack of roundworms by the solar rays.
Before proceeding to the recording clods of earth must be ground and the well leveled surfaces likely to facilitate a good circulation of water.

➢ The confection of them grouses

Tools uses for the confection of stripes are the following:

- Pegs;
- A meter;
- A cord;
- A hoe.

Measurements of stripes vary according to beddings plants.

- Tomato 0.80 m between lines and 0.70 m on lines;
- Cabbages 0.60 m between lines and 0.5 m on lines;
- Anoint 0.40 m between lines and 0.20 m on lines;
- Gumbo 0.80 m between lines and 0.70 m on lines;
- Potato 0.60 m between lines and 0.60 m on lines;
- Watermelon 2 m between lines and 2 m on lines;
- Cucumber 1 m between lines and 1 m on lines.

The respect of these measurements can increase the quantity of the production until to10%

The recording always makes him to the custards of stripes and in line. This work must make him with the help of a cord. Of even the weeding must make him in them grouse and on their custards biting spread of manure or the organic manure. It is necessary to keep that the weeding makes him with the help of a hoe and the recording with a plantoir (to See list of tools).

4. Method of irrigation (to See Fig.4)

Water must be poured with a certain sweetness of manner, manner to what it doesn't cause any damages at the level of passages to prevent a good irrigation. In other words it is necessary to control the debit of water during the irrigation or the watering well. It need be to put a heap of grass on the place or water is poured.

The watering owes to make itself of preference with a watering can that produces drops of water fine. It must make himself with care. The quantity of water to the m^2 is estimated between 10 and 14 liters. It is counseled to maintain an ambient humidity in surface but in a non-excessive way. It is not necessary either to let surfaces dry up during a long time especially in the case of nursery garden.
For what is at the level the irrigation of stripes it makes itself in a constant way. The even water always the main look and flow to a speed slow to the custards of stripes.

5. Weeding and management of the manure (to See Fig.5)

In the garden product it is said that a weeding is worth two (2) watering cans. It means that it is to hoe better that to water continual way. After the recording of plantations a first weeding must take place between the 5th and the 7th day. To the continuation of this stage the weeding or weeding to make itself all weeks until the maturity of plantations.

For what are the organic manure and the chemical manure they must be bury to every weeding. It is necessary to also keep that the weeding must make him on an earth moistened of water. The weeding and the burying of the manure or manure are made in the evening of preference the morning and the watering.

6. Harvest and merchandising

a) Harvest (to See Fig.6)
It exists two ways to harvest depending on whether the vegetables are destine to the immediate consumption, to a conservation or to the transportation for the long distances.
For what is the immediate consumption vegetables can be harvested to the state wall. For vegetables destine to the conservation and the transportation, they must be harvest in tender state that wants to say no green or completely walls.
It is counseled to space the days of harvests to permit the young fruit development. It is as preferable to proceed in the evening to the harvest before or biting the watering.

b) Commercialization (to See Fig.7)
The merchandising of vegetables products is function of their quantity and their quality. For productions of small quantity for needs of consumption the surplus can be sold on room of the walks local.
For what is the big production destined solely to the sale, it is right to proceed at the level to a prospecting of marches internal (in the country) and external (in the neighboring countries, in Europe.). In this second case it is to note that the production must take account of the demand. It is as imperious to take account of purchaser requirements that becomes more and more watching on the quality and techniques of product packing.

The garden products are an activity that mobilizes a number important of men and women in farming environment as urban. Since the year of 2000, it constitutes an important lung for the local economy in this sense that it attracts more and more purchasers coming from the neighboring countries as Ghana, Togo and Benin. This new deal created an economic relation on the one hand at the level between cities and countries national and on the other hand between market gardeners of the Burkina and neighboring country purchasers. (To see Fig.7)

But one notes that in spite of these opportunities that offers the demand coming from the outside, the lack of expertise in the management of laws of the walks constitutes a bottleneck for market gardeners. Then it is preferable for market gardeners to organize it in groupings and to form itself in technique of marketing and management of their production (technique of vegetable packing for example).

This manual doesn't certainly contain all common techniques in the garden products but gives some useful indications for those that want to exercise it.

2 Field of livestock farming

2-1 Improvement of chicken breeding

Introduction

Burkina Faso is a sahelian country for which the economy is based mainly on two points: agriculture and breeding.
Breeding sector includes various species such as cattle, sheeps, goats, pigs, but also poultry (mainly chicken and guinea-fowl). Poultry is rearing both in rural and suburban areas, and that shows its importance which can be located at three levels: economic, sociocultural and gastronomic.

- Economic importance

Poultry provides considerable incomes through the sale of chicken and guinea-fowls. This sale reaches the top level during the end-of-year festivals and holidays. Thus, at the national level several million of chicken are sold each year.

- Social and cultural importance

In Burkina Faso, fowl is taken into consideration in all social and cultural demonstrations and ceremonies such as engagements, marriages, baptisms, funerals, rituasl, as well as customary and religious festivals, etc...
Colour of fowl, in this case is taken into account according to the requisite use.

- Gastronomic importance

Poultry meat is very appreciated by burkinabé people, because it is white meat without cholesterol which is eaten under several forms: cooked, fried, grilled, or stuffed. Fowl meat improves considerably quality of burkinabé basic food such as "tô" (millet or sorghum paste), rice and others and contributes to the consumer's nutritional health by providing quality protein.

In spite of the fowl's undeniable importance for the country, poultry farming encounters a certain number of limiting factors hindering its development.

I. Limiting factors of poultry farming

Poultry farming in Burkina Faso and almost the villagers are faced with some difficulties of all kinds. Among these ones, at first there is the bad management of poultry farming favoured by:
the low level of farmers' skills
the absence and insufficiency of village farmers'means
persistence of traditional practices
the absence of economical measures allowing the farmer to make his activity profitable.

Other difficulties derived from this bad management. Indeed, the bad sanitary conditions and the absence of real habitat of the village poultry farming are at the origin of many diseases which decimating the henhouses.

The faulty food and absence of selection are working towards a low productivity of local chicken. The inorganization of farmers results from a random market left at the mercy of buyers-retailers coming from the cities. All these factors are corroborated by the fact that poultry farming in peasant's area in most cases is rather considered as a secondary activity for supporting family economy. People devote very few time to it.

Facing to these difficulties, it proves to be evident that specialist's role should come within the scope of training/extension dynamics in order to raise the villagers'technical level and to change their

mentalities. The organization of poultry farmers is also a necessity in order to allow them to profit greatly from their rearing.

II. Village poultry farming improvement techniques

A sustainable improvement of chicken breeding necessarily must be done at all levels : habitat, food, hygiene, genetics and quite sure without forgetting the farmer himself.

1. The habitat

A suitable henhouse is a proof of poultry health. In most cases of traditional breeding, even henhouse exists, it is just come down to a small room of some square metres (m^2) maximum in which all chicken of all ages are huddling together. There is bad ventilation of the house and as the inside is often inaccessible to man, so cleaning cannot be done.
Poultry's droppings mixed sometimes to bad eggs or to chick carcasses is an environment for bacterial culture. The innumerable holes and cracks on the wall or chinks on the straw roofing are hiding places where parasites are proliferating. Such kind of henhouses represents a real source of poultry farming diseases.

So, there is need to build henhouse which meets a certain number of technical standards.
- the henhouse must be sufficiently spacious, easily accessible in order to make the cleaning easier
- it must be well aired, that is to say it must has enough openings for making the ventilation easier
- the floor and the wall must be roughcast, and do not show any cracks: a well rammed floor makes easier the cleaning and handling of the litter;
- the roof of the henhouse must be completely watertight to avoid leaks from rain water.
- the different openings must have wire netting on in order to avoid entry of predators in the henhouse while allowing ventilation;
- the henhouse must be built on a flat and raised land to avoid water stagnation
- at last, the henhouse must be orientated in taking into account winds and rains (east-west)

2. Food improvement

In traditional poultry farming, chicken find its daily sustenance in gleaning from the land in the neighbourings of houses. During good rainy season year, farmer throws in passing handful of grains, and from the housewife fowl receives housework residue. But in all cases such diet hardly give sustainable results.

So, it is important to go beyond the traditional system in supplying rational and balanced food to poultry. Thus, the breeder must know that for effective production of meat or eggs, fowl need various types of food: energy-giving food, tissue-development food, vitamin and trace elements-supplier food.

a) Energy-giving foods
As their name shows it, they are foods which supplying energy, that is to say "fuel" to animal body. It is in this way that fowl breeding yields largely depend on food energy content.The growth rate of poultry is greatly related to this factor.
The energy-giving foods are as follows:
Carbohydrate foods: millet, corn, sorghum, rice
Lipid foods are oleaginous plants such as groundnuts, sesamis, etc...
The breeder will see that these kind of foods are part of poultry food ration.

b) Tissue-development foods
These foods are contributing to the development of tissue of the fowl. Essentially, proteins(bone powder, fish meal, shellfish, soya, bean...), trace elements (calcium, phosphorus...) are concerned. Here also, the breeder will see that these nutrients are part of the daily ration.

c) Vitamin and trace elements-supplier foods
These are foods which supplying vitamins and trace elements to poultry, so that to stimulate and lead the numerous biochemical reactions to be executed within its organism. Vitamins and trace elements are in green vegetables, fruit, cereals, and water. Poultry farmer will make effort to supply this food as much as necessary to fowl.
Various food formulas offering well-balanced rations according to the type of production are found within the area of modern-type fowl breeding. But, as far as traditional-type poultry farming is concerned, it is not necessary for breeder to know these different formulas which he will never be able to apply. All that he has to do is to know that hen needs various kinds of food in order to produce meat and eggs.

Moreover, in addition to the food itself, poultry farming will get down to support this improvement through the introduction of adapted tools, namely feeding and drinking troughs. As about the habitat, breeder will rigorously watch over the cleanness of this equipment in order to guarantee a good food and a good health conditions to fowl.

3. Health conditions

Health matter is an essential factor in poultry farming. Indeed, it assures a good productivity for mordern or traditional breeding. In farmer's environment, technique for running breeding makes health matter a random item, that is to say controllable with difficulty. The bred_subjects hardly or very few time benefit from health care. Sometimes, losses are very important and can reach 100%. To curb such kind of situation, it is necessary for breeder who is anxious to have prosperous breeding, to accept in harmony with technical department, to apply a protocol for combating poultry diseases. This plan of combat can be based around two points, which specialists know very well: prophylaxis and etiological treatment.

a) Prophylaxis
Prophylaxis is a set of measures aiming at preventing appearance or expression of a pathology in a given environment. We have sanitary and medical prophylaxis.

- **Sanitary prophylaxis**

This prophylaxis in poultry farming will be about the equipment as much as henhouse and food.

Hygienic conditions of the equipment
Breeders will see that eating and drinking troughs and all equipment used in the breeding unit to be daily cleaned.

Hygienic conditions of food and water
The contaminated, rotting and mouldy foods are sources of germs and various poisonings. Breeder will see in absolute way to serve food to fowl so that to avoid contamination of fowl. Water given to fowl must be free of germs

Hygienic conditions of the habitat
The henhouse, as shown above, can be source of diseases affecting fowl, if it does not meet technical norms or if it is badly maintained. Habitat must be cleaned and disinfected regularly. Litter must be also changed at regular interval.

Putting in quarantine
It is a prophylactic practice consisting in keeping new comer in a separated area for a variable time before putting it into the henhouse. It allows to avoid possible contamination of poultry in case new comer is germ carrier.

Medical prophylaxis
It is a matter of using vaccines essentially in order to prevent infectious diseases and/or vitamin-enriched hang-ups against stress.
The most current diseases in poultry breeding are as follows: Newcastel, plague, cholera and smallpox. The causes of stress are essentially derived from cold, vaccination, removals...
For all these cases, fowl breeder will get in touch with the village resident in charge of vaccination or the breeding specialist to know the kind of behaviour to be held.

b) The etiogical treatment
The etiological treatment are medical actions, aiming at combating causal virus of a disease.
The actions concerned pathologies due to bacteriums (salmonellosis, pasteurellosis, pullorum diseases, etc.) or to parasites such as avian trichomonosis, coccidiosis, taeniasis, etc. As about medical prophylaxis, breeders should request service of veterinary auxiliary or a specialist for etiological treatments.

4. Genetic improvement

Local hen is very hardy breed, meaning which can be easily adapted to difficult breeding conditions and fairly resists to diseases. However, it has slow growth compared to hardy breeds such as Rhode Island Red (R.I.R) or Hissex.
The genetic improvement in our situation will consist of two different actions aiming at improving productive aptitudes of local poultry: selection and crossbreeding.

a) Selection

Selection is an operation of zootechnics consisting of isolating or multiplying within a group or population, individuals from this group showing the best performances of productivity. So, breeder will get down to spot the best cocks and hens from his poultry, and select them and breed them in crossing them within the selected group or with other performing subjects from neighbouring breedings. So, with the passing time and selections, he succeeds in obtaining individuals which performances are superior to the ones of non-selected subjects.

b) Crossbreeding
Crossbreeding is an operation of zootechnics through which two individuals of different breeds are crossed, so that to give intermediate products. Within the framework of village poultry farming improvement, crossbreeding will consist in mating local hens selected or not with an "improver" cock (case of Watinoma project in Bam project). Such a crossing will give rise to half-breed fowl which will lose in hardiness but will gain in productivity on the other hand.

III. Organization of farmers

Facing to buyers/retailers of poultry farming channel, village breeders need to be organized, in order to profit from their activity. This organization should transcend traditional breeders'groups or associations experienced up to now and which have always collapsed. The organization should draw on breeders'real willpower to have a consultation framework and search of market as well as the common wish to speak with one voice. It is only at this cost that viable organizations which are in a position to take common decisions accepted by all members will be established.

Conclusion
For a true and sustainable poultry farming improvement in peasant's area, a certain number of actions are to be considered with the view to reach some results. These actions in order to be effective, are not to be undertaken in isolated way, but they must be integrated within a same and single motivation and the related parties will be at the same time specialist and poultry farmer, with prospect for transferring progressively knowledge from the second one towards the first one. It is only in this way that poultry farming will know a real expansion, not only for Burkinabé farmer, but also for consumer and the national economy in general.

2-2 Fodder production

Fodder production is made up of three (03) activities, namely :
- Collection crop residue
- Cutting and conservation of natural fodder
- Fodder cultivation

1. Collection of crop residue
It must be done just after harvesting. The stems of graminaceous plants must be harvested when they still have green leaves. People must avoid letting the stems for a long time after harvest of the grains. Under the effect of the sun, the stems lose their nutritional value and cannot but give lignin(very easily digestible and low nutrient), or spoil in case of rain.

As far as leguminous plants, such as cowpeas and groundnut haulms are concerned, need be to avoid piling them up because lack of ventilation leads to mould, which brings about some infections in case of ingestion by animals. It is preferable to start harvesting, either in a progressive way (collection of pods and drying of the haulms) or in spreading out the harvest in light layer and to separate the pods from the haulms within a short time (that will allow to collect haulms when it is even in good quality).

2. Cutting and conservation of natural fodder
2.1 Equipment
- Cutting equipment: machete, knives, scythes
- Transportation: by head, bicycle, wheelbarrows, carts
- Conditioning equipment: mould, excavation of hole, straw-baller, strings or creepers

2.2 Which species to cut?
To cut all local species of fodder brought by animals. It is important to know these species and to know the site of abundance.

2.3 Cutting period
Cutting must start when the graminaceous plants reach ear emergence stage and the leguminous plants are flowering. At this stage, all the nutritional elements of the plants are concentrated within the stems, leaves and pods.

2.4 Cutting time
It is preferably to cut in the morning when it is not rainy time and after evaporation of the dew. Observation of the time is important if one wants to avoid fastidious drying (too wet grass, presence of rain, etc...).

2.5 Cutting techniques
To cut at about 15 cm from the soil. To avoid systematic cutting of species (to let row intact for allowing the natural regeneration). Not pull out at the risk to have to strip bare the land (degradation). Not cut at the lowest part at the risk of wound or to damage one's equipment (uneven place). Cutting with scythe requires spaces cleared by any obstacles (stumps, stones, etc...).

2.6 Drying
- Place: to dry preferably in a clearing or in a dry place.
- Drying technique: not pile up, avoid making thick layers. To make light layers for allowing quick drying and underneath ventilation. To turn over the grass at least twice in a day (example: spread out at 10 o'clock, turning over at 1 p.m. and 4 p.m.). To collect the grass in the evening at sunset (between 5 p.m. and 6 p.m.) and keep it in a covered place sheltered from the dew and rain. To continue the drying the day after (after the dew). The duration of drying goes from 1 to 3 days (but depending from the fact that it is sunny time or not).

2.7 Conditioning

When the hay is well dried, it becomes green and soft, that make avoid the hay crumbling when we handle it. The gained hay will be assemble in bunch with help of a mould (or baler or excavated hole) in order to have bunches with approximate weight. For making bunch, two fastenings (creepers) will be spread out within the mould widthways and another one in lengthways. Then people will start filling up the mould by small layer evenly compressed. Afterwards, people will start to fasten widthways creepers then the lengthways ones. Then, one will exert pressure on the bunch for getting it out of the mould. In the case of a hole, two solid ropes will allow to extract the bunch by pulling.

It is necessary and important to weight some bunches and to know the number of gained bunches in order to get an idea of the hay quantity. The knowledge of fodder stock must guide the farmer over his planned production capacity (number of animals, duration of the activity, stock to be searched for, etc...).

2.8 Conservation

The stocking of the hay will be made in a facility fitted for this purpose (hay loft or barn). The bunches must be stored on a riddle or floor to avoid termites's attack and to allow a continuous ventilation. The stocking will be done according to the type of fodder (graminaceous plants separated from leguminous plants). Fodder with less quality must be kept on the surface in order to be firstly distributed to animal during rationing.

2.9 Fodder facilities

The traditional conservation facilities which are sheds are proved to be very unsuitable (fooder is spoilt by the sun and rain). For that, the installation of hay loft is essential for fodder conservation.

- Place: to install the hay loft in an elevated place and not far from the production unit (fattening place, etc.)
- Size: Length: 8 to 12 m
  Width: 3 to 4 m
  Height: 1.3 m(simple) 3 m (at the top)
  Air vent: from 50cm lengthways

3. Fodder cultivation

There are proof species such as the "sirratro" and some annual species such as "solique lab-lab". There are also dual-objective species of fodder (annual one) such as corn fodder, cowpeas fodder. Example: cowpeas fodder: KVX-745-11 P

3.1 Distinctive features

This type of cowpeas is a leguminous plant with erected habit, semicreeping hardy stem, fitted to sandy-clayey-type soil. This species has semiripeness-type cycle of 75 days, 60 cm of height with sweet taste white colour grains.

3.2 Cultivation

- Preparation of the soil: wet soil ploughing (400-800 mm)
- Manuring: 5 T /ha of organic manure or 100 kg /ha of NPK (to be done during ploughing)
- Implementation: sowing after ploughing with a dosage of 12 kg/ha (80 cm between the rows and 40 cm between the seed holes). To start sowing by end of june and july up to beginning of august(zone > to 800 mm).
- Maintenance of fodder growing: 2 to 3 weedings; singling to 2 seedlings per planting hole; sanitary treatment (beginning of the flowering and the formation time of pods). The herbicides are among other the "decis", "karate", etc.

3.3 Management of the crops

To start harvesting the pods from ripeness and mow immediately the haulms.

- Yields: haulms (3T/ha); grain (0.8 to 1 T/ha)
- Conservation: * to dry well the pods, then threshing and winnowing. Finally treat the grains before conservation. * to dry the haulms and bunch them immediately, and stock them in a hay loft (to complete the drying).

2-3 Ovine rearing

1. Introduction

Livestock farming is an important sector economically and socially in the region of Sahel in the Burkina Faso. In most cases, the livestock farming conduct extensively at the level of food, in the selection of animals and in their merchandising. The objectives of this sector are the sale of animals to obtain money and to get milk for the local consumption.
Many producers will more attend to the animal fattening that make possible to increase their worth especially selling in urban market (Ouagadougou, Abidjan, Pain, Lome, etc.). In spite of the growing importance of this activity, its development has many difficulties. The problems of peasant about fattening animal are in their techniques of production and the economic profitability. These problems are especially owed to the weak levels of producer's technique, the strong variation of the fattening length, the insufficiencies of the selection of animals, the lack of outlets, the strong fluctuation of animal prices. And the Producers purchasing power is low, so they cannot acquire of animals in sufficient number for a conduct profitable of the operation and the sufficient quantity of basis foods and concentrate.

The improvement of this activity needs not only the technical level of producers for the fattening and the ability of discriminating animals for fattening, but the organization of producers for the distribution system of feed resource and for the profitable market research.

2. Environment

Livestock farming to the Sahel essentially takes place from the available local feed resource valorization (natural fodder, residues of harvest, woody products (leaves, pods, etc.)). However, if in season of rains, these resources are available in quantity and in sufficient quality, in dry season they become rare and poorer. Producers must know therefore how to ally the available to forage very variable to relatively regular animal needs during the year. Among activities of production that require a certain availability of fodder in quantity in sufficient quality represents the ovine fattening. Producers must arrange technical knowledge and the necessary advice therefore to a good practice of reaps it and the conservation of fodder in their middle for the good driven of the activity.

The fattening is one type of livestock farming permitting to the animal having finished the main thing of its bodily growth generally (mineral) to express to the minimum its potential of meat production, within relatively short time and with the energizing expense minimum. It is about a livestock farming type or the totality of the food needs of the animal is brought him there in term of ration.

The ration is formed of the set of foods consume daily by the animal and the rational food has for goal to provide to animals foods clean to assure a production determined in conditions of optimal output. The food is in makes theoretical deal translation practices defined by the nutrition that, it studies nourishing contribution mechanisms to the cell, their use and the elimination of garbage with for finality the maintenance of structures tissue and the good working of the organism.

3.Amelioration of the animal selection

Most animals of fattening are bought on marches to livestock. Of these bought animals, generally called skinny animals, producer can use the young animals or animals in addition reform their parks. Considering the present structuring of marches to livestock, the purchase of animals makes him by evaluation on foot, the price being concluded after discussion between the seller and the purchaser. Therefore the price for a skinny animal will depend on the cleverness to negotiate the purchaser. In addition, there is also the fact that costs of marches have livestock are function of periods or seasons of the year and therefore one should choose those that offer prices of possible the lowest purchase. To increase odds of success of the producer it is him recommends to choose topics:

- Age varying 12- 18 months weighing 25 -30kg. The too young animals will take a lot of times for the finish and it will influence the profitability of the operation negatively. When animals are aged (more than 24 months), the expression of potentialities will be also weak.

- The race has an impact on the quality and the profitability of the fattening operation. It is preferable to take sheep of race sahelienne or very taken Bali-Bali on the urban marches (Ouagadougou, Pain, Lome, Abidjan, etc.) and that present the best faculties to the fattening. The mixed race present less potentialities than these last.

- The dress is a parameter of very important appreciation that adds a more been worth to the animal in fattening. Of preference animals presenting a beautiful dress (pie crotchet or red, speckled pie, etc.) have the best values merchants. To avoid so possible the black or red topics.

- Health constitutes an essential criterion in the choice of animals to put to manure. It is counseled to the producer to avoid topics presenting problems of health therefore. For it to verify at the time of the purchase that the general aspect of the animal presented not of signs of illnesses, of lameness, an infestation by the extreme interferences. To verify that the animal has a good teething that permits a good consumption of foods.

4. Improvement of techniques of fodder collection

In region sahelienne of the Burkina main constraint Faso one concerning animal production is the one that consists in allying the available to forage very variable to relatively regular animal needs during the year. Reaps it and the conservation of fodder is a shape of adjustment used to permit the excess period livestock plotting (season of rains). Information on the collection and the management of fodder have for worries to give to producers of the technical knowledge and the necessary advices to a good practice of reaps it and the conservation of fodder in their middle or system of production.
Principals points to know on the collection of fodder are:
- The main types of fodders dry canned foods
- Principles of basis for reaps it
- Measures of conditioning
The main types of fodder dry canned food is:
Residues of harvest (gramineous vivrieres straws, fade them of legumes), fodder cultivates, the natural hay

Principles of basis for reaps it require the restraint of the choice of instruments and techniques. Instruments must be adept to needs of production. Two types of instruments are use generally: the sickle and the forgery.

Reap it is a technique of grazing exploitation that requires the restraint on the choice of the moment and the application of drying techniques.

All herbs lose their nourishing value quickly with the evolution of the rain season. It is therefore indispensable to choose the good period or the best moment of reaps (to reap between end August and September). The broke grass must be dried during two days, one returns grass every morning. The afternoon of the 3rd day, the hay is ready.

The broke grass can be conditioned of several manners. Generally, two (02) types of conditioning are counsel:

- the conditioning in sheaf of sorghum straws and of propelled
- the stake in boot of fade them of Legumes and the hay of the gramineous spontaneous and of rice straws.

It doesn't generally exist material of reference condition of the variability of weight of boots of fodder of same species prepared by a producer.

However, the method of case in boot digging of a hole with the precise measurements exercised by certain agro-pastors permits a standardization of the boot weight facilitating the management of the livestock appropriate. Boots constituted appropriate from bottlers or hole in boot of measurements of the order (L x l x H): 70 x 40 x 55 cm generally presents capacities of 10 - 15 kg according to the degree of jamming.

5. Improvement of the habitat

The realization of sheepfold answers has several worries:

- To Lodge animals in good conditions to protect them of rains and wind;
- To Avoid losses or the robbery that risk to arrive as for animals rambles; to assure a better food follow-up of animals to manure;
- To increase the production and the quality of manure from steady animal ejections.

Convenient Council for:

- The choice of the site: a permeable soil
- Orientation: to take account of the direction of rains and the dominant winds.
- The use of materials: to use such beautiful materials the earth (clay for bricks); wood for beams and rafters, the straw or the earth for the roofing.
- For animals of fattening the building must take account of made it that animals should live in little barn during the three to four months of allotment.
- The natural ventilation and the elevated temperature embarrass the growth and the fattening of animals.

Construction

The sheepfold must be:

- It is necessary to always calculate the size of the sheepfold according to the maximal strength. For a ram, it is necessary 1.75 - 2 m2. For two rams, it will be necessary to 3.5- 4 m2 therefore a building of 2m x 2m.
- The door of the sheepfold must be preference in wood.
- Soil inviting best to rams must be constitutes by clay.
- The entry of the sheepfold must be particularly well beaten to avoid that the zone stagnated by animals' turns into mire.

Manger

- The manger can be constitutes of was etc. cut, of vase in pottery,
- It owes preference being consolidates over to the soil to 0.40 m of soil with the help of forked woods or stones.
- The middle length of the trough recommended by adult ram must be 0.40m.

Trough

- The trough designated all container one construction or animals can quench.
- The trough must be constitutes container makes in traditional pottery, of were cuts, of bowls or buckets of recuperation.
- It must provide to animals in one alone takes, a quantity of less equal healthy and cool water has their needs.
- To be easy access
- To be easy replenishment and of a drains simple
- To be easy to clean
- The site of the trough must be room against the wall of the preference stall close to the door.

Favorable period of realization

The favorable period of realization of the sheepfold is located between October and November in reason:

- The beautiful material availability, of construction (confection of seccos and straw), the possibility of brick confection in pools surroundings of dwellings, the availability in hand of work.
- It is recommended to minimize losses by termites to treat wood the door of the sheepfold with the help of products of treatments running (oil of drains, urine of animals, etc.).

6. Improvement of rationing techniques

Food conduct (formulation of ration)

The completed rations are constituted in addition of fodder or the SPA, of concentrate them (residual of cotton, seeds of cotton, molasses, its of wheat, its local...). But this concentrate, must be considering their elevated cost and their nourishing value use in a reasonable proportion in order to allow the activity to be profitable. For a ration of fattening one should look after what fodder occupies a superior or equal percentage has 20% of needs in MS and this to avoid the digestive unrests and lesions at the level of the rumen (enterotoxemie).

Picture 1: An example of ovine fattening ration

Rations		Ovine Rates of 25 kg of PV		Ovine of 30 kg of PV		Ovine of 40 kg of PV	
		MS (3.5% PV)(g)	MF (kg)	MS (3.5% PV (kg)	MF (kg)	MS (3.5%PV) (kg)	MF (kg)
Ration 1	100	875	960	1050	1106	1400	1540
Paille cereales	50	440	480	50	550	700	770
Son of ble	40	350	390	420	460	560	620
Tourteau of coton	8	70	80	80	90	110	120
Poudre d'os	2	20	20	20	20	30	30

NB. : * PV = Quick Weights, MS = Dry Matter, MF = cool Matter, PC = Straw of Cereal

The follow-up of the food, health and the habitat

Performances of animals in finish are function of the food (poor fodder, concentrate), of weight of the animal to the departure, of age (an adult needs less protein that a young), of the race and especially of the length of the fattening because more the length continues more one has the luck to reach the maximum of weight in finish. However one should verify at every instant the report weight gain /aliment consumes that must be less equal to 0.5. Actually, 90-120 days must be especially sufficient if the animal benefited from a good interview.

The worry in short account is that the stop of the fattening operation is automatic when conditions of sale are economically profitable or when animals don't increase any more weight.

Nuns for the habitat and health must be respect. For the habitat to respect measurements required by animal has know 0.6-2 m2 by head. In relation to health, it is recommended that before the entry of animals in fattening, to worm and to do a vaccination against the main illnesses (pasteurellose).

Animals who arrive for the fattening are those that underwent stress (hunger, thirst, sun, cold, transportation...).

Instead of welcome there are other stress owed to the change of food (fodder to concentrates it) and to the environment (microbes, humidity, pluviometer...).

To decrease the influence of this different stress, one can, otherwise one must take measures that are:

- Rest or forty to the arrival, water at will, fodder of middle quality to give during 4 weeks to the maximum
- To defect to be able to respect the 4 weeks of food in rich fodder the passage to the ration of fattening must make it progressively of the following manner:

Weeks	Fodder	Concentrates
1	100%	0%
2	80%	20%
3	50%	50%
4	20%	80%

7. Improvement of the market research

Since the dissolution of the national structure of merchandising of livestock farming products (ONERA), the out-flow of fattening products is let to every producer that destines them very well to the walks local, either to the export. For certain traditional producers the fattening is rather an exercise of art that an economic operation. However, when a built-in rationally all factors of production in the operation of fattening, one arrives to be profit making. In norms, when things are mastered in the investment, one manages to express the cost of production of the quick weight kg (PV) what gives to the producer an idea in relation to the animal fattening selling price.

To increase their luck the support to the activity of fattening must proceed by an organization of the producer for:

- the fixing of the best periods of fattening considering the availability of the food resources and periods of strong person demand (Tabaski, Easter, Ramadan, etc.).
- the regrouping of producers for the defense of animal prices makes to them trading.
- The research of financing. For it, to organize itself/themselves in grouping for the contraction of loans and the repayment.

3 Field of forest resource

3-1 Production of seedlings in a village nursery

1.Planning

Before beginning the general activities of reforestation, it is necessary to clarify the global plan or orientation of these activities. But, that doesn't necessarily mean a development of the activity plan, that is to say to settle a goal.

Therefore it is necessary to avoid that a certain number of seedlings to be produced will be first decided. It is necessary that a place for plantation will be chosen and that will defined the number of seedlings.

The drawing out of such a plan under the form of chronological chart is efficient because it allows to get the understanding of populations by the use of farming work calendar (so as in appendix 1). It is necessary to explain to the population all processes of concerned work and to formulation a feasible plan.

For the first year, it is desirable that the production of seedlings to be minimized and to increase it during the following.

The facilitator's contribution must be limited to support a promotion of initiative by the population.

2.Production of seedlings

Most the time, environmental problems are not priorities for the resident populations, and sensitization is therefore essential to tackle these activities. It is necessary to organize the visit of existing advanced sites from of other villages and exchange points of views with their inhabitants as well as sensitization meetings by evening video projection. Besides, a lot of things depend on the facilitator who is in charge with this support.

Rather than installing a nursery per village, it is more easy or advised for populations that every villager produces seedlings little by little at his home.
A diagram of small nursery (see fig. 5)

Criteria for the selection of the site

- The land is plane and horizontal
- One arranges the necessary work space
- Trees give a appropriate shade ensuring a protection against the blazing rays of the sun during works
- The site is enclosed etc. by hedges to prevent the livestock to enter inside.
- There is no flooding of the very site even though it rains a lot.

As for the progress of the reforestation works, since the period of plantation is limited, it is necessary to establish the calendar in taking into account this period.
Progress of works in the course of the year (see annexe 1), the big stages of work in the case of a plantation achieved in the mid-August up to the beginning of September.

1) Collection and treatment of the seeds (see fig.7)

- The available species in the village and those existing in the zone (the brainstorming is used here as tools)
- Techniques of seed picking according to species (the trainer has to proceed by the convenient demonstrations in considering the local ability)

- The favorable time for the collection of seeds
- The way of seed treatment, 2 types of treatment have been identified:
  - The treatment by chemicals (acid), these techniques have not been subjet demonstration considering the fact of its high cost but also the risks linked to its handling.
  - The technique of culture medium, a convenient demonstration is achieved with seeds collected before by participants.

2) Preparation of compost and filling up of pots (see fig.8)
- The necessary aggregates (sand, earth, manure...)
- The necessary quality by component before the mixture (using wheelbarrows, buckets and empty cans)
- Pots and their role, the trainer and participants proceeded to the filling up according to the theoretical diagram
- Maintainance and watering of seedlings

3) Sowing (see fig.9)
The important points at the time of the sowing are as follows;
- Seeds must not be buried deeply. It varies from one seed to the other, but to a depth of about the double of their thickness (about the length of the joint of the tip of the finger),
- To make sure that seeds are not stacked, to avoid the fact of decomposition after the sowing,
- To dig a hole with the finger or a small branch, put inside there 2 or 3 seeds if they are small, then cover in packing the earth well,
- Powder seed, as those of the eucalyptus, must be mixed to the sand then sowed in surface.

4) The necessary points for a plantation are following;
- Choose the good seedlings (see fig.10)
- Transportation of the seedlings (to see fig.11)
- Preparation of holes (trouaisons)
- Order of plantation (see fig.12)

A general view of forms of plantation is presented in the appendix following (see appendix 2).

3-2 Forestry resources preservation

1.Introduction

The forest resource management is work that required the efficient mobilization of all users. The establishment of the CVGT is one of approaches the more adapted to give a framework to the devised mobilization of synergies. That is why, several legal and statutory texts are drawn out to define the legal system of natural resource management bodies set up by the populations. It is a target that the population favours the control of drawing out process and to test the applicable way of the rules proposed. However, such a process would not present all indispensable guarantees to be a possible depository of prerogatives for local forest resource management. Also, it would be necessary to consider with the populations the development perspectives of endogenous evolution rules toward a formal type fit to be entrusted with rights and recognition of local administrative powers.

2.Process and methodology

Dialogue among the population (with facilitators)

- Participatory diagnosis of forest resource
- Drawing out of regulation initiated by the population

Discussion through aged class (men, women, youngster, etc.) is achieved to have the sound opinion of populations.

Sensitization on the collective use of forest and natural resources

- Present problem
- Necessary measure

Qualities of the good facilitator

- To trust participants, to believe in their expertise,
- To establish a mutual confidence atmosphere
- To have patience and attentive ear
- To know one's limits and to be always ready to learn
- To be self-confident, without falling into arrogance for all that
- To respect the opinion of the other people without imposing one's point of view
- To be ideas man
- To be flexible, to adapt methods to the situation and avoid the strictness in the implementation of plans
- To grasp with sharpness the participants' thought and feelings
- To know how to draw and to put in writing
- To know how to make the synthesis and to analyze.

Facilitator's contribution

While working with the rural community, most of the time facilitator always falls on the illiterate persons. To make easy the interview he/she must follow some principles and two aspects are fundamental: to ask questions arousing the will to participate, and to visualize the expressed ideas correctly.

The art of the question

THE GOOD QUESTION	THE BAD QUESTION
Cause the curiosity Stimulate the discussion Make all the group thinking Make progress the process Highlight knowledge Reveal the wish to understand and to help	Is closed; to a limited or obvious response such as "yes" or "no" Is vague or call for a bad defined response Is intended only for "experts" Undermines the desire for collaboration Centres everything on the organizer; start with a "speech" of the organizer Reveals the paternalism

The visualization of responses

To visualize all ideas expressed by participants:

- To use the blackboard, sheets or to draw on soil;
- To use some understandable symbols by all population: to agree beforehand with participants on their meaning; it is worth for all tools of visualization such as: pictures, sheets, diagrams, etc.
- To write the ideas if necessary; to read in high voice what is written on the blackboard or on sheets;
- To vary colors and materials with the concern of clarity; to be really legible; not to overload drawings and texts; to make sure that all participants understood.

Anything that is created (cards, boards, diagrams etc.) under the framework of the participating action belongs to participants and not to the facilitator.

DOES THE PROCESS TAKE PLACE WELL?

1. Can one improve reliability and the efficiency of actions?
2. Do the obtained information are really useful?
3. Is the degree of involvement sufficient? Can one spread the involvement to others?
4. Is the problem tackled sufficiently under different aspects?
5. Are the nformation cross-checked?
6. Is the progress normal? Is the process rich (instructive)?
7. Are participatory tools used as much a possible?
8. Is communication with the community sufficient?
9. Do participants well understand information and are they useful to them?
10. Are the results not dodge the issue? If yes, is mistake of participants and the process, or the one of organizers?
11. Are actions undertaken well assessed with participants?
12. Is the follow-up well understood by participants?

3.Starting

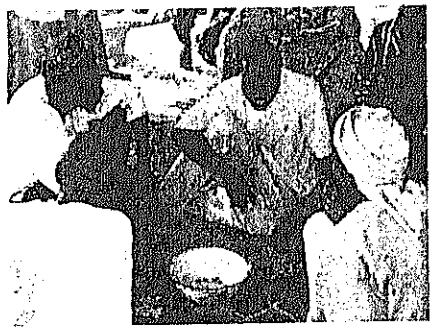
Objectives of the regulation

To the question to know what are roles and objectives of a protocol between several fields, some people said:

- to guarantee the transparency
- to put in confidence the differents fields
- to distribute agreements
- to clarify the role and tasks of actors

- to capitalize the commitments

Equivalents in local languages
The identification of the definition and the contents of the "rule of agreement"
Amaana, Kaldal, Kawral, Pamral, Anniya gooto, Dewral are terms in Fulfulde designating litterally the rule of agreement.


Games of the peanut

The context and the method of use
Some participants have mentioned the cases where regulation or agreement is necessary:
- in case of sale and purchase
- the marriage
- the inheritance
- the loan / credit

Generally the concerned parties seal their agreement around essential points of the content that determine the subject of commitment of parties, witnesses, deadline and the practical modalities.
Often, when one buys a sheep in the markets, it is done through a messenger in presence of witnesses, the salesman gives the origin and main features of the animal, the amount is fixed by common agreement while taking in taking into account the case of disappearance of the animal or later confusion.
The owner of the animal bears these consequences.
The purchaser also supports cost of the messenger's gait.

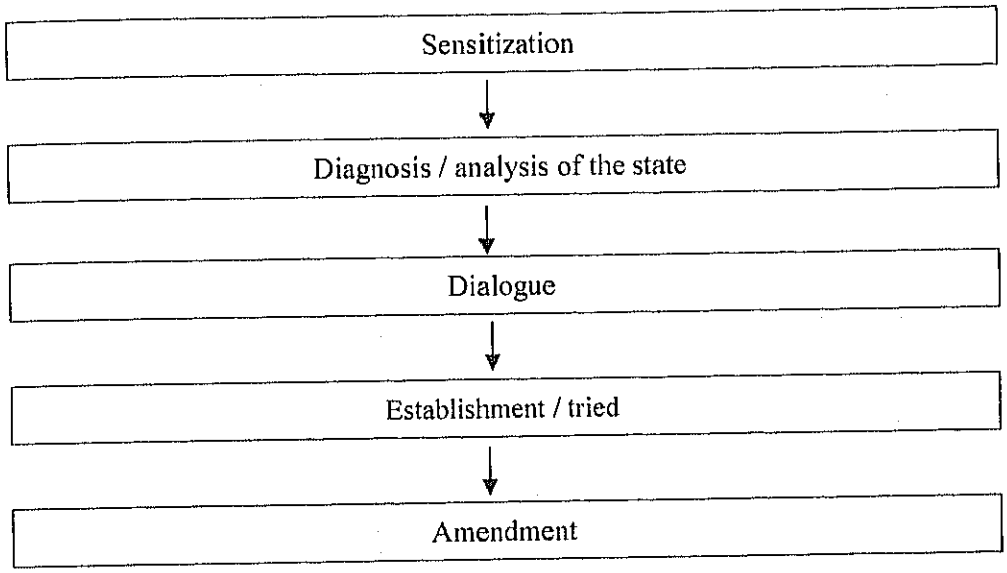
The agreement is often featured by:
- a simple testimony
- a praying ceremony (case of marriage)
- a symbolic grant of cola nut
- an exchange of some object (loincloth ...)

All these systems used by the local communities are considered like agreement about particular topics.

Before considering the situation of the forest resources, the team puts emphasis on the populations' perception about the question of resource degradation, to achieve that, organizers have used the method of peanut games.
The game consists of designating two(02) to three(03) people, who are going to try to monopolize seeds of peanut contained in a plate provided for the circumstance. After the kickoff given by a referee designated with this end in end; once actors finished collection of seeds; the breakdown is done after the referee's decision. The game starts again in several phases according to the situation and rhythm of players.
This gait aims at:
- the observation of players and observers' behaviors
- the analysis and proposal of discussion items about reports made by participants
- the identification of orientation tracks concerning the management of resources

After the stage of the game a debate is opened by the team among the participants which turns around the reactions.

4.Flow of the rule's establishment for forestry resource management



Rules for forest resource management (ex. Village of Selbo)

Rule 1

A protected area is hold back for a duration of 3 years, the village forest of 3ha protected against the cut of wood, fire, the aerial grazing and farming activity.

Rule2

The protection of 3 reforestation sites supported by ADRA Gorom against development of agricultural fields, fire and grazing; the case of the site located near compounds will be subject of thinking for a possible relegation in aid to the agricultural activity.

Rules of forest resource management (ex. Village of Diogora)

Rule 1

The surrounding areas of the main village river are proctected(for a period of 7 years)

- The cut of wood and trees are forbidden in this zone
- All agricultural activity is forbidden positively as well as fire
- Grazing is permitted.

The present point contains a special protection system of a part of Diogora area. The objective defined by the population of this type of system is to face up to a situation of strong deterioration noted in the village.

It is encouraging to note that populations integrated aid to the nature in their management system.

The banning of wood cutting in this area. This point answers to worries for facing up to the phenomenon of wood trade that is more and more developing to respond to the demand of the urban zones and auriferous sites. However, it is necessary to note that the banning of exploitation is applied only to areas put in reserve. For the pastoral resource exploitation they plan the free access however submitted to the applied rule respect.

Rule 2

The below mentioned woody species are protected, and their cutting is forbidden
The exploitation of these species is submitted to a special authorization of the CVGT in case where these trees are located in a community zone, on the other hand those in private spaces notably agricultural fields, the owner's opinion is essential.

Scientific name	Local name (Fulfulde)	Observation
Adansonia digitata	Bokki	
Ziziphus mauritiana	Njiabi	
Sclerocarya birrea	Eedi	
Butyrospermum parkii	Kareehi	
Raisin local	Tchabi	

Technical data sheet: Assisted Natural Regeneration

1.Definition

The attended natural regeneration is a set of systematic interventions undertaken by the man to provoke or to stimulate the regeneration natural of the woody vegetation and/or the development of this one. In the context of the agro-forestry in the space cultivates so that they can increase the total output of this space.

2. Objectives

- to encourage a better woody resource management and to assure the dynamics of the plant table setting
- to preserve and to restore soil
- to exploit coins woody products (flowers, leaves, fruits,...) for some useful ends
- to minimize the production of plantations that proves to be costly

3. Conditions of realization and conduct of the RNA

3.1 conducted of the natural regeneration

The main characteristic is the presence in the field of a certain number of arborescent spaces to keep according to a variable and acceptable density.

One will speak of selected park, (several species) when trees are saved deliberately in fields for diversities of products that they provide. The generally met spaces are:

- Parkia biglobosa,
- Butyrosperum parkii
- Lannea microcarpa, etc.

When a species becomes dominant, either by plantation, either by natural regeneration one will speak of constructed parks (mono specific). As example, it mentions one of Acacia albida and Butyrosperum parkii.

Cultures are exercised during a long time, same partitions in a permanent way, although not benefiting, the most often, of outside contribution in fertilizing matters.

3.2 conduct of the natural regeneration attended

Stages has follow of which the following:

1) Surface valuation
2) Qualitative and quantitative inventory of tree seeds
3) Selection of tree seeds and the ones to be protected as regards to the function and components 25 adult trees by ha and 60 - 80 young saplings or sprouts by ha
4) Location of selected tree seeds
   Stake, colorful strip, paint,
5) Protection
   - solve, emondage, elagage, tuteurage, sanitary cut, diguette, demi-lune against the fires of bush (sarclage, firebreak, paillage)
   - against the bad herb competition (sarclages)
   - against the raving of animals (individual baskets, distempering with dung of cow, security)
6) Maintenance
   - solve, emondage, elagage, tuteurage, sanitary cut, diguette, demi-lune,

4. Generally saved species:

- Butyrosperum parkii - Tamarindus indica - Adansonia digitata - Parkia biglibosa - Acacia albida - Sclerocarva birrea - Afzelia Africana - Bombax constatum - Lannea microcarpa	- Detarium microcarpum - Pterocarpus erinaceus - Diospyros mespiliformis - Balanites aegyptiaca - Ficus gnaphalocarpa - Daniellia oliveri - Anogeissus leiocarpus - Borassus aethiopium, etc.

The size of regeneration (see fig. 1,2)
Bad practice
The pruned tree doesn't produce many sprouts
Good practice
The low pruning favours the numerous sprouts development

Bad practice
Water penetrates in the stump causing rots
Good practice
Water that falls on the section flows out on the ground

The pruning (to See fig. 3, 4)
1) Selection of place for the extension
- Select a well adapted place in terms of visibility by village inhabitants
2) Used tools
- Local knife (utilization of a tool which is currently used in the village)
3) Explanations
- Explanation of advantages of the pruning (efficient use of branches favors healthy growth of trees, etc.)
- To cut the small branches of the third lower of the tree and the sick branches
4) Items to be explained the pruning

①Slash until the third of the diameter of the tree, then tilted cut

②To cut then by the top

Card technique :La demi-lune

Definition
A demi-lune is excavation (hole) deep (20cm) in the shape of semi-circle with a ray that is generally 2m.

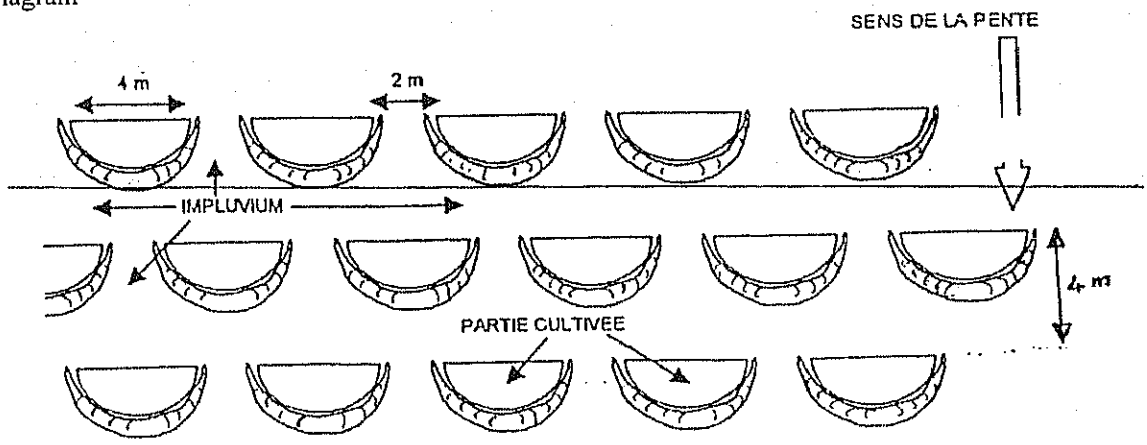
Objective
The demi-lune is conceived to capture the waters of stream that come upstream from the free spaces serving of impulsion.
It permits to increase the available water quantity for the culture, trees and herbs. It encourages thus:
- the infiltration
- the natural regeneration of the plant table setting
- the sedimentation and preserve the humidity of plantations
- the reduction of erosion

Site of implantation
- Glazes or slimy, clayey trays and gravel

Technique of realization
- the cutoff of level curves
- carving of the half moons with the compact or rope that are arranged in quinconce
- digging according to traces to 20 cm with the help of picks and shovels
- clears it that constitutes the diguette in earth is room downstream the work

Interview / Protection
It consists has:
- to avoid the reclamation of the excavation (provoked generally by turning of the earth embankment)
- to protect the embankment against all scatting or breakage or crack. For that to make the backing of the embankment by means of stones or the regular tamping, impose it.

Diagram



Card technique :Le ZAI

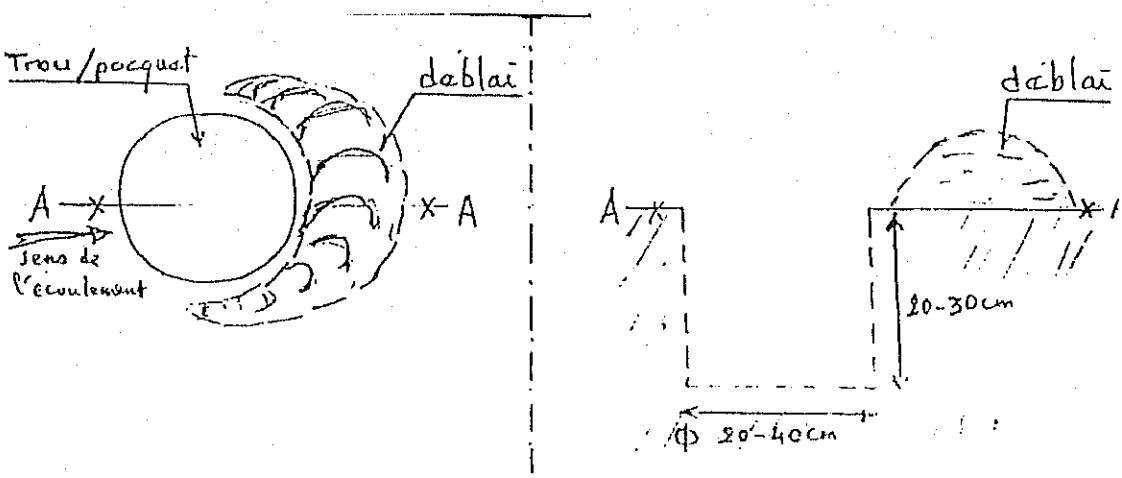
Definition
The zai or packed is a method traditional work of soil, a system of hole digging to ends to capture the water of stream.

Objective
He/it has for main objective the recuperation and the enhancement of earths damaged notably of glazes and trays lateritices.
He/it permits:
- the capture, the infiltration of the stream waters,
- the contribution localizes and the burying of the manure
- the natural regeneration by semi indirect in even time that manure

Site of implantation
- Glazes or slimy, clayey trays and gravel

Technique of realization
The method consists the dig holes therefore successively in quinconce and of which the earth of clears is poured of the quotes downstream of holes.
Holes of zai are generally hollow in dry season or toward the end of the rainy season.
As for has the contribution of manure, it depends on two elements:
- if the period of execution is located between September and October or October and December, one can apply the cool manure that can be decomposed before the period of seedling.
- when it is located between May has June, it is preferable to apply compost. The use of the cool manure is not counseled during this period at all because it provokes a wither of plantations when water makes somewhat defect. In general measurements of holes for the zai are located for the diameter between 20 - 40 cm and 20 - 30 cm of depth. The zai can combine itself to the half moons, mini benches, let's string stony...

Diagram



Card technique : Hedge defensive

Definition

A hedge is an alignment of bushes and/or of numerous branch shrubs and inextricable forming a gate preventing the passage of animals or men. Its height is limited at 1.50 ms about by the regular size of branches.

Objective

The hedge permits to protect cultures, plantations and orchards against animals mainly. But the hedge can also be used for:

- to produce wood and fodder shortcoming a management ration rational of the woody,
- to delimit parcels of culture.

Conditions of realizations and technique appropriate in place

1) Conditions of realization

The hedge required of soils that agree the used species and an appropriate rainfall. In case of rainfall the first year appropriate in place. During this same period the hedge must be protected to permit it a good development.

Sites targets are: market perimeters, orchards, villagers nursery and fields of culture.

2) Technique appropriate in place

It includes the following stages:

- Opening of trenches or holes
- Plantation or direct seedling
- Hedge management

Opening of trenches or holes

Considering the spacing between plantations (very greenhouse), for the setting up of the hedge lives the opening of trenches is counseled in place and individual hole room.

Plantation

It takes place in the usual conditions. The spacing between plantations is 50 cm and the one between lines is 40 cm. Plantations are arrange in quinconce of a line has the other. The plantation can make itself also in line unique.

	Width trench	Depth trench	Spacing between plantations
Unique in line hedge	40 cm	40 à 60 cm	50 cm
Hedge in double line	60 cm	40 à 60 cm	50 cm

Hedge management

The natural elagage made that the hedge had tendency to dismantle with the basis. As is it necessary to carve the hedge regularly to encourage the development of branches with the basis. The size can be done two times per year (in short in season dry and in end in season rainy). Residues of the size can be use to close breaches or to protect some young plantations. They can be use also like fodder.

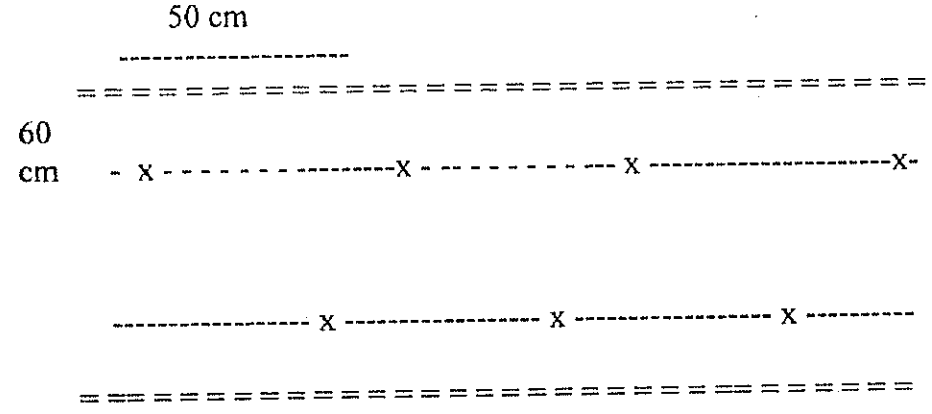
The height of the first size is varianle according to the used species. Thus, for variety of tree tendency monocaule, a first size of ramification should intervene before 1 m. thereafter; the maintenance sizes can make itself a height of 1.5 m.

Species usable

Species the more indicated for the setting up of the hurdle live are:

- From plantations in pots
  Acacia nilotica, Acacia seyal, Acacia senegal, Prosopis juliflora, Ziziphus mauritiana, Bauhinia rufescens,
- From boutures
  Euphorbia balsamifera, Commiphora africana, Jatropha curcas,
- From direct seedling
  Acacia nilotica var. nilotica, Acacia seval, Bauhinia rufescens,

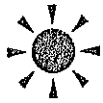
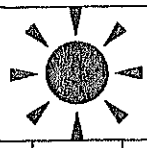
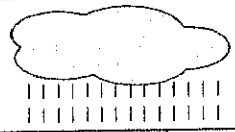
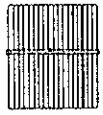
The preparation of soil in this case consists in a light labour or an opening of trench.



= = limites de tranchée
x = emplacement des arbres

Appendix 1

Progress of works with the passing of the year (example)

Works	Dec.	Jan.	Feb.	Mach	April	May	Jun.	July	Aug.	Sep.	Oct.	Nov.
Lunar calendar (agricultural)	Storage and conserv ation	Cold and dry season		Hot and dry season			Beginni ng in season pluvial	Pluvial season			End in season of pluvial	Period of harvests
												
Investigation of opinions												
Scheduling												
Preparation of the site, accumulation of the sand and manure												
Manufacture of pots												
Sowing, resowing												
Starting, transplantatio n, growth of plantations												
Preparations and plantation												
Interview and management												

Appendix 2

Important points according to the form of plantation

Form of plantation	Social effects	Approach towards inhabitants and points to consider
Hedges	Necessary work reduction of the hedge installation, which requires a strengthening every year.	The work of neighboring vegetable garden is a community work. Installation of plant hedges in periphery; if one makes the plantation inleaving a great distance until the interior limit, one can use in a more efficient way the space that the individual hedge installation in decreasing the number of seedlings and the work of plantation.
Limit of farms to be cultivated	Elimination of disputes between owners as regards to lines of adjacent land limit.	An understanding is necessary between owners of adjacent lands. It is very important to hold discussions in advance with regard to rights on plantations.
Trails of livestock	Elimination of disputes between farmers and breeders.	If plantations are not continuous, livestock will penetrate inside there; discussions between owners as regards to the set of plantations are therefore necessary, so that they reach a common understanding. In fact plantations are done by each owner, and even if all farmers don't always show evidence of understanding the first year, they will later follow each other lead when they notice results gotten by some of them.
Agricultural land conservation	Prevention of the agricultural earth erosion	It is important to cope with erosion by the works of civil engineering whereas it still has weak scope. They are executed during dry season, then the direct sowing or the plantation in rainy season. Stone Lines, stone ridges: direct sowing between stones Crescent moons: plantation in the center. Zaï: direct sowing
Village forests, trees on the side of the road, fire wood	Evocation of inhabitant's responsibility, woody resource management.	After the plantation, the problem of the management arised. To designate a person responsible for every tree so that he is in charge of its management after the plantation; in principle the utilization of the tree is entrust to the inhabitant based on an individual consideration.
Drill to graze	Advance of the controlled grazing	Possibility of acceptance by inhabitants of the region if one presents good examples of success, but in the region of the Sahel, where a sedentary raising system is not yet established, the acceptance is difficult.
Protection of banks	Prevention of the decrease of farming land.	Inhabitants, who don't want their cultivated surfaces to decrease, have tendency to make plantations in wady, and so planted trees are carried away by water during the rainy season. It is therefore very important to really explain the meaning of the plantation and show some examples

4 Management of the natural resources

1. CONTEXT AND JUSTIFICATION

1.1 recall and historic of the management participative of the NR

The association Nodde Nooto is created in 1996 in the goal to accompany and to valorize the potential human, cultural and economic of the Sahel. Considering the continuous deterioration of the natural resources and the competition more and more increased between agriculturists and breeder, generating some conflicts, A2N, on the basis of the experiences of the partners, and especially of his/her/its strong knowledge of the middle sahélien, defined a gait participative concerning management of the natural resources and set the objective next one:

- **To cause and to develop a management participative of the natural resources in order to assure an ecological and fundamental balance in the Sahel.**

The management participative is a pluralistic approach of the natural resources calling on various partners assuming the varied roles generally stretching toward protective objectives of the environment, of lasting exploitation of the NR and equitable sharing of the profits and responsibilities bound to the exploitation of resources. She/it must lean on some conditions of basis (total access on the news concerning the questions and applicable solutions, liberty and capacity to organize itself/themselves, liberty to express the needs and the preoccupying topics, non discriminatory social environment, will of the partners to negotiate, confidence in the respect of the agreements, etc.) to develop itself/themselves.

The management of the natural resources (MNR) represents important political stakes. Once, numerous traditional societies had the relatively closed systems in which the natural resources were managed by complex mechanisms of reciprocity and solidarity. These systems were anchored deeply in the local cultures and took into account the differences of power and influence (including to the level of the hold of decisions). The dialogue and the discussion between interested part on the basis of the convenient experience (foundation of the management participative) were very currents in some of these societies. In others, different social values (religious authority, system of castes, cultural criteria, etc.) determined most decisions of MNR and the related sharing of the costs and profits.

The emergence of the colonial powers and the States, of power takes with their violent on the major part of the collective earths and the natural wealths, nearly dragged everywhere the downfall of the systems traditional of MNR.

The monetarisation of the economic exchanges and the integration of the local savings in the frames of reference to more and more global vocation weakened the local systems of reciprocity and solidarity.
The multiple approaches and steps developed by the intervening parties came up against difficulties of which the main resident in the weak rate of literacy of the populations that is translated in a distrust of the communities and dragging one thimble responsibility of these.

The attitudes of confrontation and reciprocal distrust between these local communities and the representatives of the state became widespread. Where they existed before, the communal practices consisting in proceeding by groping and to debate the management of the natural resources for a long time have been replaced extensively by the coercive imposition of practices dictated by the law (nationalization of the NR), the regulations, the auxiliary services. The management participative in spite of his/her/its slowness and his/her/its complexity decorated to be one of the most suitable approaches, however it requires the respect of some values. These can be regrouped like follows:

- ✓ **The fairness and the justice**
- ✓ **The lasting exploitation of the natural resources**
- ✓ **The taken initiatives and concretized by the communities**

NB: Plan type or universally applicable ways don't exist for an initiative of management participative. It is necessary to draw on the contrary in an enormous diversity of options capable to suit a particular context.

Three big phases exist:

1. Preparation of the partnership (organization)
2. Negotiation of the plans and agreements of management participative
3. Setting in application and revision of the plans and agreements (training by the action)

Step indicative and main stages in the process of development of the rules of management of the natural resources.

ATIVITIES	CONTAINED	OBSERVATIONS
1. Establishment of the partnership	Establishment of: -A partnership between all actors - Principles of basis in the setting of the partnership - A plan of collaboration with the technical team	-To cause the reflection on questions keys (interests in game) -Clarification of the collaboration principles -To facilitate holding: the conduct of meetings, writing of the PV, -To push the resolution of the hanging questions
2. Analyses of the constraints and assets of the zone	-Diagnosis of the fashions of management of resources and the state of resources between the actors to different scales -Organizational diagnosis -Sketch of solutions / options for the different levels (villages and inter village)	-To facilitate the reflection -Technical contribution -Various information
3. Agreement on a shape of organization around the MNR (Settings of consultation/coordination to the level, CASE to the scales villages and inter villages)	-Reflection/consultation to different scales -Composition of the organization -Responsibilities -Working	-Information/formation on the texts concerning organization in Burkina -To cause the reflection on the conditions / criteria of viabilities of an organization
4. Development of a management plan (a local convention of MNR and a diagram of planning)	-Proposition of rules from the basis -Proposition of planning diagram -Harmonization to the level of the coordination organs -Agreements between actors (producers, administration, technical partners) -Consensus between the actors implied adoption / administrative recognition and / or legal	-Adoption of a work plan -Large information on the existing legislative texts -Facilitation of the exchanges between population, technical partners, administration and the judicial authorities -Support has the writing of the documents
5. Setting in work consistent assessment and adjustment	-Fashions of organization for the follow-up	-Support to the definition of the fashion of organization

	-Devices of follow-up and assessment and follow-up of the effects	concerning peasant follow-up -Support to the setting up of the peasant device of follow-up -Consistent technical and consistent of the effects

The activity n°2 (of the picture above) has three components are two types of diagnosis and a restitution:

These must permit to know the state and the reasons of the deterioration or the bad management de(s) her (them) resource(s).

1. The advance diagnosis (in every village) has for objective of:
- To identify the limits of resources and the different shapes of use (the agricultural zones and the zones of grazing);
- To identify the villages sharing the same resource and the users coming besides and operator the same resource;
- To collect by village the operating modes;
- To identify the restriction/ problems and to collect the measures to stop to short and middle term for a better management of the resource;

2. The thematic diagnosis:

To study the constraints and the potentialities of the zone (by village)
- soil
- covered plant
- the state of deterioration (fashion of management)
- the users

3. General assembly of restitution.

The public targets this meeting is: the chiefs of villages, the RAV, Preside them of the CVGT, the leaders of opinions, the persons responsible of the women, the representatives of the agriculturists, the representatives of the breeder. On this occasion, the restitution of the diagnoses will be made. Successively, the principles following will be presented:
- Real implication of all users of resources in the process of research of solutions;
- Identification of the solutions by the different actors themselves (priority to the solutions, engagement of the populations);
- Taken of decisions by concerned them - even as for the rules of the administration to take consensual way.

Activity n°3: Setting up of a dialogue structure

A constituent General Assembly is organized with the representatives of the villages represented in an equitable way for the setting up of a dialogue structure. During this assembly the following tasks are executed:

Setting up of an office (committee of coordination)
- Setting up of the General assembly
- Adoption of an interior regulation
- Emargement (signature) of a verbal suit by the delegates

Conclusion

The enterprise to push the communities of basis in the validation of the actions of MNR is delicate and require the hold in account and the efficient implication of the local administration and the technical services. The development of the rules is made to the level inter villager and therefore the concerned rules can theoretically and to the maximum being of level local rules. The question that arises remains to know how the actions of responsibility of the populations in relation to the resources natural of their soil can be however advanced in a setting of legality without which the efficiency of the actions undertaken would remain hypothetical.

Annex 1: Step of setting in Suvre development of the rules of management of the natural resources

Stage	Contained	Tools	Actors
Establishment of the partnership	-establishment of a dialogue with all actors - adoption of a certain number of basis principles in the setting of the partnership	-Meetings	Villages - Technical Services
Reflection/analyses of the constraints and strengths of the zone (initial diagnosis, deepened diagnosis)	-diagnosis of the fashions of management of the natural resources and present state of resources - sketch of solutions to the level villages and inter villages assorted of a card of soil and natural resources	-Aerial photos (PVA) -MARP tools -Cards -Investigations	Villages and Technical Services
Agreement on a shape of organization around the Management of the Natural Resources (MNR)	-reflection/ consultation - composition of the organization	Meeting/Workshop	Representatives of the villages - Technical Services
Development of the management rules	-proposition of the rules from the basis (village) - harmony/synthesis to the level inter villager - amendments of the technical services and Administration	-kraft paper -facilitation of the exchanges between populations -laws and texts	-CVGT - technical services -Setting of dialogue - technical services Agriculture - Raising - Environment – Prefect
Signature of rules	-support to the writing of the documents - signature (administrative accord/reconnaissance)	-computer -Workshop/General meeting	Setting of dialogue - technical Services - Administration - Partners
Consistent - assessment	-fashion of organization for the follow-up - disposition of follow-up and assessment of the effects	-Tools of follow-up	CVGT - setting of dialogue - Administration - technical Services

Annex 2: how to lead the advance diagnosis or initial

To know the village better:

a) - to collect the data on these points:

- General aspects (historic, fractures socio - economic);
- Identification of resources notably the shared resources
- Fashion of valorization of resources (enhancement, pastoral and agricultural);
- Fashion of management of these resources (arrangement, rules, the users of the resources, etc.);
- Local institutions of management of resources (traditional and/or modern)
- The conflicts bound to the exploitation natural resources and fashion of management;

b) - Question keys:

1. Since when the village is himself it installed in this soil?

2. Since the creation of the village, what are the prominent events which occurred? (historic profile)
3. What are the limits of your soil? (card of the soil)
4. What are the existing ethnic groups?
5. How much districts account the villages?
6. The local denomination and the geographical situation of the pastoral space of the village
7. what are the main natural resources of the soil? (card of resources)
8. what are the herbaceous species and of trees that exist currently?
Which disappeared and those in way of disappearance?
9. What are the answers that the populations give to these changes?
10. Who do resources of the soil exist are exploited by other villages?
Which?
11. What were the fashions of access and management of grazing?
Did these fashions of access and management change?
If yes how and why? (What to do concerning management and planning).
12. The types of conflicts bound to the pastoral resources and their fashion of management.
13. The constraints and difficulties bound at the pastoral space.
14. The axes of intervention
(What to do concerning management and planning).

NB: Possible tools: ISS, cards of resources and the soil, historic profile.

Annex 3: the works of the diagnosis will consist of the following stages:

Documentary analysis
Previous works executed on the same zone will be consulted by the services of the environment, agriculture, the animal resources and the administration: this documentary analysis will permit to make available the data on the populations, the natural resources and especially the pastoral resources. This stage will be an opportunity of exchange and justification of works with the backer.

Summary cartography of the zone
Of the cartographic products on the occupation of the soils of the studied zone exists already; it will be about extracting them and to present them in an exploitable format; the cards extracted to be enriched by the exits land and the transect;
Some cards villagers will be elaborated in order to represent the pastoral space or the space being under the influence of every village. So therefore, a sketch of card of the pastoral space is elaborated with localization of the coins pastoral units and their local denominations (zone of pasture of every village) and the different movements of animals on the space.

Of the interviews with the representatives of the populations
He/it will concern the representatives of the populations (General Assembly) of every village and the representatives of the 12 villages; the main objective is to center the situation socio - economic of the populations (different resources) and to surround their vision in relation with use or the management of resources of the pastoral zone. The iss will be used to this effect.
During these interviews, the cards villagers representing the pastoral space or the space being under the influence of the villages will be elaborated. A summary assessment of the importance of the animals as well as their movements in the space will be described and cartographies.

Of the inventories
An inventory of the existing woody and herbaceous species and the types of soils and their state of deterioration: the inventory will be achieved by at least two transects that will permit to meet the maximum of representative units of vegetation and soil. The inventory of the plant species will come to enrich the card of occupation that will specify the dominance and the spatial distribution. The inventory of soils will put in interrelationship the occupation/utilization, the level of deterioration and the different restriction/pressure.

Analysis of the data and writing of the temporary report

The introverted information will be analyzed under the angle of the quality, of the quantity, of the diversity of resources, the assets as well as constraints. The report will clear besides some perspectives sensed during the exchanges with main actors.

Annex 4: Verbal suit of the meeting (PV)

N°	Full Name	Village	Signature

Annex 5: Diagram of the zone

5 Field of agricultural land conservation

5-1 Recovering of bare lands

①Importance of recovering work: after run-off of surface soil, the remaining hard surface turns into glacis. Line plowing of this hard surface allows rain water to penetrate and temporarily stocked in the soil. This fact will permit the germination of weed-seeds, and restored vegetation. In this case the shallow tillage along contour lines and the seeding of existing weeds, brings expectation of better effects again. That prevents soil degradation, and allow to ensure efficient use of soils and plant resources;

②Methods of shallow tillage: it exists the plowing method in using animal pulling and the one using heavy materials. The second method is advantageous as regards to the cost for a large surface.

③Shallow tillage must be done after the beginning of the rainy season when the land surface is soft. Running water penetrates into the scarified part of the soil. Seeds of grass and trees mixed to the scarified part, will naturally germinate. The plants will often grow through manuring arranged within the droppings.

④Sheep' and goats' droppings get mixed up in the soil of the scarified part and there are seeds in the droppings.

⑤So, millet, sorghum, etc. can be sowed in some scarified parts and will produce like food crops.

⑥Internal convention for stone lines building: the recovering works of bare lands, alone do not make hope for sustainable effects. For the effective use, an internal convention must be established within each CVGT, to which the users belong to(see Annexe 1).

5-2 Stone lines building

①Limit of the effect: this method consists of canalizing rain water along the contour lines, to store it up for infiltration. But the effect of stone lines along contour lines has also its limits. To reinforce this effect, need be to add other conservation works. Practically, the construction of infiltration blocks or terraced blocks in the concave part is effective.

②Infiltration blocks: even though stone lines are installed along contour lines, rain water is concentrated in the concave part of the fields, and gullies and channels are created. In this case, infiltration blocks are constructed at the same time of the stone lines.

③Terraced blocks: if there an important difference of height between the high and the low levels of fields, terraced blocks will be built between the infiltration blocks.

④Reuse of the stones: in case of lack of stones, it is proved economical to reuse stones. If some stones are withdrawn from an existing stone line, that one loses its effectiveness. To maintain this effectiveness, plants (Andropogon and Ephorbia balsa mi fera)planting is necessary.

⑤Filtering breakwater (by Dr Albert BARRO, INERA-SARIA): it is system of free stones (that is to say not built or joined) basically applicable to bas-fonds and gullies; Free stones have also interest for protecting cultivated piece of lands located down-stream of a catchment area. The target is to

--slowdown the waves from the flood and to stop gullying erosion around the immediate surrounding areas of the breakwater.

--cause at upstream of the breakwater an increase of water infiltration and sedimentation of sand, clay and organic fragments.

--recover land for farming or clearly improve its productivity at upstream of the breakwater. The filtering breakwater does not block the flood but has it slowed down in forcing it to filter through the stones and let the surplus of water to run above. To avoid breaking of the breakwater, there is need to calculate the flood rate of flow of the "bas-fond" (decennial flood calculated from the surface of the basin bank, the "bas-fond" area and the possible highest rain) (figure 1, 2 and 3)

⑥The basic principles for the treatment of gullies (by Dr Albert BARRO, INERA-SARIA):

--As long as there is no improvement of infiltration in the basin bank, there is no need to attempt

filling up the gully (if not it will find another bed) but to plan a stable canal able to drain the highest rate of flow from decennial flood (at the most).

--The mechanical and biological treatment of a gully can be progressively carried out from 1 to 6 years, but it must concern the whole basin from the first year. The biological fixing of a gully comes to strengthen the sides and the bottom of the gully made firm by various types of sills, if the order is reversed plants are pulled out with soil during floods.

--The location of the sills must de carefully chosen according to the aimed target. If it is only for heightening the bottom of the gully so that to have the sides reach the natural balance slope, need be to choose a bolt, a narrow gorge where many light sills will be able to rely on solid banks.

--If we are looking for fixing maximum sediments or to recover farmlands, there is need to choose weak slope area, the confluences of secondary gullies, with flared sides and to build heavy weight works which will be heightened progressively.

--The space between the sills is according to the slope of the soil. The downstream spillway must be at the same height as the base of the upstream sill, and to within the balancing slope (1 to 10% according to the feature of the bottom of the gully) which can be observed at the concerned site (stable area without excavation or sedimentation). At the beginning, we can double this space and build intermediate sills when the first generation of sill is filled in with sediments: to make firm the trapped sediments immediately with low plants according to the line of flow and trees on the bank.

--To avoid hydrostatic pressure of the flow, it is better to drain the sills (wire fence, zigzag trench or free stones).

--The sills must be rooted into the bottom and the sides of the gully (foundation trench) to avoid leaks and skirtings. On contact between alluvium-clayey-type soil and stones of the sills, need be to plan filtering layer of sand and gravel so that to avoid underpressures to bring about fine particles and leaks formation.

--Running water must be well-centred according to the main line of the gully through the flanks of the sill, which are higher than the main spillway. This spillway must be reinforced with big flat stones, more or less cemented or with old iron for resisting to the wrenching force of sand, pebbles and rocks which are rushing down at full speed into the bottom of the gullies.

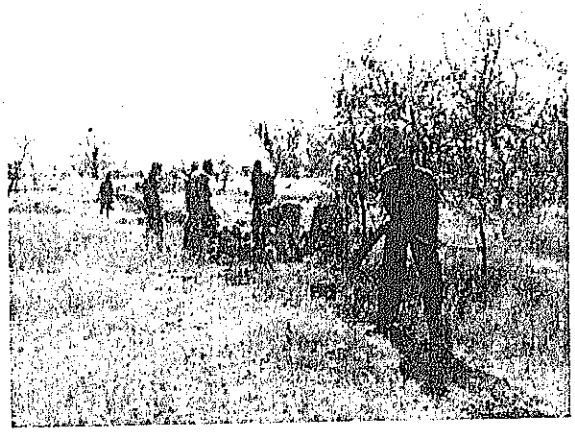
--The power of waterfall which jumping from the spillway must be broken by a mud guard (set of blocks, small gabion + grass tuft) or by a water basin for avoiding fissures under the sill or knocking over of the sill.

--To keep livestock away from the installation because animals would have been quick to destroy the sills and damage the vegetation. In compensation, one can allow picking of fruit, harvesting of fodder and later on cutting of wood, in exchange for maintenance of the installation.

--The mechanical treatment is completed when the sources of sediments are putting out and the heads of gullies and sides are stabilized. Then revegetation must be done naturally if the balance slope is reached, but one can help the environment in quickly covering the sediments (grass) and fixing them with help of trees selected thanks to their ecological capacities and their production. There is need to go from simple management of sediments to the development of installations. The gullies can become "linear oasis".

⑦Internal convention for stone lines installation: stone lines installation does not make hope for a sustainable effect. For an effective use, an internal convention must be drawn up in each CVGT to which the inhabitant users belong to. (See internal convention for stone lines installation in Annexe 1)

ANNEXE 1



PROVINCE OF AAAA
BBB DEPARTEMENT
VILLAGE OF CCCC
CVGT OF CCCC

INTERNAL CONVENTION FOR STONE LINES INSTALLATION

PREAMBLE

Being aware of the continous degradation of terroir natural resources, the population of CCCC started reflections and actions aiming at alleviating the effects of desertification. Acccording to this viewpoint, the residents through the CVGT, decide to commit themselves in pilot actions of stone lines installation. Two sites of one hectare each have been identified for this purpose.

GENERAL PROVISIONS

Article 1: The aim of this convention is to define the internal rules for the management of sites and equipments.

Article 2: The two pilot sites for the stone lines installation are located respectively in both President of CVGT and the auditor's fields.

Article 3: The two resourcefulness persons, owners of the fields agreed with the management modalities of the pilot sites.

Article 4: The convention is adopted by the general assembly of the CVGT.

ABOUT MAINTENANCE OF THE SITES

Article 5: Stone lines installation is accepted as community operation and is organized by the CVGT through the CAS agriculture.

Article 6: The daily maintenance of sites is responsibility of the field owners.

Article 7: The fields owners and the CAS agriculture commit themselves to take into account technical partners' advices.

ABOUT THE MANAGEMENT OF THE SITES

Article 8: The site-fields owners commit themselves to open up the sites for visits and sharing out of experience at any time if need be.

ABOUT THE MANAGEMENT OF EQUIPMENTS

Article 9: Equipment gained under stone lines installation remain the property of the CVGT.

Article 10: The CVGT commits itself to collect and keep in its bank account the sum of twenty seven thousand(27,000) CFA Francs corresponding to the required taxation.

Article 11: The CVGT mandates the CAS agriculture to manage the small equipments in the general interest of the village.

Article 12: The equipment can be used on new sites for anti erosive combats or lent for other operations following the consensus modalities at the CVGT level.

ABOUT HANDLING OF CONFLICTS

Article 13: Any difficulty or conflict arised from the application of this convention should be solved out of court through the local instruments.

MISCELLANEOUS PROVISIONS

Article 14: The CAS agriculture will make regular report to the CVGT general assembly about the management of equipments notably at the end of each month.

Article 15: This convention goes into effect from the date of its signature.

At CCCC, December 00th 200X

The official of the CAS agriculture DDDD

The president of the CVGT EEEE

HANDING OVER STATE OF THE EQUIPMENT

Village of CCCC

Subject : Stone lines installation

Description	Quantity	Unit cost	Amount
Shovel	06	3, 500	21, 000
Pick	06	4, 000	24, 000
Crowbar	04	8, 000	32, 000
Hammer and chisel	04	7,000	28, 000
Wheelbarrow	04	30, 000	120, 000
Cart	04	165, 000	660, 000
Water level	02	7, 500	15, 000
Total cost			900, 000
Taxation of the CVGT (at 3%)			27, 000F

Deadline for the payment of taxation

CCCC , (date)

The official of the CAS agriculture

DDDD
(signature)

The president of the CVGT

EEEE
(signature)

6. Field of livelihood improvement

6-1 Cereal Bank

1. General objectives

This is a guidebook for training for the management of cereal bank. Its use has target to endow the beneficiary residents with knowledge and skills in order to reinforce their self- management capabilities.

2. Specific objectives

In reference to the training the following targets can be quoted:

- to allow the management committees of the cereal bank to be able to handle the management books accurately
- to reinforce the population's capabilities for a rational management of their economic units
- to instil confidence between members of the CVGT thanks to a fair management of financial resources.
- to allow the CVGT to make assessment of the economic profitability of the cereal bank or any similar activity generating incomes.

3. Target group

Any person who was taught how to read and write will be able to use it, at any time to solve problems or to improve one's knowledge as regards to management. The training will concern only the persons involved in the management of the cereal bank, mainly the CVGT bureau and the CAS in charge with the management of the economic units.

4. Definition of the concept: what is a cereal bank?

The cereal bank can be defined as a building allowing the stocking of cereals bought during the harvest time which should be sold at less expensive prices than those of the market in the period where populations are bridging the gap. That building is a supplying point of the village and allows escaping from the high prices applied in market during the gap period, rather than making big profit.

5. Functions of a cereal bank

The cereal banks have three main functions, which are as follows:

- function of food security during the period for bridging the gap in waiting future harvest.
- function of price stabilization: to buy at good price during period of cereal availability and make stock, in order to ensure later sale at a non high price in case of shortage;
- function of profit making intended for other beneficial investments for the village.

6. Organization of the cereal bank

The general assembly (AG) of the CVGT is the supreme body of the cereal bank. It is made up of all members of the CVGT. The AG takes the decisions about the amount to be dedicated to the purchase of the cereal, the selling period of cereals, and the fate reserved to the profit derived from the sale. The AG takes the decisions about the method for selling the cereals (sale reserved only to the members or any person from the village or neighbouring villages, sale in cash or on credit), the operating rules of the cereal bank. The AG gives power to the management committee to execute the decisions and to ensure the operation of the cereal bank. The management committee has to ensure fair running of accounting documents with a view to follow the transactions of the cereal bank and to specify the results of the activity. The committee ensure the purchase of cereal in conducting a market study in order to know the availability of cereal in markets and change of price according to markets with the view to buy cereal at good prices. The committee ensures the stocking of cereal also after having followed

the cleaning rules of the banks and the practical measures to be taken for a good conservation of seeds. The management committee also does the sale. All these activities can be undertaken with the support or help of the members of the CVGT (purchase, stocking, sale). The committee has to make reports of all activities related to the cereal bank at each meeting.

7. Reminding of the roles and tasks of the members of the CVGT in the cereal bank management

(see fig. No 2)

(1) The control committee

The monitoring and control committee is a body of the CVGT and is in charge to check if the management committee follows the decisions taken by the general assembly (checking if the purchase and sale periods are respected), if the management of the cereal bank ensured by the management committee is fair and if the rules for the conservation of stocks are respected.

(2) CVGT president's role and tasks in the management of the cereal bank

(see fig. No3)

1) Generally speaking the president has four main tasks:

- He convenes and chairs the meetings
- He follows the carrying out of the decisions
- He is the representative of the CVGT in the village or outside of the village
- He controls and signs the documents

2) Specifically regarding the cereal bank:

- He convenes and organizes all the meetings related to the cereal bank (supplies, fixing the prices, periodic balance sheets or state of affairs...)
- He supervises the sale and makes sure of the operation of the cereal bank
- He has to exchange regularly with the secretary and the treasurer and makes sure of a fair running of management books of the cereal bank, and if need be he has to support each official of the CVGT.

(3) Case of a good president (see fig. No4)

The vitality of an organization is often related to the good performance of the president, which is specified by:

- Good morality of the president
- His availability
- His capabilities to serve the interests of the members of the CVGT and in a certain way his personal lack of interest facing to the one of the group.

(4) What is a bad president

Numbers of presidents are bad presidents due to various reasons: either they monopolize the power or they are not competent and do not do anything.

(5) Case of a bad management by a president

- He monopolizes the various tasks that he performs alone without informing the members of the bureau or either the committee. He considers the committee as his own business and other members as "pawns in the game" that he manipulates at the will of the activities and personal interests and other friendly or family connivances.
- He does not have good morality and uses his power for his own benefit.
- He does not have time to mind with the business of the committee and does not entrust the tasks to his close colleagues.
- He does not pass the information on to the related officials.

(6) Secretary's roles and tasks (see fig. No 5)

The secretary is in a certain way the public letter writer and the indispensable intellectual of the bureau. If we can imagine that a president endows with a strong personality and quality of awareness of responsibility of people surrounding him can be less taught how to read and write; this, in no way cannot be the case of the secretary. In most organizations the secretary is the mainspring of the bureau. The main tasks of the secretary are as follows:

- to write the minutes and reports of the meetings
- to support the treasurer in some tasks(record of expenditures, subscriptions...)
- to report on the results during the meetings
- to write reports of activities of the CVGT(monthly, annual reports...)
- to support planning and assessment of activities.

He has also to support the president in his functions since he is the memory of the bureau

- He must keep the various documents of the organization carefully.

(7) Treasurer's role and tasks (see fig. No6)

The treasurer's tasks are as follows:

- To keep the accounting documents of the CVGT: takings and outgoings books and others.
- To carry out and/or record the outgoings (in agreement with the president)
- To take and/or record money payment: subscription, membership fees, grant, etc.
- To make with president and the secretary's support the assessment to be presented to the general assembly
- To take care of the material and properties of the organization

8. The cereal bank supplying (see fig. No7)

Before setting about with the cereal bank supplying, the sub committee in charge of the cereal bank management has to canvass the supplying opportunity from different markets in cooperation with some members of the bureau(president, treasurer for example), to know the price of cereal, in order to make comparison of prices and availability of the various kind of cereals for the selection of or purchase areas.

To know the quantity of cereals to be bought, the CVGT has to consider the financial available funds of the cereal bank, the charges to be incurred before the sale period, the stocking capacity of the building. They must fix themselves the maximum purchase price that should not be exceeded.

It is also necessary to fix the quantity of cereals to be bought in order to avoid loss, surplus of non-marketed cereal, shortage of cereal that should cover the members' needs. When the purchase unit price is not the same, it is necessary to look for average purchase price in calculating total purchase price and divide it by the total quantity. This calculation is necessary because it allows the fixing of the selling price.

9. The stocking (see fig. No8)

It is transactions that consist of keeping for a given period cereal in a warehouse following the norms or rules of seed conservation. For the stocking the seed, at first there is need:

1. To clean the warehouse (**see fig. No9)**
2. To fill in the cracks of the building to avoid oozing of water and the invasion of some predators (insects);
3. To clean the sacks and keep them under the sun when they are old. Treat as far as possible the seeds (case of cowpea) in using traditional methods or with local chemical products.
4. Afterwards, the cereals should be put in sacks, which will be well arranged in the warehouse according to some norms (ventilation, stocking on pallets, the quantity should be in accordance with the size of the warehouse).

The bad stocking (see fig. No 10)

10. The sale of cereal (see fig. No 11)

Before starting the sale of cereals, need be to fix the selling price.
The selling price = to average purchase price + charge or cost incurred during the purchase, the stocking cost + planned profit.
To fix the selling price the management committee must have an idea of selling price of market in order to sell the cereals at a good price than the one from market.

11. The management of stocks
Any product, any goods piled up in any place are called a stock. Management is a judicious use of what people have at their disposal (stock) to reach the target for which it is intended.
In accountancy stock concerns any products or goods intended for sale.
To reach a fair and sound management of an economic unit such as cereal bank, the following management instruments can be used.

(1) The stock book
It is used to record the operations of stocking and is made up of the following items:

- Date
- Number of written proof
- Wording/ Nature of the operation
- Entrance
- Exit
- Stock
- Observation

(2) The takings book
It is used for well a control and follows up of the takings and outgoings of money; it is the instrument that is going with the takings. It is made up of the following items:

- the date
- the chronological number of operations
- Wording/number of written proof
- Takings (payment)
- Outgoings
- Balance (difference between takings and outgoings)

At the end of each month the state of affairs of the takings book should be made, that is to say calculations of takings and outgoings in order to know the remaining amount before recording the transactions of the following month; new page should be used for each month. The takings book allows knowing the situation of takings at any moment.

(3) The purchase book
The purchase book allows knowing the total quantity bought for each kind of cereal and the total amount used for these purchases. People refer to it to fill the entrance column in the stock book. The purchase book is made up of the following items:

- Date
- Wording/ Salesman's name
- Quantity of bought product
- Unit price
- Total price
- Observation

(4) The sale book

The sale book allows knowing for each product, the total sold quantities and the total sums received thanks to the sale. It is made up of the following items:

- date of the operation
- wording/ purchaser's name
- sold quantity
- unit sale price
- total sale price
- Observation

(5) The credit book

The credit book allows knowing each type of sold product, the sold quantities, the quantities to be recovered and the non-recovered quantities. It is made up of the following items:

- Date
- Contracting person's name
- Quantity received
- The interest rate
- Quantity to be reimbursed
- Contracting persons' signature
- Date
- Quantity of the first reimbursement
- Remaining quantity to be reimbursed
- Contracting person's signature
- Date
- Quantity of the second reimbursement
- Remaining quantity to be reimbursed
- Contracting person's signature

Annexe

Management instruments

Accountancy book
Stock book

Date	Number of written proof	Nature of the operation	Entrance	Exit	Stock	Observation

Takings book

Date	Chronological number of the operation	Wording/Number of the written proof	Takings	Outgoings	Balance

Purchase book

Date	Wording/salesman's name	Sold quantity	Unit sale price	Total sale price	Observation

Credit book

Date	Contracting person's name	Quantity received	Quantity to be reimbursed	Date of reimbursement	Contracting persons' signature

6-2 Choice of Income Generation Activities

1. The Different Stages of the Choice and the Implementation of the Activities

1.1 the Needs of Feasibility Study

For the planning of a new activities it needs to be made sure that the activities can guarantee the profits. In order to achieve to this, a feasibility survey is needed. The feasibility survey consists of the collection and the analysis of information to know if an activity is feasible. In order to this, it is needed to make us sure to consider a certain number of points.

- what people buy or want to buy (Marketting),
- what we can make,
- how we want to work,
- advantages that we want to get.

1.2. Marketting

It is needed to know what people buy or want to buy. The following points are the targetted information for collection and analysis :

- where possible customers live
- what is their group of age? (men - women - children)
- what is their income?
- how can he/she know of your product?
- what is his/her the frequency of restocking of your product?
- of other commercial activities
- that what you make or want to make
- think to be able to vie you with the other

who makes the same activity that you?

1.3. Producers' capabilities and preference

In order to guarantee the smooth implementation of the activity and the support, we also need to know about the producers. We must learn,:

- what do they know already on the activity? (process of production)
- what they are not yet informed or skilled in the activity?
- what points they want to deepen?
- what material or what resources will be necessary to us t him and what is their cost?
- what are problems that you have meetings?
- what solutions do you propose?

We also need to know their preference of the ways of work .
how will organize us our activity on the plan:
of the production
of the merchandising
of the management
advantages that we want to get:
Can I find advantages that I hope for this activity for myself, my family, and my community?

6-3 Production of the Soumbala

The soumbala is traditional food made from seeds of néré or soy that have sudden different transformations.

1. Equipment and Materials used for the Preparation

- seeds of nere or soy
- pot
- dish
- drier
- bucket
- punched calabash
- basket
- plastic bag
- mortar - pestle - ash
- wood - water
- material of conditioning.

2. Different Stages of Preparation

(1) Soumbala of néré.

1. to wet seeds of nere in a container (Reduced quantity) about 5 mms. This stage is going to facilitate washing after cooking flight the wet seeds and put them there in the mortar to add the ash, sifted.
2. to crush until has that that seeds become smooth, very crotchets.
3. to winnow to make leave the ash and other foulness
4. to wash to remove stones
5. to put has cook during 24 hs, during cooking it is necessary to add water so that seeds are always moistened
6. to crush the boiled seeds until has that that the black skin is reduced in fine dough capable to pass by holes of the calabash.
7. to wash seeds crushed with the punched calabash as ironing them three has four water
8. to pull seeds immature and other foulness that remained there
9. to boil seeds well washed during 30 mns again
10. to wring seeds mushes (with the help of a basket)
11. to place the plastic bag previously lava in another basket and there to overturn the wrung seeds
12. well to cover for a good fermentation
13. to really place the basket of soumbala in an uninhabited house to close the house, fermentation lasts 48 hours.
14. To collect seeds of soumbala slightly dried has 2 hours and made of balls according to the e spending power your clientele.
15. Put back balls prepared in the drier to finish the drying: 2 have 3 days
16. Condition balls in sachets
17. Wash and arrange all your material
18. Time of conservation of the soumbala 2 has 3 months.

(2) Soumbala of Soy Beans

NB: the material remained the same except to switch néré seeds with soy beans

1. to pour soya beans in one boiling water pot
2. to let has soft fire until beginning of boiling point
3. to withdraw fire and to let rest in the pot during 12 have 15 hours of time.
4. Well to rub
5. To wash with the punched calabash and to sort out
6. To rinse and to wring (to drain)

7. To put back has boil the washed seeds and sorted out
8. to let boil 30 mns
9. to wring (with the help of a basket)
10. to spread out the plastic bag in another basket and there to overturn the wrung seeds, well to close again and to place the bag in a house inhabitee/fermer
11. fermentation lasts 48 hours.
12. To spread out the soumbala in the drier and to move (1 has 2 hours)
13. Made of balls
14. Put back balls in the drier and dry the 2 has 3 days
15. Condition in sachet
16. Time of conservation 2 has 3 months.

Technical Note : SOY

The soy is a legume used in the manufacture of the soumbala and other culinary returns : It is very rich in proteins (33,7 grs) of proteins on 100 grs of edible part.
Soya beans preserve their power germinatif badly. It is necessary to treat them and to maintain them to the dry. The technology of the soy soumbala is the same that the one of nere seeds.

SEEDLING:
Land has good capacity of retention in water and drain well (not too sandy)
Flat -a: 40 xes 7,5 cm for the G 121 has a seed by poquet (40 kg/has)
60 XS 7,5 cm for the G 115 has a seed by poquet (output 50 kg has the ha)

FAVORABLE PERIOD OF SEEDLING:
- end June for G 115
- beginning July for G 121

After a thick rain has less than 4 cm of depth
- to treat seeds to fungicide
- raised: 7 have 10 days after seedlings

MANURE:
100 kg/has of NPK 520-35 JS)

INTERVIEW:
Binage at the 15eme day and has the demand

HARVEST:
Of the that the first pods explode, to put in boot leaned one in the sun against the other in a clean place and disinfect and let finish to ripen. To beat and to treat as the niebe - well to preserve.

6-4 Production of Soap

1. Preparation

1.1. Equipement :

- mold has soap
- bucket in plastic
- bowl in plastic
- goblet in plastic
- pot
- plastic sachet
- spatula in wood, gloves, muffler,

NB: All the equipement used should be in plastic except the pot that is used solely to melt butter. Metals should be avoided as sodium carbonate attacks them.

1.2. materials used

- butter of karite or vache*huile of peanut or cotton or all other lubricates
- caustic sodium carbonate
- borax
- sodium carbonate
- omo
- water

II. Different stages of Production

- Well to wash all the material to soap and the clean water in a pan:
  - to add 4 liters of cold clean water (with the goblet of one liter)
  - to add? caustic sodium carbonate kg
  - to add 2 spoonfuls of borax
    and 2 spoonfuls of sodium carbonate
  - to add 1 sachet of omo of 60F

It is necessary to note that borax, sodium carbonate and the omo are products that encourage to the soap to foam well.

- to move the all so that sodium carbonate remained not in the bottom of the bowl, that she/it founds in water
- to place this solution in a corner far from the range of children. Generally this work makes himself the eve of the actual preparation.
- In one pot, to make to melt butter and to let really get cold it.

The liquefied butter and the water of sodium carbonate must have the same temperature.

In a container, to pour 2 liters of melted butter cooled, there to add 2 liters of oil of peanut or cotton.

To bring the solution of sodium carbonate and to pass have the preparation.

The preparation requires two people:

- a moves the water of sodium carbonate with the spatula and the 2eme person pours the fat bodies slowly
- to move until has the thickening of the dough (resembles has a thick mush).
- To place the mold without his/her/its rod of cut on a plane surface
- Place in the body of the mold a plastic sachet that will facilitate the demoulage
- To pour the dough slowly in the mold
- To adjust the rod of cut

- To place soap in a place that is not had the range of children.
- To let soap in the mold all one day
- To unmold the eve while removing ball by ball
- To put balls on a bag, or cardboard or plastic sachet
- To wait for 2 has 3 hours to put the tampon
- Put balls of soap in a cardboard
- After two or three days one can use him

N.B: measures are: 4 liters of water for 4 fat body liters.

One uses gloves and the muffler at the time of the preparation to protect of gases that clear themselves.

7 Field of the development of resources in water

INTRODUCTION

More and more, it is recognized that the hydraulic facilities everlastingness depends in big part of the process of responsibility of populations opposite the point of water to put in work this process the animation in programs of hydraulic villager is charged of:

- To cause in general by the farming communities and of groups targets in particular a mobilization participative to the program of hydraulic villager.
- To sensitize the population to the appropriation of the point of water.
- To explain rights and duties of the state and the population concerning the modern water point.
- To sensitize on the importance of a healthy water for health and precautions to take since the collection, to the transportation until the consumption to keep this drinking water as well as of the hygiene of the point of water.
- To mobilize and to imply the involvement of women in decision-makings and to bring them to play an active role in the management concerning the point of water.
- To help to the setting up of the Committee of Management of the point of water and form the elected committee.
- To follow the functionality of the maintenance device (CGPE: Committee of Management of the Point of water, network of repairing craftsmen and distributions of pieces detached) in collaboration with technicians.
- To make to know to the technical and administrative services methods of intervention of the project, its strategy, its objectives and to make be born a setting of inter-sector collaboration.

Actions of the animation take place before, during and after the setting up of the point of water. To this title organizers play an important role in the transmission of information. It is had them that come back the stain difficult to show to villagers approach paths to the project and to look for the project approach paths to the village.

This notebook is explained in six stages from experiences of land. It is destined to the use of organizers, organizers and state-controlled agents that intervene in programs integrated of hydraulic villager. With the progression of its use, modifications will be able to be brought there according to hiatuses and insufficiencies noted.

STAGE 1: SURVEY OF THE MIDDLE (to See Fig.1)

1. to know the village while using information like means of action and to help villages in the organization of activities to undertake.
2. to collect your information on the localization of the village, resources in available water, the organization of the village, the sanitary situation, relations between villagers in order to constitute a bank of data.
3. to permit the confirmation of the village maintenance for the realization of the point of water asks.
4. to make identify by villagers the preferential zones of the site of the point of water.
5. to introduce the link between Water Health and Development

STAGE 2: MEETING OF RESTITUTION OF RESULTS OF THE SURVEY OF THE MIDDLE AND SENSITIZATION (to See Fig.2)

1. to inform the population on the results descended of the survey of the middle and to bring to accept him the choice of the preferential sites of the site of the forage makes by the group of work from the cartography.
2. to inform the population on conditions of the contract.

3. to sensitize villagers on the necessity of the systematic integration and the responsibility of women in the management of the modern water Point.

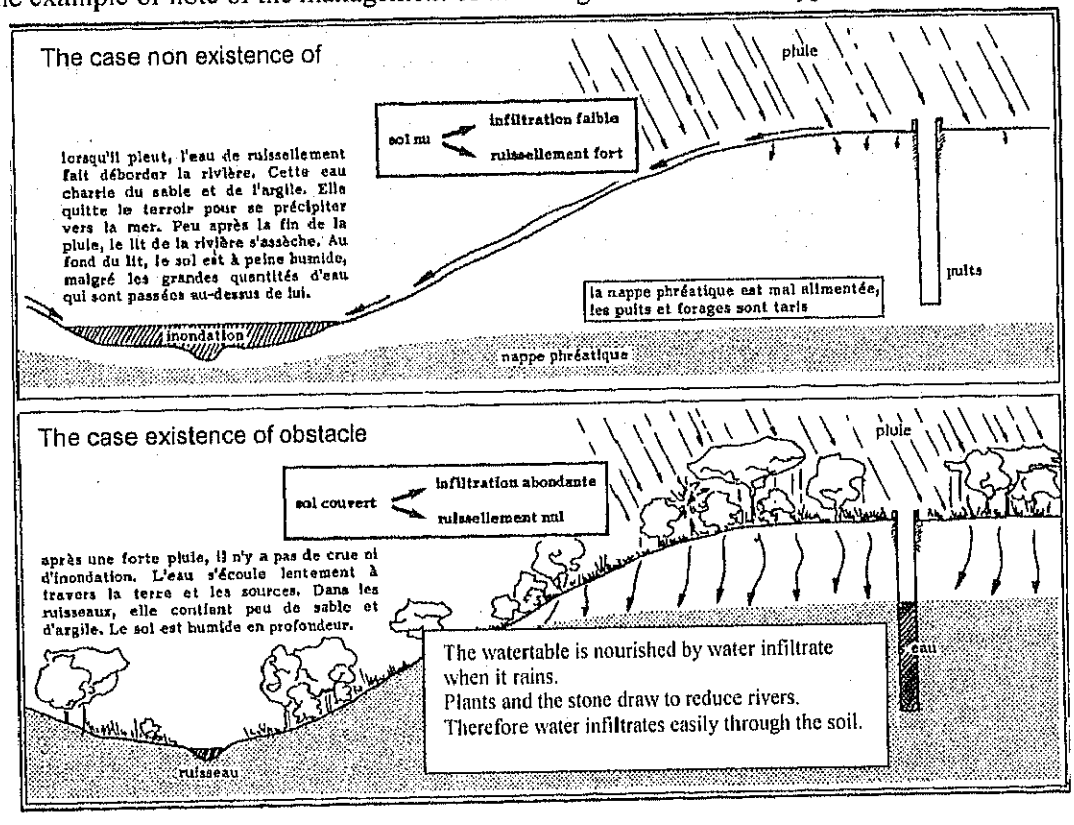
STAGE 3: DEFINITIVE IMPLANTATION OF THE SITE (to See Fig.3)
To confirm with technicians the definitive site of the implantation while taking account of the different arguments (population, hydrogeology, women).

STAGE 4: ORGANIZATION OF MANAGEMENT COMMITTEES (to see Fig.4)
1. to allow the CGPE to exchange inter-villagers experiences concerning self-management and appropriation of the modern water Point.
2. to transfer to villagers the necessary knowledge in the management and the maintenance of the point of water.
3. to deepen roles and responsibilities of every member and to give the necessary faculties to shapes to assume the different stains.
4. to sensitize shapes on the transparent management of case water.

STAGE 5: MEETING OF USERS (to See Fig.5)
1. to recall conditions of the use regulation put in place by the village
2. to recall users of terms of the contract
3. to sensitize your users and particularly women on measures of hygiene of the point of water and on the fashion correct of collection, transportation and consumption to preserve the potabilite of water.
   One example of regulation of the use of the forage is attached the appendix enclosed.

STAGE 6: ENTERTIEN OF THE POINT OF WATER (to See Fig.6)
1. to know the functionality of the CGPES, repairing craftsmen, and the system of maintenance.
2. to identify dysfunctions and to bring a support in case of need.
3. To know a mechanism of the increase of the watertable. (to see above)

One example of note of the management of the forage is attached the appendix enclosed.



Appendix

Proposition of management regulation for the forage clears Selbo

1. Use of the forage

a) to Pump without forcing: the arm of the pump must not knock in loud nor in bottom at the time of the pumping.
b) not to go up, not to make bring up children on the arm of the pump
c) not to wash, not to make the laundry, to make the dish doesn't have immediate proximity of the forage. Villagers will respect a distance of at least 5 meters of the forage for these activities.
d) to make their needs doesn't have less than 50 meters of the forage. To make children respect this rule.
e) to respect engagements described in c) and d) for the well that is to rating of the forage.

2. Management of the forage

a) to assure by collections by villagers the necessary funds for the lasting management of the forage
b) to immediately Make call to a repairer of the that there are the least defect or problem of working or quality of water
c) to make repair one (1) time per year for verification of the forage, and to do revisions and necessary repairs.

Place, Date

For the CVGT	For the Sub-committee
The President	The President
Mr._____	Mr.