

Granaries



Agrodok 25

Granaries

Martien Hoogland
Peter Holen

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Foreword

This booklet appears in a series of Agrodoks published by CTA and the Agromisa Institute in Wageningen. Agrodoks provide practical information on small-scale sustainable agriculture in the tropics. Until now, the Agrodok series has generally focused on subjects that are directly related to the cultivation, production, processing, storage and soil use of a variety of agricultural products (food crops, cattle, small farm animals, dairy products). However, Agromisa has recently become aware of a growing need for information directed more at the level of organisation and management of these products. This booklet on granaries is an attempt to meet part of this need.

The information provided in this Agrodok has been compiled from NGO reports and conversations with field workers who have been involved for a number of years in the establishment and operation of granaries. The text is based as much as possible on practical experience. The authors want to thank everyone who has contributed their practical knowledge to this booklet, especially Erik van Altena of SNV Nederland and the *Compagnie Malienne pour le Developpement de Textiles* (CMDT) who were willing to share their valuable experiences with us.

Because little has been published on this subject, information had to be gathered from many diverse sources. This booklet could not have been written without the successful efforts of Martien Hoogland, who was able to gather this information and put it down on paper. The authors would also like to thank all of the other workers at Agromisa for their enthusiasm and contributions to this project. More in particular we have to thank here Barbara Oranje for her drawings and Maritn le Fèvre, for all the efforts in giving this publication its final lay-out.

Martien Hoogland and Peter Holen

Contents

| | | |
|----------|---|-----------|
| 1 | Introduction | 5 |
| 1.1 | The granary | 5 |
| 1.2 | The contents of this Agrodok | 7 |
| 2 | Granaries | 8 |
| 2.1 | Background | 8 |
| 2.2 | Modern granaries: a new type of cooperation | 8 |
| 2.3 | The grain problem | 9 |
| 2.4 | San: an example of a balanced area | 15 |
| 2.5 | Bougouni: an example of a surplus area | 17 |
| 3 | Organisation of the granary | 19 |
| 3.1 | From idea to implementation | 19 |
| 4 | Management and activities of the granary | 28 |
| 4.1 | Administration and management | 28 |
| 4.2 | From granary to bank: Earning a profit from a grain surplus | 36 |
| 4.3 | Differences between groups of people | 39 |
| 5 | Participation of members | 42 |
| 5.1 | Participation and learning | 42 |
| 5.2 | Obstacles for participation | 42 |
| 5.3 | Commitment and personal contributions | 43 |
| 6 | Case studies: Mali and Zambia | 47 |
| 6.1 | The San region, Mali | 48 |
| 6.2 | The Bougouni region, Mali | 60 |
| 6.3 | The Monze region, Zambia | 64 |
| 6.4 | The Sesheke region, Zambia | 66 |
| 6.5 | Lessons learned | 68 |
| | Further Readings | 75 |
| | Useful Addresses | 77 |
| | Glossary | 78 |

1 Introduction

“Any commodity is politically significant if huge economic and social interests are at stake. Grains are particularly significant because, according to place and to purse, maize, wheat, barley, sorghum, millet or rice form the basis of the diets for both the poor and the rich.”

M. van de Velde, In: *The Courier*, No. 114, March 1989, p. 62

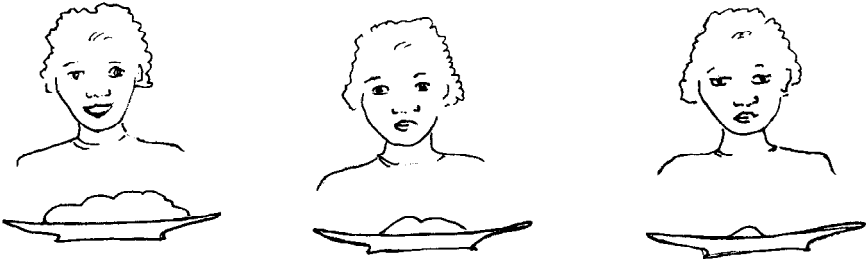
Most people in the world depend on grains, such as rice, corn, wheat, sorghum and barley, for their main source of food. Due to this dependency and the varying availability of grains, many grain-producing families experience periodic shortages or they are regularly confronted with unequal social and economic relations within their village or region. To decrease the negative effects of this dependency, a large number of organised granaries have been established in the past decades by governments, the mission institute or non-governmental organisations (NGOs) in diverse regions of Africa. The experiences and results of these initiatives vary greatly. By presenting a summary of these experiences we aim to give individuals and groups involved in the establishment and management of a granary a source of information and direction, which will support the proper functioning of their granary.

1.1 The granary

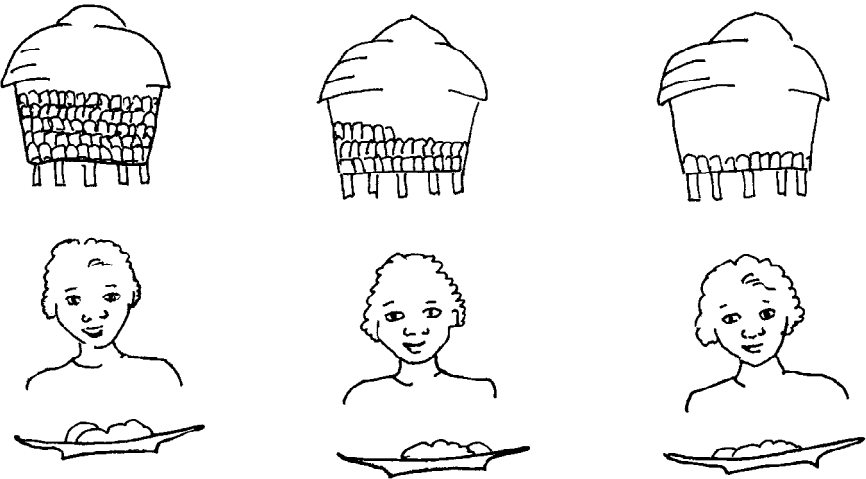
Granary is a general term for a form of cooperative in which grain is stored so that it can be distributed at a later date. There can be different reasons for setting up such cooperative, depending on the characteristics of the area. This is explained in detail in Chapter 2. In general it can be said that a granary increases the availability of grain for the households and allows them to be less dependent on the price fluctuations of the crop (due to a surplus or scarcity of the grain).

A well-functioning granary improves the self-sufficiency of a village or community. Grain stays in the village. The food security of the

households is increased and it is sometimes even possible to save some grain, or earn money if the compiled reserve is sold. Needy households can take out a low-interest loan and they can purchase grain at a low price. Large-scale farmers, who can grow more than enough grain to support their own needs, profit by selling their extra grain at a high price.



a: Due to a varying availability of grains, many people experience regular shortages or even a famine.



b: A granary decreases the negative effects of the dependency on grains.

Figure 1: Food availability

Granaries are managed by village councils or by individual groups of farmers who are responsible for the proper functioning of the cooperation. The households that join a granary can *borrow* grain from the granary, which has to be paid back later. The lending of grain is usually done at a relatively low interest rate that is enough to cover the costs of the granary.

1.2 The contents of this Agrodok

This booklet attempts to concisely present the general principles and assumptions that granaries are based on. Wherever possible, these principles and assumptions are demonstrated through examples from different regions of Africa. Based on examples of both good and bad practices, the reader is provided with an answer to the following questions:

- In what situations is it worthwhile to set up a granary?
- How is a granary established?
- What aspects are important in establishing and operating a granary?
- What requirements must be fulfilled for a granary to function well in the long term?

In an attempt to make this book compact and manageable, we have concentrated only on the basic ideas behind granaries and the most important factors influencing their operation. The information presented here cannot be complete. For this reason a list of other sources has been included to help readers find answers to their specific questions. We have also deliberately chosen to leave out aspects having to do with the physical circumstances and processing of grain products, because these are described in detail in other titles in the Agrodok series (numbers 18 and 31).

2 Granaries

2.1 Background

Granaries were first established in response to the droughts that plagued the Sahel region of western Africa in the 1970s. Very little rain fell, the crops failed and the population suffered from starvation. Foreign organisations donated grain as emergency aid to thousands of villages all over western Africa. These emergency relief organisations, together with hastily chosen village committees, distributed the grain to the villages and their households. The grain was consumed until the stocks were again depleted, and the whole process was repeated the following year.

Already during the periods of drought in the Sahel, initiatives were made to structurally improve the food supply situation. The population began to organise itself into a granary. The goal was to offer a long-term solution to the grain problem. The first granaries were established in 1974 in Burkina Faso. Afterwards, the concept spread through large parts of western, and later, southern Africa.

Not all of these granaries proved to be successful, however. The main problem in many cases was that the organisational structure was too weak. The concept depended on members of the granary fulfilling their responsibilities, but this was often neglected. Households could not always repay their loans, for example. Also, granary income was sometimes used for purposes that had not been agreed upon by the members of the group. The money was invested in activities or goods that were not directly related to the granary. In this way, the grain reserve declined and the granary could not serve its main purpose of providing inexpensive food.

2.2 Modern granaries: a new type of cooperation

In hindsight, it is clear that the short life span of many of these granaries was due to the fact that they were established from the outside.

The grain reserve came from elsewhere and the organisational structure was not created within the village or the community. For this reason, a new type of granary has appeared in recent years. It is created from the bottom up, by the farmers themselves. The farmers reserve their own grain, and, together in small groups, they market it at the highest possible selling price. The goal of the cooperative is to earn a profit, not just to ensure basic survival. This new type of granary has been established in both West and Southern Africa.

2.3 The grain problem

The *purpose* and the *organisational form* of a granary are determined by the *grain problem* of a particular region. Three general problems can be distinguished based on the characteristics of the area in which the grain is cultivated:

- In *shortage areas* not enough grain can be cultivated to feed the population
- In *balanced areas* overselling, occasional droughts and limited production can lead to food shortages
- In *surplus areas* small farmers cannot profit from the surplus of grain, usually due to overselling.

Shortage areas

Shortage areas generally receive too little rainfall to provide sufficient food security for the population. Over a period of many years, households structurally produce too little grain to satisfy their basic needs.

This situation typically has the following results:

- A structural shortage of grain forces the households, once they have consumed their own harvest, to buy grain at the village market or regional markets. They buy it from the small-scale traders who visit these markets. The small-scale traders buy grain from large-scale traders or from farmers who have produced grain in surplus regions. Since the small-scale traders want to earn a profit from selling their grain, it becomes relatively expensive for the families that buy it. The danger in this situation is that the families can enter or become trapped in a poverty cycle.



Figure 2: Traders buy from and sell grain to small-scale producers

- The households buy small amounts of grain, at the most a few bags at a time. A member of each household has to go to the market to buy the grain. This is time-consuming and expensive.
- Moreover, the grain price increases as the season progresses and the grain becomes more and more scarce. The best solution, therefore, is for the families to buy and store the grain at the beginning of the season, right after the harvest.

The possibilities for a granary in a shortage area

The households can buy the grain collectively. For this purpose they organise themselves to form a granary, which purchases the grain in a few stages for all of the member households. They hire a truck so that they can buy the grain outside of their own region. This saves a lot of time and money.

Farmers no longer have to buy grain from traders, who also have to earn enough to cover their own costs. The granary buys the grain

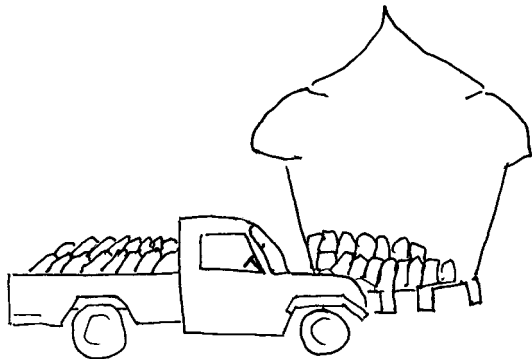


Figure 3: Renting a truck together saves money as well as time

shortly after the harvest. The grain in the surplus areas is then relatively inexpensive. Later in the season the price of grain will only increase.

In a shortage area, the granary has the advantage of offering the households a way to buy or borrow relatively inexpensive grain. They no longer have to travel to the market to buy grain. Instead of going to the market they can spend more time working in their own fields. This in turn also increases the availability of grain in the village.

Box 1: The poverty cycle

In West and Southern Africa many farmers depend on cultivation of grains for their subsistence. The cultivation of cash crops such as groundnuts and cotton is not feasible in many areas of these regions because of the long dry periods or erratic rainfall. As a result there is a high risk for those families that depend on the grain harvest to be caught in a poverty cycle. Such impoverishment then becomes a structural problem for large parts of the population.

The grain problem is caused by the large supply of grain to the market following the harvest. All farmers sell their grain in the same period. This results in a relatively low unit price for the crop. In the months following the harvest the farmers start cultivating next year's crop. During this period until the next harvest the availability of grain becomes smaller because people buy from the stock, while there is no new supply to the stock. This causes the price to increase sharply since the grain becomes scarce. The price will be highest just before the new harvest, when there is little left. The price of the grain will be much higher compared to what the farmers received for it just after the harvest.

The farmers end up selling their harvest for a relatively low price and have to buy it later in the season for a high price when they need the food. This causes a serious "cash flow" problem for these households, a situation that is known as the rural poverty cycle. As a result little investments are made in the grain cultivation and so the yields and the income from selling the harvest remains low and purchasing food remains relatively expensive. In order to enable farmers to invest in crop production this negative cycle needs to be broken. Organising grain producers in a granary offers such an opportunity.



Figure 4: The village people can save time when they buy at the local granary, but they will save money too

Balanced areas

The characteristics of a balanced area fall somewhere in between those of a shortage area and of a surplus area. In an average year, the households in a balanced area can produce enough grain for their own consumption. Occasionally there is a small surplus that can be brought to the market.

Nevertheless, in some periods a shortage of grain can develop. There are two possible reasons for this:

- *Overselling*: Some households sell too much grain after the harvest. This means that by the end of the season they have a shortage of grain. They then have to buy relatively expensive grain at the market, or they have to go to work for other farmers.
- *Drought*: Occasionally, balanced areas are faced with unbalanced and unpredictable rainfall. This can lead to a grain shortage in the area. The households then have to buy grain at the markets to supplement their own production. Many farmers go to work for other farmers to earn an income. This reduces the time they have available to tend to their own grain crops, which has a negative impact on the next harvest.

The possibilities for a granary in a balanced area.

To compensate for the negative effects of overselling, a granary buys the surplus from the member households directly after the harvest.

Before the following harvest, this grain is lent back to the households. This can be done at cost price; so the selling price of a farmer's own product need not be much lower than the price that farmer has to pay to buy extra grain needed to survive until the next harvest. This decreases the negative *cash flow* of the households.



Figure 5: The granary buys the surplus directly after the harvest

To compensate for drought-related problems, a granary purchases grain in the good years at a low price. It is then stored and reserved for the dry years. In a dry year, the grain is lent to the households at cost price, or sold elsewhere at the market price. The advantage is that because the farmers have access to inexpensive grain, they have more money left over to spend on other necessities. They can also spend more time tending their own fields. This increases the harvests and the availability of grain in the village. See the example in section 2.4.

Surplus areas

Surplus areas generally receive sufficient rainfall for subsistence farmers to cultivate enough grain to support their families. In most years the grain harvest is more than adequate to feed the households.

This situation typically has the following results:

- After the harvest there is a surplus of grain. Due to the abundant supply, the price of this grain is low and the farmers tend to sell more than they should.
- The extra grain is usually bought by small-scale (intermediate) traders, who visit the farmers individually or buy the grain at the village markets. The intermediate traders bring their bags of grain to the re-

gional markets, where they sell it to large-scale traders. These traders transport the grain by truckloads to the cities or to grain shortage areas. Sometimes they store it in storage facilities and wait until the prices increase. Ultimately, they sell the grain at a higher price.



Figure 6: Time saved can be spend more usefully by tending their own fields

The possibilities for a granary in a surplus area

Rather than allowing intermediate traders to sell their grain, the farmers can do it themselves. They can sell their grain individually, which costs each farmer travel time and money, or they can sell the grain collectively, so that they can profit from *economies of scale*. To act collectively, the farmers organise themselves into a granary, which buys the grain after the harvest, stores it, and then sells the grain elsewhere when the price has become high enough.

To profit from a higher price elsewhere, it is necessary for representatives of the granary to visit the markets in the region and stay abreast of price increases. When the time is right, the farmers hire a truck to transport the grain. A delegation from the granary then sells the grain at the market.

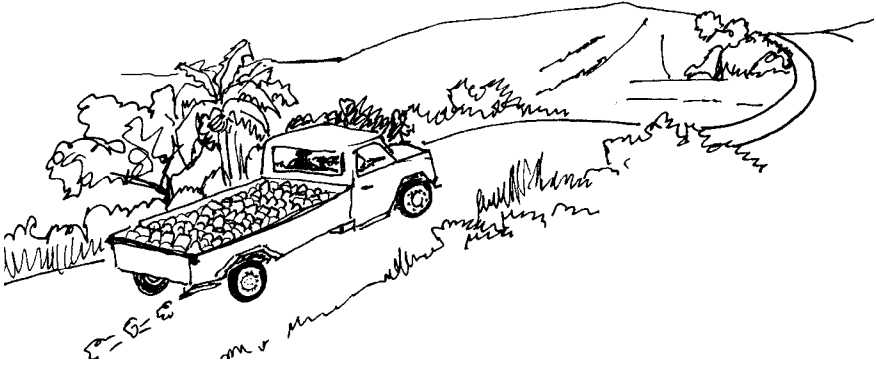


Figure 7: Hire a truck collectively to transport the produce to distant markets with higher prices

Once they are organised, farmers can transport and store grain more efficiently, and they can keep part of the harvest in storage until the selling price increases. The granary has the advantage that it can offer a large volume of grain at once, which makes it possible for the farmers to hire a truck and visit more distant markets. In this way, the farmers can take advantage of the higher prices charged for grain elsewhere. The granary thus increases the income that can be earned from growing grain, which in turn also allows the farmers to spend more time and means on grain cultivation. This increases the yield of the following harvest.

2.4 San: an example of a balanced area

In this section we will present a case study of a typical balanced area.

The grain problem in San

San is located in the southern region of Mali in the boundary area between the Sahel and the Sudan. Farmers in San are mostly dependent on the cultivation of millet and sorghum. Annual rainfall is generally between 600 and 700mm. The harvest in normal years is enough to feed the population, and often the families can even sell a small sur-

plus of their product at the market. Nevertheless, in some periods the area experiences a shortage of grain, due to insufficient rainfall or to a yield that is too small to last until the next harvest. San is therefore an example of a balanced area.

After the harvest a large volume of grain goes to the market. The 1993/1994 season, for example, yielded a surplus of almost 10,000 tons of grain. The surplus is sold by the farmers at a low price. Some of the grain leaves the San region and is sold again elsewhere.

The area can still experience shortages, however:

- In the period before the harvest, called the *soudure*. This period includes the months August and September. Only small-scale farmers and some medium-scale farmers experience a shortage, because their grain supply is not large enough to last until the following harvest.
- In a year with little rainfall. This occurs approximately once in seven years. The grain shortage is then felt already in April or May, during the rainy season, when the land is being prepared for the following harvest.

If the harvest is too small to support their families, the farmers in San have few other sources of income to fall back on. Cultivation of cotton and peanuts is no longer possible, because the area has become increasingly arid since the 1970s. The only available options diminish either the household's means, or the investment that can be made in the following harvest.

The options available to the farmer are either to:

- sell livestock at a low price
- borrow grain from neighbours or from a dealer at a high price
- travel to the market to buy grain, which costs time and money, or
- work for other farmers or in the city to earn an income with which the farmer can buy grain for his family.

After the next harvest he will have to sell grain at a low price to support his family. Ultimately, only the traders or the urban consumers profit optimally from the grain.

In this way, periods of grain shortage force many families into a poverty cycle as described in Box 1. The farmers invest less time and energy in the cultivation of grain than would otherwise be possible, which results in low yields. However, it must be stressed that, in practice, not all of the factors mentioned above occur at the same time and not all households are affected in the same way. This means that the usefulness of a granary can be less than it appears to be in theory!

The possibilities for a granary in San

The first granaries in San were established in 1985, during a period of drought. The granaries were established by the mission and the government extension service. The granary is used primarily to combat the poverty cycle. This type of granary is called a *prevoyance*. The accumulated grain reserve is made available to the households so that they will have enough to eat. This way the households do not have to buy grain elsewhere at a relatively high price or look for alternative sources of income. It saves a lot of time and money and the farmers are freed to cultivate their land. This increases the village's yield from the following harvest and generally benefits everyone.

2.5 Bougouni: an example of a surplus area

Bougouni's grain situation is different than that of the San region. Bougouni is located in a more southern part of Mali, which receives more rainfall. Part of the land is used for the cultivation of cotton. Land is also less scarce than in San. It is a surplus area, with the potential for producing a grain surplus.

Yet the consequences for the households are not always positive. In practice, a shortage of grain can still develop. This occurs when not enough labour and means are invested in the land. Young people, for example, do not want to work on the land. In addition, there is always

a risk of overselling, because traders buy the grain from the farmers right after the harvest, when the prices are low. This leads to a greater shortage of grain just before the next harvest, which in turn increases migratory labour in other regions, etc. The danger of entering the poverty cycle as described in Box 1 is thus very real here too.

Boegani has the potential to supply grain to other regions of Mali. To do this, however, more grain has to be cultivated, because a large volume is needed to make the transport and marketing of the grain outside the region profitable. In addition, a trade route to other regions has to be set up for this grain. This means that information is needed about markets, traders, transport possibilities, etc., and that the grain has to indeed get sold.

The possibilities for a granary in Bougouni

A traditional granary is not the proper means for developing a trade route to other regions. This requires initiative and a large investment of labour. The granary can, however, ensure that the volume of cultivated grain increases, and that people stay in the region to work on their land. It also prevents the grain from leaving the area at a low price. Both factors increase the grain cultivation and make it possible to build up a surplus. The main purpose of the granary is to offer inexpensive foodstuffs to those who need it and to lend support to the community.

An experiment with a new type of granary, called *Groupement professionnel de producteurs cerealiers* (GPR), was started in the Bougouni area in 1996. This type of granary joins together individual farmers who have a surplus of grain. The goal of the GPC is both to increase production and to store and sell the surplus. This is managed in such a way that the granary makes a profit. This in turn provides the farmers with the opportunity to invest time and money in the establishment of a trade route and to gather the information necessary to by-pass the intermediate trader.

3 Organisation of the granary

The previous chapter outlined the basic concept of a granary. The following steps summarise the development cycle of a well-functioning granary:

- The granary acquires or expands its grain surplus.
- If the households have consumed all of their own cultivated grain or if they have a shortage, then grain is lent to them by the granary.
- The loan is repaid after the following harvest, when the supply of grain is replenished.
- The households pay interest on their loans, which should cover the costs of the granary and which constitutes a deposit for the next cycle.

This chapter will elaborate on the above steps, and will present the various aspects that are important to the proper functioning of the granary. Examples and experiences from San, Mali; Bougouni, Malawi; and the Monze and Sesheke regions in Zambia are given in Chapter 6.

3.1 From idea to implementation

The following steps in organisation are generally needed to move from idea to implementation:

- The idea of the granary: the start.
- A village or a group of households applies for a granary or makes the necessary preparations itself.
- Determination of the grain problem that is characteristic of the region.
- Preparation of the community.
- Appointment of the members and the committee of the granary.
- Additional support and training from the extension service.
- Establishment of the first grain reserve, made up of the farmers' own deposits or a donation from the extension service.
- Daily management by the steering committee.

The idea of a granary

“Every journey begins with the first step” (an old Eastern proverb).

This is also the case with a granary. At some point a group of farmers gets the idea of forming some sort of granary. This initiative could spring from pure necessity or from the desire to work more efficiently and to save some food. The idea often first comes from the extension service. The extension service can discuss the possibility with the village leaders, but it is even better if the villagers themselves go to neighbouring villages to see for themselves how a granary works. This way they can hear the other villagers’ experiences and learn about the advantages and disadvantages of a granary.



Figure 8: It can be very motivating to pay a visit to neighbouring villages and exchange ideas and experiences

Application and preparation

If the idea seems plausible, the group of farmers starts to establish a granary. Or, even more likely, the extension service or an NGO is approached, because they have more experience and the means to implement the idea. The initiative has to clearly come from a group of farmers or a village, because this demonstrates the collective input that

will be needed in establishing a granary. The extension service or NGO often provides the first supply of grain, evaluates the application based on their own criteria, and trains the steering committee.

When a village or community approaches the extension service for a granary, the service first evaluates the village or community to determine whether it is suitable for a granary. The extension worker often knows the village well and can generally form an accurate opinion. This is nearly impossible for someone from the outside to do.

The most important aspects that the extension worker has to look at are:

Education level of the community

At least a few people in the village have to be able to read and write. These people can manage the administration of the granary.

Opportunities for cooperation

The villagers have to be able to cooperate with one another. There must not be any existing disputes between households, extended families or ethnic groups in the villages. The village must not be made up of too many large-scale or small-scale farmers. The group of middle-scale farmers must dominate. A granary also requires a feeling of solidarity between households; and all households have to be able to attend the meetings. At the meetings decisions are made about the granary. If the meetings are poorly attended, it will be difficult to make decisions and to ensure that the households are committed to the granary.

Number of households

The village may not be too large. If the village is too large the households will not feel as connected to the granary. Participants won't know each other as well and communication will be more difficult. Normally the number of households varies between 20 and 100. The FAO (Food and Agriculture Organization of the UN) favours larger groups, and even promotes the idea of having only one granary for

various villages. However, in practice, it has been shown that working together is easier in smaller groups (about 20).

Relations between extended families or clans

The number of families or clans may not be too large. It is crucial that relations between them are good. If this is not the case, some members may not trust an officer appointed from a different group. In some areas, it is better to establish a granary within each family or clan.

Determining the grain problem

Regardless of whether a granary is established from within a community by the farmers themselves or from the outside by an NGO, the first step is to determine what the predominant grain problem in the area is. (This is explained further in section 2.3).

This is based on whether the area is:

- a shortage area
- a balanced area or
- a surplus area.

Preparation of the community

After determining the grain problem, the members of the community in which the granary will be situated have to be prepared. A village cannot establish a well-run granary in one day. It has to progress through a number of stages. The extension worker plays a central role in supporting these stages. He or she works together with the villagers to establish a type of granary that will meet the needs of the community.

The ultimate goal, however, is for the granary to be managed by the villagers themselves without outside help.

Often the villagers are asked to attend a number of village meetings, so they can learn how a granary works. They have to be given answers to the following questions:

- What is the area's grain problem, and what are its effects?
- What does the granary do? (lend grain at cost price)

- What are the rights and responsibilities of the members?
- Who controls the daily leadership of the granary? (the committee)
- What is the function of the village council?

The goal of these meetings is to stimulate the people to take an active role in the granary. The extension worker has to explain all aspects of the granary. It is important that as many attendees as possible express their opinions or ask questions about these issues. In this way the villagers will feel more committed to the granary.

Choosing the members of the committee

The daily decisions necessary to run the granary cannot be made at the village meetings. These are made by a small group of specialists, who make up the committee. The committee has daily control of the granary. The four main posts in the committee are:

- Chair
- Secretary
- Treasurer
- Weigher

It is possible to add more posts to the committee as well. The number of committee members depends on the size of the granary membership. In general a committee of four is sufficient for a small group. In a large group more supporting functions can be introduced such as storeroom management, maintenance, conflict intervention, etc.

To obtain widespread support from the membership, committee members are usually chosen at a village meeting or other gathering. Before individuals can be chosen, there has to be a clear definition of all of the committee posts. Once the villagers understand what the responsibilities of each post are, they can choose qualified candidates. All groups within the village should be represented on the committee so that the committee can speak on behalf of everyone.

It is also important to consider whether leaders of existing village co-operatives should be allowed to participate in the granary committee. In the past, village cooperatives were often established by the gov-

ernment. They do not always function well and they are not always democratic. Sometimes it is better not to involve these cooperations. Experience has also shown that in some areas it is wise to grant the village chief or elder the function of honorary chair. Their influence can be helpful in getting things done.

In practice, the granary is often directed by a group of middle-aged, medium-scale farmers. They have more time to spend on the granary than farmers who can barely support themselves. They also have different interests than small-scale farmers or young people, for example. These medium-scale farmers decide on the use of the granary's grain reserve. It is in their interests to invest in the community.

Extra training and support from the extension service

Committee members have to be trained. The secretary and treasurer, for example, must be qualified to do the granary's bookkeeping. For this purpose committee members attend courses offered by the extension service. Committee members can also visit other granaries in the area to learn from their experiences. This is an important source of information!

The grain reserve

The basis of a granary is the grain reserve. The grain reserve can come from various, and often a combination, of sources. The reserve can be established and replenished through market purchases; it can also be comprised in part of interest received for earlier loans, the most recent harvest, or a gift, from the extension service for example.

Acquisition of a grain reserve

The question is *who* is to provide the surplus grain?

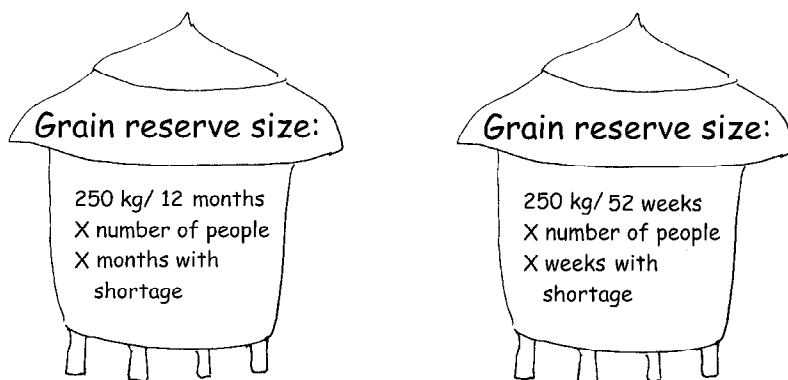
The households involved are often poor, especially in shortage areas. They cannot provide surplus grain. The granary does not exist yet. The solution is for the grain to come from the outside. The grain can be offered by:

- the extension service
- the mission

- national development organisations or services
- international development organisations

The size of the reserve

The members of a granary have to first decide how large the grain reserve should be that the granary stores. This depends on the goal of the granary (is it intended to ensure food security or to make a profit?), the previous harvest (good or bad), the number of members represented by the granary and the availability of grain after the harvest. To determine how much to store, the FAO uses the following calculation. It assumes that an average person needs 200 to 250 kilos of grain per year. If the granary's goal is food security, then the number of kilos needed per person per year is multiplied by the number of members, minus the amount of grain members have at their disposal. It may also be helpful to look around in the area to see how other co-operations or granaries determine their supplies.



a: Determining the size on a monthly basis.

b: Determining the amount on a weekly basis.

Figure 9: Determining grain reserve size

If you represent this by a formula, you get the following equation:

The desired reserve size (in kilos) = 250 kg grain divided by 12 months, multiplied by the number of people who experience a shortage and the number of months the shortage will be felt.

Or , calculated in weeks:

The desired reserve size (in kilos) = 250 kg grain divided by 52 weeks multiplied by the number of people who experience a shortage and the number of weeks the shortage will be felt.

The cycle of the grain reserve

The volume of the reserve changes over time. This volume depends on the quality of previous harvests. They determine the availability of food and, thus, also of grain in a particular area.

In bad years

Grain becomes scarce before the new harvest. Many have borrowed grain. If a second harvest is also bad, then the farmers' storage sheds will remain empty. In the coming year not very much grain can be lent out.

Grain can be bought at the market only if there is money in the treasury. Because demand is high, the price is also high, so not very much can be bought. Though it needs to replenish its reserve, the granary can only buy small amounts from the households. The households have a shortage themselves. The committee cannot lend out very much either, because many households cannot repay the loan. The same is true for the granary if it borrows money from the extension service in a bad year. Grain is expensive and few households have the means to borrow, but the granary does have to pay the money back to the extension service, possibly with interest. After a few bad years, there is a greater risk that some households will not be able to pay back their loans or the interest on loaned grain and they will have to be excluded from the granary as a result. Such a household will have to repay its debt before being allowed to participate in the granary again.

In good years

Luckily, one or more bad years are inevitably followed by good years. This has consequences for the grain reserve. The first good year enables a number of households to pay off part of their debts to the granary plus interest. The grain reserve can thus be restored to its original

level. The second good year allows most households to completely pay off their debts and all of the interest incurred. The reserve thus increases to above its original level. The committee can then decide to sell some of the grain. It can be sold to the member-households or at the local or regional markets. The granary thus earns money that can be deposited in a bank.

In average years

In theory, the grain reserve of a well-organised granary should increase steadily. In practice, however, the grain reserve or the amount of money that a granary has in the bank can sometimes slowly decrease. One explanation for a decrease in the grain reserve is that the granary's money is used for other purposes, such as the purchase of agricultural equipment intended for collective use. Alternatively, the grain problem may not be critical enough to require a large reserve.

4 Management and activities of the granary

4.1 Administration and management

For a granary to function well, it must be well administered. Someone must keep track of the granary's supplies and credits. The general membership must always be able to see how much grain is in the reserve, which members are in debt to the granary and by how much, etc. This information is needed to make the right decisions at the right times. For example, if part of the reserve can be sold at the market, or which part of the reserve is available to be sold and what is the minimum price that must be obtained for the transaction to be profitable?

Administration of the granary is done by the secretary, who can also be supported by a bookkeeper. They are not paid for their work. There are, however, costs involved in purchasing notebooks and for the training of the committee members. These costs are covered by the granary or they are donated by a development organisation or the extension service.

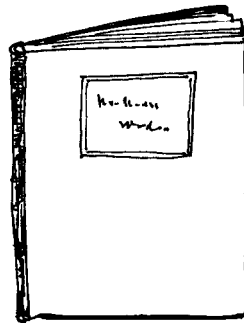


Figure 10: The committee has to do the bookkeeping

Loans to the households and repayment

In general, it is best for the committee to designate certain days for accepting loan applications. This way the members know when to apply, and they know that all applications will be treated equally. Moreover, there has to be enough grain in the bank to make the loans, and this requires advanced planning. One of the secretary's tasks is to evaluate loan applications. The most important factor to consider is whether farmer has the means to pay back the requested loan.

Specific days can also be designated for paying back the loans. Repayment is made in kind, which replenishes the grain reserve.

The repayment rate depends on the organisation of the granary. Members of a well-organised granary share a feeling of solidarity. They have a common goal of keeping the granary operational. Social pressure ensures that members pay back their loans if at all possible. If a household does not repay its loan, this will become the subject of local gossip and the household may be reprimanded by the secretary or chair on behalf of the whole group.

Members of a poorly organised granary do not have a feeling of solidarity, as they are less committed to the project. Members try to get out of repaying their loans. They often wait to see if others are going to pay. If one member refuses to pay, then others will refuse too. They may then invent excuses for not appearing on their payment dates. To make paying as easy as possible in such a situation, the committee may declare that payments can be made on any day and with money rather than grain, because it is much easier and does not depend on the agrarian calendar. Moreover, the weight and quality of the grain is then no longer an issue. If necessary, the committee can also accept payments at a number of locations, rather than just one.

In a good year, households usually pay back their loans. In addition, they pay interest, which can vary between 20% and 50%. An interest rate of 50%, and thus an increase in the grain reserve by 1 ½ times by the end of the year, rarely occurs. This normally only applies to granaries that are confronted with many loan defaults.

The repayment rate also depends on the way a community or a group is organised and on the prevailing forms of authority. Repayment is usually more problematic in egalitarian communities than in communities that have a clear and widely accepted central authority, such as a chief or governmental institution.

Income and harvest

The size of the harvest affects the income of the granary. In a bad year the granary lends out its reserve. Little grain is left in storage, so the

granary cannot sell any grain later in the season to profit from the increased prices.

In a good year the opposite is true. The harvest was good so the households pay back their loans with interest and the storage shed is full. The granary then has a surplus that can be sold. These sales in turn pay for the granary's costs. The problem is that it is difficult to sell this grain at a profit. The prices do not increase towards the end of the season because there is too much grain on the market. The grain is then sold after a few months for the same price as when it was received.

The granary can only sell grain for a profit in an average year. After the harvest it has a modest surplus that can be sold a few months later at the market for a higher price.

Costs and interest

The goal of a granary is to make food available to households at a price that is less than the price charged by grain traders. The granary buys grain at a low price, so theoretically it can sell it a lower price than an intermediate trader or any seller that is out to make a profit.

However, the granary has expenses too. The households have to pay the expenses generated by the granary. This is why they have to pay interest on their loans. A well-organised granary charges 15% interest. A less successful granary charges 50% interest. In addition to paying for expenses, this interest can be used to increase the grain reserve. The granary can then not pay for other activities.

Costs for storing grain

Storing grain costs money. The grain is 'sleeping capital' and as such does not make money. If the value of the grain in currency was deposited in a bank it would earn interest. If this money was used for buying and selling commodities by a knowledgeable trader, it would earn a profit.

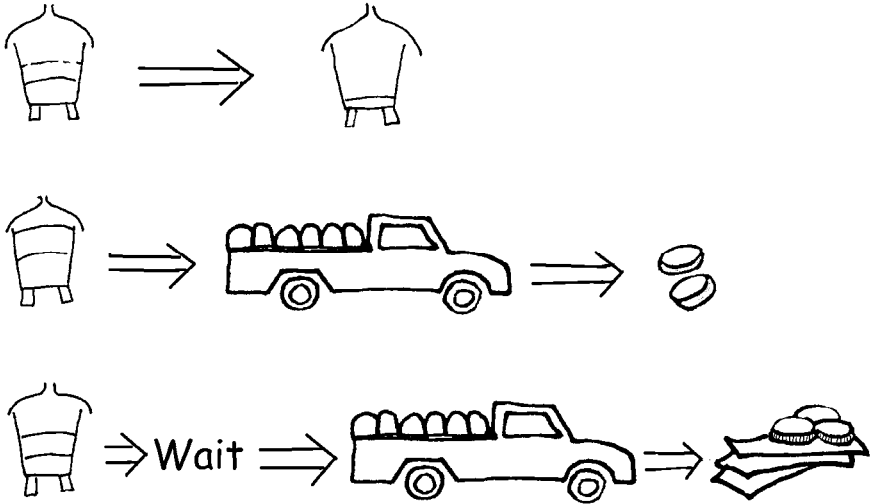


Figure 11: The profit of a granary depends much on the moment of selling the stored products

The profit loss of the grain depends on the size of the harvest and on the market swings of the grain price:

Good harvest and a stable price

If the harvest is good, the price for grain will remain stable or it may even drop. It is then difficult for the granary to sell its reserve. There is a danger that the granary may even have to sell grain at the season's 'beginning price'. It would be better to hold onto the grain for another year. However, the granary does incur costs that amount to 15-50% of the value of its reserve. In this case, the granary is incurring a loss rather than a profit.

Poor harvest and a sharply increasing price

After a poor harvest the grain price can double. It is then profitable for the granary to sell part of its reserve. In this way it can make 100% profit on its reserve, which is especially attractive when the total costs of the granary are 15-50% of the value of the grain. The problem is

that the households cannot pay back their loans after a poor harvest. They have to wait until a good harvest. As a result, the granary's reserve is very small in a bad year, and this grain is supposed to be stored to insure food security for the villagers. *Only a granary that has financial reserves can buy grain after the harvest in order to sell it later at a higher price.*

An average harvest with a gradually increasing price

After an average, sufficient harvest the grain price will not swing drastically. The price can ultimately increase by about 30%. Whether or not the granary makes a profit then depends on its costs. If a lot of money is needed for maintenance or new tools, for example, then not very much money can be accumulated. However, if the repayment rate is good, the granary will function properly.

Maintenance of grain shed and storage of grain

The grain is stored in a shed, which has to be built and maintained. In a good shed the grain retains its quality. Therefore, a lot of attention must be paid to the quality of the shed.

Loss of stored grains

Grain can be eaten by rats, insects (such as the infamous 'greater grain borer') or it can rot due to contact with moisture. This happens when the storage shed is not good enough. It is therefore important that a lot of attention be paid to the circumstances under which the grain is stored. Agrodok 31, *Storage of tropical agricultural products*, explains the best way to store grain. It is important that the grain be kept dry and at the right temperature. Other, usually traditional, methods can also be used to protect the grain. These methods are described in Agrodok 18, "Protection of stored cereals and pulses". Never use pesticides on grain that is stored for human consumption, as this can lead to food poisoning.

It can also happen that not all of the households repay their loans. This is the most important cost incurred by a granary. Loan defaults occur most often in years of crop failure. Members of a 'well-organised'

granary will pay their loans back after the next good harvest. This is not such a problem, except that the granary has only a small reserve in bad years. The granary should actually supplement its reserve in such years, but this is difficult to do. The grain is scarce and expensive. It has to be bought outside the village. In addition, the granary receives no interest for the whole year, so, theoretically, double interest has to be charged the following year. This will have to be explained to the members.

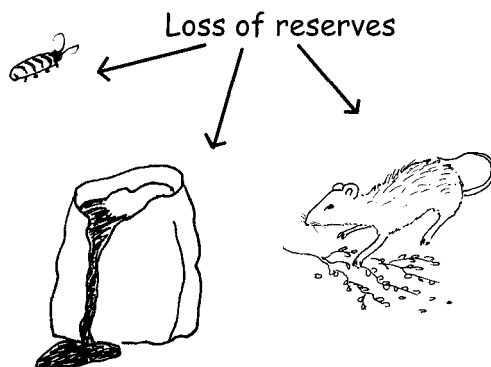


Figure 12: Protect your grains against pests, rodents and spilling

Loan defaults are most often made by small-scale farmers. They are the ones who need the granary the most, so they borrow grain nearly every year. But they are also the least capable of paying back the loans. By defaulting on their loans they run the risk of being excluded from the granary. They then become dependent once again on the market. Loan defaults also occur when members do not feel a sense of solidarity. They only pay back their loans if others have already done so as well.

Loan defaults weaken a granary. Eventually, they can also cause it to close. It is a difficult problem to solve. The small-scale farmers simply cannot repay their loans. Lack of solidarity in a village is difficult to control, but it can be limited by increasing the members' involvement in the granary as much as possible. For example, allow each member to help build the grain storage shed, give each member clear tasks, remind them often that it is in their common interest to make the granary function well, and involve everyone as much as possible in granary decision-making.

Marketing

The term 'marketing' refers to activities aimed at selling a product at a profit to clients, the consumers. Marketing activities for a granary are particularly relevant in surplus areas. The marketing strategy of a granary in a surplus area can be directed toward selling part of its reserve at the market. Marketing activities are less relevant for granaries in balanced or shortage areas. These granaries exist mostly to ensure food security for their members. Selling their (temporary) surpluses could very well lead to shortages later.

For the surplus-based granaries, and thereby also their members, the goal is to obtain the highest possible price for the grain. Such a granary takes on the function of a marketing enterprise. The added value of the granary is that it allows the grain producers to market their grain collectively. This organisation of grain producers ensures that its members are in a stronger position to enter the marketplace and that they will obtain better prices for their grain.

Obtaining a good price for grain depends on a number of factors:

- Supply and demand / selling location
- Amount / quality
- The grain buyer/ negotiating position

We will focus briefly on these points.

Supply and demand / selling location

The most important factor related to the price is supply and demand. When demand is high and supply is low the price will be high, and vice versa. Up to a point, little can be done to influence this trade off. Moreover, if the price is good, there is no problem. The granary can then sell the grain for a good price and the members are satisfied. If

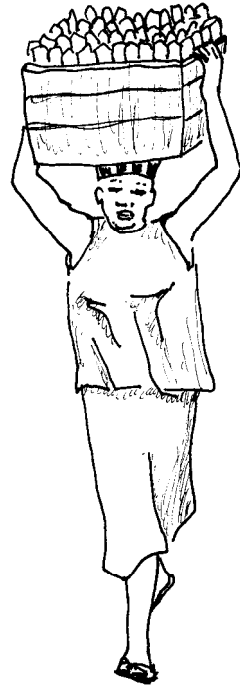


Figure 13: Taking the produce to the market

the price is low, it is not profitable to sell the grain. There are a few possible ways to (temporarily) get around this problem. Grain surpluses often vary per region. One year the harvest can be good in one region and bad in another; while in the following year the situation could be just the opposite. It can be useful for a granary in a low price region to investigate the prices in other regions. A region 100 or 200 km away may have had a poorer harvest, so the prices there may be better. Since the granary holds a relatively large amount of grain, it is worthwhile to find out whether such shortages exist in the immediate area. Moreover, a group of producers can arrange for reasonably priced transport by collectively hiring a truck or boat.

Another possibility is to store the grain. Grain can keep well, and the prices may eventually rise after the supply from the good harvest shrinks again. However, one must weigh the costs of storage against the possible increase in the price of the grain. Storing grain does involve some risks. It costs money and the grain can be damaged by moulds or pests. Furthermore, there is no guarantee that the prices will improve. These factors must be considered before the decision is made to store the grain.

Amount and quality

Since the farmers work together in the granary, the marketable amount of grain increases. Large amounts of a product can usually be sold for a better price and at a lower cost. A large amount is also more interesting for a buyer, because it saves him from having to deal with many small-scale sellers. Moreover, the total cost of selling the grain decreases because there are a number of fixed costs that can be spread over a larger volume of product (economies of scale).

The buyer / negotiating position

A granary has a stronger negotiating position than an individual farmer does. Sometimes intermediate traders pressure farmers into selling at a low price. An organisation of producers can eliminate such power differences. Due to its size, the granary can withstand the pressures from intermediate traders and thereby obtain better prices. As a collective, the granary can also go directly to a large-scale buyer

(such as a bakery or brewery) and make a deal to supply grain at a fixed price (contract farming).

As we have seen, by organising into a granary, grain producers obtain tools for achieving a higher price for their grain. The power of the granary lies in the strength of its organisation. The sustainability of the organisation and the commitment of its members are thus of utmost importance.

4.2 From granary to bank: Earning a profit from a grain surplus

Chapter 1 explained that the function of a granary largely depends on the type of region or area in which it is established and the character of the grain problem that predominates there. In shortage or balanced areas, the granary is set up as a *prevoyance* directed primarily towards ensuring food security, but it also has in part the character of a ‘bank’. A *prevoyance* has namely a surplus of grain that it can sell. The size of this surplus depends on the rate of interest and the quality of the organisation. This surplus will be small if the granary decides to charge a low interest rate, or to sell the surplus to the families below the market price. The members and the committee can also choose to let the surplus grow. In this way it becomes more like a ‘bank’. The granary will then decide to sell part of its surplus at the market when the prices are favourable.

Not many granaries follow this path. One reason is that the extension service does not support this development. A second reason is that it requires a lot more time from the committee members. The organisation is often too weak to support this burden. The committee does not even exist for parts of the year. It is most active before and after the harvest; after that, there is little left for the committee members to do. There is also a great risk that prevents the granary from developing into a more profit-oriented bank: selling at the regional market involves costs, and what happens if the costs are higher than the profits?

A granary in a surplus area is more likely to focus on making a profit and on taking advantage of the economies of scale. It is also easier for it to build up a surplus.

How is a profit made?

There is no easy answer to this question. Of course it is important to market the grain at a time when the price is as high as possible. But no one can say in advance when the price will be at its peak. Prices are high when few people have grain, such as after a poor harvest. But this means that the surplus can only be sold once the members have been supplied with sufficient food security. Moreover, to make a profit, costs must first be incurred (market orientation, transport). Generally, however, the committee is too weak to perform these tasks on its own and it has to enlist the help of other members of the community. This can easily be done by hiring someone to do the work, but this represents another extra expense.

Storage and sale of the supply

Grain is stored for a time after the harvest, until the grain price has risen enough to sell the grain at a profit. The granary tries to take advantage of the rising price of grain as the season progresses. The increase in the grain price has to make up for the costs of storing and marketing the grain. However, if the grain prices do not increase very much or if they even fall, it would be more profitable to sell the grain right away. Thus, the moment at which the grain is sold has to be carefully determined.

Selling at the local market

Selling the grain at the local market costs very little, but the prices there are also generally low. Often only small amounts are bought there, and this is not very profitable for the seller. The grain is usually bought by small dealers, who have little money and who come to the local markets with a cart or small car. An exception is the local cooperatives, such as beer brewers or flour millers, who buy large amounts of grain. Large dealers or their assistants only come to the markets when they can buy a large amount of grain at a low price – thus at a

time when the granary will probably not be able to make a profit from selling its grain.

Selling at the regional market

Prices are higher at regional markets in rural areas or in the city than at local markets. But the costs of marketing the grain are much higher. The committee has to visit various markets to find out what the prices are. It has to take action as soon as the prices are right. Then transportation has to be organised. It is most cost efficient if the committee itself has access to a motorised or animal driven cart. Otherwise, a means of transportation has to be hired. This is especially expensive if it involves transportation by truck.

Once the decision has been made to sell, a number of steps have to be taken. It is important to consider the following questions:

- Where will the grain be sold: at home, at the local or the regional market?
- Who is going to gather information on the prices at this market: how high are the costs of transportation compared to the potential profit?
- Who is going to sell the grain?
- How will the costs be divided among the farmers: will a differentiation be made between farmers with a lot and farmers with a little grain?

Problems can arise at each of these steps. Cooperation costs time and each member looks at it from his or her own perspective. In making such decisions there is one important rule of thumb: the advantages must be greater than the disadvantages.

There are risks involved in marketing the grain. The committee can make a wrong decision about when to sell the grain. If it is to act quickly, the committee often cannot take the time to inform the village council. This leads to tension between the committee and the members if the committee makes the wrong decision. To protect itself from making this mistake, the committee generally does not take the initiative too quickly to enter the market. The committee does not receive

part of the profit if it makes the right choice, but it is held responsible if it loses money by making the wrong choice. There is no such risk involved if the grain is allowed to 'sleep' or if it is distributed to the households.

Selling grain to buy other products

If it has a surplus, the granary can sell part of its grain supply. Other products can then be bought with the money that is earned from the grain. These in turn can be stored and sold when the prices are right. In this way the granary can profit from the market swings of various other products and an optimal profit can be made from the earned capital.

To do this, the grain must again be sold at the right moment. Here too, the costs of marketing the grain must be lower than the profit from selling it. The costs depend on where the grain is sold: close by at the local market, or farther away at the regional market.

4.3 Differences between groups of people

Granaries do not work in the same way for all people. Differences exist both in the way the granary is introduced into the village and in how the population participates in it. The establishment and functioning of the granary depend on the level of organisation and authority it receives. A distinction is made here between *tribal groups* and *groups belonging to a nation state*.

Tribal groups

Traditionally, tribal groups or communities did not belong to a state. These villages or groups of compounds often did not even have to pay any tax to a chief. The eldest households determined for themselves what they did. As a result, the village head or chief did not have very much authority. These groups do have a democratic tradition, however.

It is more difficult for the extension service to introduce a granary into such a village. It is difficult to find leaders who have broad support, to

organise a village council and to get people to work together. The grain committee has little authority.

For this reason problems with loan repayments and participation can arise that are not easily solved:

- The committee has little authority over the elders.
- Elders have little authority over the youth.
- Young adults establish their own households immediately after marrying because this offers more security for the future.
- Households are smaller and thus more numerous.
- It is therefore more difficult to monitor repayments.
- Elders do not have central control over the grain.

Therefore the following points must be taken into account when establishing a granary in tribal areas:

- The beginning is difficult;
- loan defaults are common;
- costs are high;
- interest is high;
- many households are eventually denied additional loans because they cannot fulfil the requirements.

However, in the long term this leads to a selection process that actually strengthens the granary. Many farmers no longer participate, but the ones who are left generally become active and committed to the granary. It takes a while before the idea of a granary takes root. First, leaders have to emerge and take the initiative. If there is a clear, trusted leader, others will become more actively involved, both young and old. Participation in the granary grows on the basis of equal standing.

The granary in this situation often develops from a prevoyance into a bank that is directed toward making a profit. The grain supply is used for buying and selling. Money plays an increasingly important role. This development can only take place if the villages receive helpful guidance from the extension service. If they receive no guidance, the organisation usually remains weak and not much can be achieved.

Groups belonging to a state

In other areas villages have traditionally been part of a state. Authority figures were thus always present in the village. The chief was the contact person for the central government. The elders from the most important families also had some authority.

It is usually relatively easy to introduce a granary in these regions. It is easy to establish a village council. The chief and a number of influential elders are asked for their cooperation. It is also relatively easy to build a shed and to choose a committee. The committee also has authority within the village. This means that many households repay their loans. The dates for repayment are respected. Thus, many families can retain their membership in the granary.

The eldest in the family has authority over the household. Young adults stay within the household longer after they marry. The eldest also has authority over the grain harvest. A large part of the grain harvest is stored in his sheds. The grain harvest is also threshed all at once and brought from the fields to the household's sheds. The grain is thus centrally managed. This makes it easier for the eldest to pay back the grain. But it is also easier for the committee to monitor whether the household has harvested its grain and how large the harvest was.

This situation does have some disadvantages, however. The granary is run by a select few. The chief and the eldest of the traditionally important families have the most influence in the committee. The village council and young people have little influence. There are often few reasons to establish other cooperative activities. The primary function of a granary in this situation is to act as a prevoyance. Its purpose is to ensure food security for the households.

This type of granary is sustained through loans and repayments in kind. Money plays a relatively minor role. Very little grain is sold. This is because the main objective of the eldest members of the households is to ensure food security. They are interested in the long-term welfare of the households. Short-term financial profit is less important to them.

5 Participation of members

“Participation is to people-centred development as shaping sound is to music or expressive movement is to dancing.”

(Quoted from **M. Bopp** [1994], *The illusive essential: evaluating participation in non-formal education and community development processes*. Convergence, vol. XXVII, no. 1).

Development, the establishment of new activities and stimulating a process of change all depend on the commitment of all those involved. Without their commitment, it will not be possible to establish a long-term project, or to develop it further. For this reason, it is impossible to guarantee that a granary will function well or survive in the long term if it is established or organised from the outside. Success can only be achieved if the driving force behind a project comes directly from the will of the people themselves.

5.1 Participation and learning

Participation is important because people are “learning beings”. Learning is an essential component of change and of development activities. The basis of learning lies in the interaction of a person with his or her environment. Processes of modernisation and development are purely processes in which we learn to live together with the people and the world around us. If people learn to live together in harmony, then the basis is laid for the expression of human potential and for achieving general well-being among the population. This is why development can only succeed if the people are actively involved in the process.

5.2 Obstacles for participation

Despite the obvious advantages of participatory approaches and the positive results that they have had, participation is still a difficult goal

to achieve in practice. The most important obstacles to a participatory approach can be divided in two categories:

Internal obstacles: social and cultural dimensions

- Many countries were colonised in the past, or have a clear western orientation. As a result, many people have lost confidence in their own capacities and potential, and they have become strongly dependent on the west. This orientation is often reinforced by governments and international organisations.
- Sometimes there is also a traditional elite or leadership structure that keeps important groups in the community from participating. These groups are usually women, young people, or the poorest class in the society.
- Often the management and leadership skills needed to support a new organisation or activity are not present.
- Knowledge, power, access to assistance, status and wealth are unevenly divided and they thwart attempts to democratise and to participate.

External obstacles: structural and administrative dimensions

- Participation can be difficult or even dangerous if the political climate does not permit openness, the expression of criticism or the formation of interest groups.
- For a central government, participation can be seen as dangerous, because power and decision making are delegated from the central authority to the outer margins of the system. Political and administrative systems that are designed to keep power and decision-making in the centre, work, therefore, against participation and democratisation.

5.3 Commitment and personal contributions

For a granary to succeed, it must have support from the village. The villagers must believe it is important. Commitment to the granary is

difficult to measure. One way is to ask the villagers to make personal contributions, for example by:

- building a grain storage area; villagers can help build a shed to store the grain;
- contributing to the grain supply; the village can contribute part of the grain supply.

The contribution to the grain supply can come from either the individual households or from a communal field:

Households

Many households have little grain reserves themselves. This is certainly the case in a bad year. Moreover, not all households are the same. Some households have many mouths to feed and little land. Others have a lot of grain and few mouths to feed. Therefore it is difficult to determine how much each household should contribute. In practice, the households are asked to make a voluntary contribution. Households should give a surplus of grain out of “solidarity” with the village. This is a weak basis. In practice, only the wealthier households give a supply of grain, and even then it is usually a limited amount.

The communal field

The contribution can also come from a communal field. Generally only tribal groups have a communal field. The labour is provided by the young people in the village. They work the communal field after the fields of their own households are finished.

In practice, the yield from this field is often not used by the granary. The young people use the grain for a ceremony or a celebration. The grain is then used to brew beer. It is difficult to save this grain. Another factor is that young people do not have enough influence in the granary. They would supply the grain, but the household elders would then have control over its use.

Personal contributions thus remain limited in practice. They can consist of a few hundred kilos or up to a maximum of a thousand kilos of

grain. This reluctance is especially apparent where the population is used to receiving grain from the extension service or the mission. It is difficult to break this policy of gift giving, but there are methods to increase the importance of personal contributions. The extension service has to first stop granting credits. It can choose, for example, to double the required contributions from the villages. If the village does not make its own contribution, there will be no grain supply.

Organisation from outside

If a granary is set up from the outside, there is a danger that its organisation will always be weak. The population is required to make only a small contribution and it has little to lose if the granary does not function well. The households do not feel committed enough to the granary. In addition, because the contributions are small, there is no need for the people to organise themselves. No clear leaders emerge, no decisions have to be made about the management of the grain, etc. Instead, the households wait to receive the grain and they do not work together.

Participation: involving the people

Many granaries are set up through the extension service, the mission or development organisations. The initiative for the granary comes then from the outside, but the idea is that the village households will carry it forward. The extension service tries to get the population involved in the granary and to help them make it their 'own' project. To do this it uses so-called participatory methods. The extension worker has to take a "participatory" stand. He or she has to give the villagers responsibility for the project. Often special training is needed, because until recently the extension service only engaged in one-way exchanges with the farmer. It determined the farmers' needs and the farmers had little input. The extension service normally provides information on technical subjects, such as how much fertiliser to use. It is easy to provide this kind of information from the outside. However, in most countries, governments and foreign agencies have fortunately realised that this is not necessarily the most effective way to lend assistance.

Experience in setting up granaries has shown that a granary is most successful if the extension worker hands over responsibility for the granary to the villagers themselves. They can then express their opinions and be heard, make their own decisions and eventually run the granary. This requires a change in the orientation of the extension worker, the government and the foreign aid organisations.

6 Case studies: Mali and Zambia

This chapter includes a number of practical examples and experiences. These examples are divided according to the grain problem of the areas, because this largely determines how the granary functions (see also chapter 2). The experiences are presented as much as possible in the same order as the stages of organisation were presented in chapter 3:

- the idea of the granary: the start
- a village or a group of households applies for a granary or makes the necessary preparations itself
- determination of the grain problem that is characteristic of the region
- preparation of the community
- appointment of the members and the steering committee of the granary
- additional support and training from the extension service
- establishment of the first grain reserve
- daily management

Not every step will be described in detail, for two reasons: since the experiences are not those of the authors, information is not available for every step; and, to limit the size of this booklet, a selection has been made of the most relevant information.



Figure 14: The two countries in Africa, from where the case studies were taken

Experiences from four different areas are given in the following sections:

- 6.1 The San region (Mali) as an example of a balanced area
- 6.2 The Bougouni region (Mali) as a surplus area
- 6.3 The Monze region (Zambia) as a balanced area
- 6.4 The Sesheke region (Zambia) as a shortage area

6.1 The San region, Mali

Determining the grain production level

The harvest in normal years is sufficient to feed the population, and often the families can sell a small surplus of their product at the market. Nevertheless, the area does experience grain shortages, in years with too little rainfall or too little yield to sustain the families until the following harvest. San can thus be typified as an example of a balanced area.

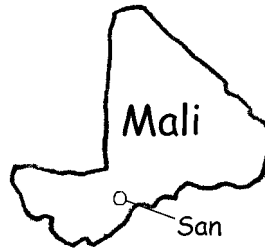


Figure 15: The San region, Mali

A more detailed description of the various grain problems and how to determine them is given in section 2.5.

The first granaries in San were established in 1985, during a period of drought. The idea came about in the context of a search to find a way to decrease poverty caused by the drought, and to provide enough food to feed the households in the area. The granaries were then set up as purely 'prevoyance' banks.

The initiative for the granaries came from the Catholic mission and the government extension service. Both types of organisations have their own way of establishing a granary. The mission was the first to set up a granary. Compared to the government, the mission has more contact with the people and it works more closely with them.

Initiative from the mission

The Catholic mission is active in San under the name Action Sociale. It works in the same area as the extension service and thus deals with the same grain problem. As of 1985, the mission managed about 30 granaries, which it handed over to the extension service in 1989. In the drought year of 1991, the mission started setting up its own granaries again. By 1998, it had about 30 granaries within its boundaries. These were both *prevoyances*, aimed primarily at providing food security, and banks, with the objective of making a profit.

The mission has fewer means and personnel available to manage a granary than the extension service does. It therefore set up the granaries on the condition that the village would form its own committees. The mission could not be a part of the committees. In practice, the members of the committees were often former students of the mission's agricultural school. The mission did provide courses for committee members. These courses were free at first, but later a fee was charged to increase the commitment of the students. The mission also organised meetings for the granary leaders, to give them the opportunity to discuss the progress of their granaries. These meetings stimulated active involvement within the granaries.

From the government

The extension service of the Malinese government has a hierarchical structure. It works with a 'top-down' approach. The granaries set up by the government normally have a *prevoyance* character. Just as the mission, the extension service began establishing granaries in 1985. By 1996 they managed 223 granaries.

The government had already been active in San. It had also tried to introduce the cultivation of cotton. This failed because the area became too arid. The introduction of peanuts also failed in the 1980s, among other reasons because the processing plants were too far away.

Initially the government did not support the establishment of granaries. It was used to earning money through crops and had little experi-

ence in reserving food for the households. During the 1980s, the extension service started to focus more of its attention on erosion prevention measures. Unfortunately, it had no contact person or group in the village to act as an entry point for the implementation of these measures. The granary could function as such an entry point. The extension service therefore changed its position and started to support the granary idea. At this point the extension worker became responsible for five villages, which could vary considerably in size.

The granaries established in San by the extension service were relatively successful. Only 7 of the 223 granaries eventually faced insurmountable problems. These granaries were established in the beginning period when the extension service's support was not very good yet. The villagers at that time still considered the grain supply to be a gift, and they did not pay back their loans. Most of these granaries were located in traditionally tribal areas, where the Bwa lived.

Supporting establishment of granaries

In 1989 the extension service received assistance from a Dutch NGO called SNV (Stichting Nederlandse Vrijwilligers). SNV supplied a development worker who was given three important tasks:

- to teach participatory methods to extension workers
- to support the creation of information materials
- to help with the central administrative management of the granaries

Application for a granary

The village has to apply to the extension service for the establishment of a granary. The initiative has to thus come from the village itself. The idea is that without proven commitment, the granary cannot be a success. Usually the chief of the village is the one who applies for the granary in the form of a written request given to the extension service. The extension service then decides whether the village is suitable for a granary.

The village council and granary committee

The village council is called together a number of times to clarify what a granary is. It explains to the population how the granary func-

tions, why it is being established, what the rights and responsibilities of those involved are, and who the granary's leader is.

The village council has the following tasks:

- It appoints the granary committee (as explained in the next section).
- It makes important decisions concerning the granary.

Decisions are made during the critical times in the agrarian season. During the shortage period, called the *soudure* in Mali, decisions must be made on:

- the size of the grain reserve,
- the expected shortages of the households,
- assessing households with debts to the granary,
- the size of the loans to be made to the households,
- agreements over lending dates.

Shortly after the harvest, decisions have to be made on:

- the actual size of the harvest that was brought in,
- possible repayments by households,
- repayment dates.

After the loans have been repaid, decisions have to be made on:

- establishing the size of the granary's grain reserve
- establishing whether the granary has to buy or sell grain.

If the granary has a *surplus* it will sell grain. Then decisions have to be made on:

- whom to sell the grain to, i.e. members of households or at the market,
- what price the grain will be sold for.

If the granary has a *grain shortage*, then decisions have to be made on where to buy the grain and at what price.

Choosing the members of the committee and their tasks

The committee is chosen by the village council. In San the granary committee consists of 11 people:

- The *président d'honneur* Is the chief of the village; he represents the village authority.

- The *président actif* Oversees the activities of the granary; he chairs the general meetings.
- The *secretary* Monitors the de gestion records.
- The *organiser* Informs the villagers on general meetings and prepares the meetings.
- The *treasurer* Is responsible for the money and pays the granaries expenses.
- The *weigher* Weighs the surplus and the grain repayments.
- The *storage manager* Is responsible for the storage facility and for the quality of the stored grain.
- The *woman responsible* Informs the women in the village of granary activities.
- The *supervision officer* Monitors the reserves and the accounts.
- The *conflict officer* Acts as an intermediary in conflicts.

Tasks and training of the committee

The committee administers the reserves and the credits of the granary. The treasurer and the secretary keep a record of these. The most important record book is the *cahier de suivi interne*. It includes a table that lists the credits granted to individual members (internal credits).

The members of the committee have to be trained. The treasurer and secretary have to be capable of doing the bookkeeping of the granary and the other members have to be able to perform their tasks well too. To learn these skills, the committee members attend classes given by the extension service. The committee also visits other granaries to learn from their experiences.

The grain reserve

Obtaining a reserve from the government: in kind or in cash

The extension service granted a loan of about 10 tons of grain to each granary. A representative of the granary had to sign a contract agreeing to pay back the loan in four instalments. The granary did not have to pay interest on the loan. Initially, the extension service gave the loan in kind and the granary paid back the loan in kind as well. The extension service saw the granaries primarily as *prevoyances*. Their role

was to provide the households with inexpensive food. For this reason, the extension service did not want to make a distinction between the interests of small- and large-scale farmers. It was looking for an organisational form that could support the whole village.

However, it is difficult for the government to work 'in kind'. The grain has to be bought at the market and then transported to the village. Repayments in kind are also difficult for the government to manage. The extension service has to pick up the grain and also check its quality. The extension service therefore began to give monetary credits. The granary can then buy the grain itself at the market. This is only possible if the harvest was good and there is enough grain available at the market. An extra advantage of granting credits in cash is that the granary learns how to work with money.

Obtaining a reserve from the mission: from gift to matched contributions

The mission began establishing granaries in 1985 in response to widespread hunger in that period. The first grain reserves were given as gifts from the mission. However, these first granaries proved to be difficult to sustain.

In the dry year of 1991, the mission began establishing granaries again. Granaries were established in 60 villages out of the approximately 120 parishes. Over time about 40 remained in operation. In 1991, traditional methods were still being used, namely credits in the form of money or in kind. One new aspect was that granaries could buy grain for a price of 50 Fcfa per kilo, and they had to pay it back to the mission for a price of 62.5 Fcfa. The mission stopped granting credits in 1992. From then on, the villages had to come up with their own reserves. This was then doubled by the mission. Additional reserves were also doubled by the mission. The amounts were usually small, from a few hundred kilos to a maximum of 1000 kilos.

Determining the size of the grain reserve

The size of the grain reserves in San is based on FAO standards (see chapter 3), which assume that a person needs an average of 200 to 250

kilos of grain per year. In the period before the harvest it is assumed that $\frac{1}{3}$ of the population has a shortage for 4 of the 12 months in the year. If 200 to 250 kilos of grain have to be available per person per year, and there is a shortage for 4 of the 12 months in the year, then the granary has to have on reserve $\frac{1}{3}$ of the amount needed annually for each person that experiences a shortage.

Chapter 3 presented the following formula for determining the size of reserves: 250 kg grain, divided by 12 months, times the number of people that experience a shortage, times the number of months that the shortage lasts.

The required reserves in San are thus based on the following calculations: If one assumes that 240 kilos of grain is needed per person per year, then in a shortage period of 4 months, 60 kg of grain has to be made available for each person that has a shortage. It is then assumed that 20 kg extra per person in the whole population has to be kept in reserve. The underlying idea is that $\frac{1}{3}$ of the households in the villages are small-scale farmers, who do not own enough land to feed themselves for the whole year.

Diminishing reserves

The size of the grain reserves decreased over the years. The granaries in San, for example, each began with 10 tons of grain. In 1996 it appeared that the average reserve of the granaries had decreased to 6 tons. These granaries did pay back their loans to the extension service. The rest of the grain, however, was used for other purposes. These included, for example, repairs to the roof of the mosque, or the establishment of other communal services. The committee also used the granary's money to pay for their own travel costs, for financing the visits of guests, etc. In this way the reserves slowly diminished.

This diminishing supply brings with it the danger that the granaries' reserves may not be sufficient to cover shortages in dry years. Some of the households would then still have to buy grain at the market or go to work for rich farmers.

What are the underlying reasons for the diminishing reserves?

The first reason is that the granary is not the highest priority for the population. A hole in the roof of the mosque or church, or a hole in a well have a higher priority for at least some of the people. In the first phase of establishing a granary the population is only given the choice of whether or not to have a granary. Other priorities that the people may have are hardly considered.

The grain ‘problem’ may be less critical than the extension service had assumed. Theory is often different than reality:

For a shortage area or a balanced area it appears that in a normal year the grain production level is not the same for all households. Medium-size households do not need the granary in such a year. They have enough grain in their *greniers* or they have money to buy grain at the market. In a normal year only the small-scale farmers have a shortage. They thus have a need for the granary. These are often young farmers who have not yet built up any property, or farmers who have suffered from sickness or misfortune.

Only in a dry year do all of the households need the granary. However, this is on average only once in seven years. In the rest of the years the medium-size households do not really need the granary. They therefore have less reason to spend a lot of time on it. On the other hand, medium-size farms are usually in the hands of middle-aged farmers. They still hold to the traditional idea of being responsible for the long-term food security of the household. Access to a full grain shed means extra prestige for them.

Young people think more in the short term. They have not yet developed the idea of investing in the future. They also want to be paid right away for their labour. This does not fit the granary’s principle of free labour in return for inexpensive grain. Young people are therefore underrepresented in the granary committees.

Management and administration of the granary

In theory, a granary is managed by the village council, which should come together at important times in the season to make important decisions. The committee reports to the village council and has to keep it

up-to-date of the granary's status. The members are also well informed.

The reality is different, however. The village council is often not very active and participation is limited. The members are not well informed of the granary's status. The committee calls together the village council and makes the proposals. The council almost always approves the committee's proposals.

The members of the committee are not paid for their work. This is the strength, but at the same time also the weakness of the granary. The committee members perform their tasks out of a sense of duty. They do not want to betray the members' trust. However, the granary is not always well administered because the committee members do not always perform their duties as well as is needed. In some cases the record books are gone or they are not filled in completely. Basic data for the granary are then not available.

The granary only works in ideal conditions

This is when villagers have:

- good relations among themselves
- an active committee
- do not make up too many poor households.

Another important aspect in San is that the extension service functions well. It provides for the development of the granary's members. It also monitors the repayments of the granary. The extension worker checks the books and holds the committee accountable.

From granary to bank

Most of the granaries in the San region function reasonably well. They pay back their loans to the extension service. A few granaries even function very well. These are *prevoyances* that have a relatively low interest rate of 30% for their loans, and that sell their surplus for a low price to the households.

A small number of the granaries have developed into 'banks'. For them trading their grain surplus is relatively important. They buy and

sell with the goal of making a profit. Surprisingly, these banks developed in villages where the granaries did not do well at first. The villages had many people who defaulted on their loans and who were no longer eligible to receive a loan. The granary had to therefore find another use for its grain surplus.

A second reason for the transformation was that the poorly operating granaries had to be rescued with financial credits. These credits were used to earn money. A development related to this is that the government extension service began to give the grain as credits. The government first gave the reserve of grain in kind, but that was not practical (see above under the heading 'the grain reserve'). The government quickly developed a preference for working with 'cash' credits and this made it easier for the granaries to develop into co-operations, which could make a small profit.

Granaries set up through the mission

When the mission set up granaries it deposited half as much as the total reserves collected. This means of acquiring reserves stimulated the granaries to take more initiative. It appears that these granaries also became better organised than those that work with grants.

It does take some time before such a granary takes root. Only after a year do some of the granaries become successful. There are also a number of granaries that fail. This relatively difficult start is largely because of the weaker assistance that the granaries get in the beginning. The mission does not have any extension workers who can take a lot of time to train the village council, or to help choose and formulate the committee etc.

The success of this method is demonstrated by the increase in the grain reserves of the granaries by about 10 tons per granary. Various granaries got involved in trading to make a profit. The committee transformed part of the reserve into money and traded with this sum. The committee members bought grain at a low price and sold it at a higher price. The same was done with other products. The data on

these transactions are not available however. It is also unclear how the profit is divided among the individual members.

This development in which the granaries focus more on making a profit began around 1995. This is not easy to explain. In part the transformation is stimulated by young people. They want to see a monetary reward for their labour. They do not see the value of a ‘sleeping’ grain reserve. One prerequisite for the development of a granary into a bank is that the mission itself have a bank into which the granaries can deposit their money. This money can also be withdrawn quickly. The mission’s bank is a safe place to keep the money. Evidence of the granaries’ success is the fact that a large portion of the mission bank’s capital (about half) comes from them.

It is not clear which granaries retain their primary focus on the *prevoyance* role and which develop into a bank. This is possibly related to the amount of money circulating in the region. In self-sustaining regions located far from the market, the granary will be predominately a *prevoyance*. Granaries in villages located close to a market will be more likely to develop into banks.

Organisational weaknesses from the mission

Despite its advantages, the mission’s method also has some weak points. Of the 120 villages, only 60 established granaries. Of these, only 30 to 40 remain in operation. This can be explained by the following reasons:

- The mission has little means to introduce a granary into a village. This is disadvantageous for the development of the village population.
- Part of the reserve still comes from the outside. As explained earlier in chapter 4, a reserve donated from outside the village does not help the granary function independently.
- The grain production level is apparently not critical enough to warrant a granary. Medium-scale farmers apparently do not need the

granary in most years. The problem of overselling (see chapter 1) is less urgent than depicted in the official brochures.

- There is often no clear division of the income among the members. Young people, especially, want to be compensated for their work. Saving is not as important to them.

For these reasons, the granary is not a place for training new managers. It does not attract enough qualified people. Young people are not committed enough. Also, the granary does not function often enough as a starting point for other activities.

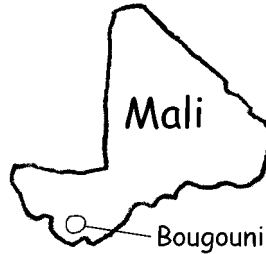
The mission has recently focused less of its attention on the granaries. It does not see the granaries as the solution to the grain problem. The mission is therefore working on other solutions, starting with improving cultivation. The first problem to solve is the low yield of not more than 300 to 400 kilos of grain per hectare. The land is exhausted. Higher yields have to solve the grain problem. The mission supports initiatives by the villages to prepare compost and to spread this over the land. Organisations devoted to this work have existed in the villages since the early 1990s. By 1998, this kind of organisation was active in 120 villages. These organisations have united themselves in regional umbrella organisations.

Commitment and participation

The mission was the first to establish granaries. It is more closely connected to the population and it works more from the 'bottom up'. This is why it is more likely for a granary initiated by the mission to develop into one that is especially directed towards making a profit. Because the granary is initiated and organised in cooperation with its users, they have a vested interest in the granary's functioning and results. They are prepared to invest in it, without getting any immediate return other than the assurance that they can turn to the granary for help if it is needed. Families who lend from the granary also feel more responsible for paying back the loan. If the members of a granary consistently follow its rules, the granary will be able to operate successfully in the long term.

6.2 The Bougouni region, Mali

In 1996 the government began establishing granaries south of San in the Bougouni region. These granaries were directed less at food security and functioned more like banks.



The grain production level

The Bougouni region has different characteristics compared to the San region. It is located in a more southern part of Mali where more rain falls than in San. Part of the land is used for the cultivation of cotton, a crop that depends on sufficient access to water. Land is less scarce than in San. It is a surplus area, with the potential to cultivate a surplus of grain. A more detailed description of the area and a description of its grain problem can be found in section 2.5.

Figure 16: The Bougouni region, Mali

The idea of a granary

The government extension service had long been active in this area. Village associations (*Associations Villageoises*) had been set up in villages to support the various tasks involved in the cultivation of cotton. The extension service granted credits, stored cotton and supplied fertiliser and ploughs.

In 1996 the government set up a new type of granary. It consisted of a small group of farmers, who were organised for the commercial sale of surplus grain. Bougouni is a surplus area, where a *prevoyance* granary would not work. The purpose of these cooperatives is to make a profit, not to ensure food security. The profit is distributed among the members based on their individual contributions of grain and labour. The village council does not play an important role here. It is important, however, that the people who initiated and executed the granary be financially rewarded. A mechanism for translating profit into im-

mediate rewards has to be found. Just as we have seen in the case of traditional granaries, such a mechanism is still lacking.

One NGO took the initiative to solve the grain problem of this surplus area. It chose a new type of granary. The NGO decided to take this step after listening to negative comments at the village meetings in San. Young people protested there against the existing granary. They wanted a quick financial reward for their invested labour in the granary and on the land. This did not happen, which forced them to perform migratory labour and kept them from cultivating grain. Large-scale farmers also protested against the functioning of the granary. They felt it was unfair that everyone had the right to vote in the granary. The granary was originally established to provide a source of inexpensive food for the population, but this goal proved to be nearly irrelevant because almost no one had a shortage of grain. Large-scale farmers profited very little from the granary. There was a general call to consider distributing profits to individual members.

Initially, the extension service was against such a development. It wanted the granary to retain its function as a source of inexpensive food. The extension service also wanted the granary to remain a village organisation that could serve as the extension service's contact point in the village. This approach did not coincide with one focused on individual farmers or groups. Nevertheless, the decision was made to try a new type of granary, called *Groupement professionnel de producteurs cerealiers* (GPC). The purpose of this group is to trade in grain. Its activities are directed at making a profit.

Determining the members of the group

The village council does not play an important role in granaries established specifically to make a profit. The group that sets up the granary chooses the members itself. This can be a great advantage, because the members choose one another based on trustworthiness and personal preference. Often these are farmers that have about the same amounts of available land, labour and means. It is unlikely that a large-scale farmer would choose a small-scale farmer.

Obtaining a grain reserve

As described above, the granaries in the Bougouni region were directed at earning a profit, unlike most of the granaries in San. The initiative to establish the granaries was made by the government extension service, but it still had to decide where the first grain reserve should come from. Did the members have to come up with the reserve themselves, or should it be given to the granary by the extension service? The government chose the second option. One reason was that most of the members were small-scale farmers, many of whom had a shortage of grain and could therefore not contribute to a reserve. The reserve would have had to be obtained from a small number of larger-scale farmers, who would then also be the only ones to profit from the granaries. This was not what the government wanted. The second reason was that the government wanted to free Bougouni from the negative spiral of insufficient grain yields due to insufficient investments. By giving groups a grain reserve, the people could work their own fields better and thereby cultivate a surplus the following year. The condition for giving the reserve was that it would be paid back after one year.

Carefully chosen groups were given a reserve of 10 to 15 tons of grain. This size was chosen because it is a marketable amount that still fits in a truck. If the reserve were only a few bags, it would not be worthwhile marketing it.

Because the reserve has to be paid back at the end of the season, the extension service carefully determines whether the group is capable of paying back this loan. It does this by measuring the cultivated area of each farmer when the grain is still on the field. The extension service also depends on the supervision of the farmers carried out by the *Associations Villageoises*. This association follows the cultivation of cotton and everything involved with it, and it can be a source of good advice. If necessary, the extension service can force the farmers to pay back the loan. The farmers also have to contribute something: they have to build a place to store the grain.

The group thus has access to a grain reserve. This is stored centrally. Part of the reserve is used to make up for the shortages experienced by families during the period of sowing and harvesting. The farmer buys the grain out of the reserve at the current granary price or he borrows it with interest. After the harvest, the loan is repaid. With the money earned from the sale of grain, the reserve can be replenished. The money can also be used to pay for the costs of selling the grain.

Management and activities of the granary

Financial management

The granary has a number of expenses:

- The various markets have to be investigated to determine where the highest price for the grain can be charged. This means that the various traders have to be identified.
- The various ways of transporting the grain have to be identified. Who has a truck? What will it cost to transport the grain?
- After the group has decided to sell, the necessary arrangements have to be made. A car has to be hired; a truck has to be loaded; a representative of the group has to go along to the market; and, finally, the grain has to be sold.
- The income from the sale has to be divided between profit and expenses. What remains as a profit has to be divided according to the investments of the members.

Decision-making

The group makes decisions about all of these subjects during meetings. Most important decisions have to do with the following variables:

- The time to sell and the selling price of the grain. Some members want to sell early on; others want to wait and bet on the chance that the price will increase later in the season.
- Who is to investigate the markets? This is a very responsible position. Based on this information, decisions will be made on when and where to sell the grain.

- Who is going to sell the grain? This is also a responsible position. The seller determines what the selling price will be.

6.3 The Monze region, Zambia

The grain production level

Monze is located in the mid-south of Zambia, southern Africa. It is a balanced area (see section 2.3). Little else is known about the grain problem. Over-selling is probably a problem in the area. This means that after a normal harvest, a lot of grain leaves the area at a low price. Because the price is low, the farmers have to sell a relatively



Figure 17: The Monze region, Zambia

large portion of their yield to support themselves. For this reason a number of households have a shortage of grain in the period before the following harvest.

The idea of a granary

The first initiative for setting up a granary in Monze came from the mission, which was approached for this purpose by the local population. The mission identified the grain problem in its parishes. It decided in 1996 to set up a number of granaries. The money for this was donated by a foreign NGO, but the mission was responsible for the management of the granary. It got the local people involved by allowing them to help build the storage facilities for the grain. This was the only direct contribution that the people made. About 100 households were associated with each granary.

Obtaining a grain reserve

The mission used two different methods to build up a grain reserve:

- It bought the grain from the farmers after the harvest. These farmers are the 'members' of the granary. The idea is that part of the grain is

sold at the market after 6 months to supply the granary with financial resources. The costs of the granary are paid for with the profit. Part of the reserve is sold to the members at a price that is between the cost price of the grain and the current market price. The cost price is calculated by adding the purchase price of the grain to the storage costs.

- In another parish the mission had its members build a storage shed. The member invested their labour and materials, but the mission donated the reserve which it bought from the grain-producing farmers. The grain was stored directly after the harvest, when a lot of grain was available. The idea is that the grain would become available again when the families experienced shortages, or when the supply can be sold for a good price when the supply at the market is limited.

In Monze both methods did not work well. The method in which the mission bought grain from the families failed already in the first season, because the harvest in 1996-1997 was abundant. Therefore the prices declined even after the harvest was bought. The mission had bought the grain for too high a price. It couldn't sell the grain after a half year for a price that would cover the costs. For the same reason, very little grain was sold to the farmer members. They didn't need any grain. Here too, the selling price did not cover the costs. The result was that the granary lost considerably the first year. The mission lost a large portion of its beginning stock, and the next year it could buy only much less grain from its farmer members.

The method in which the potential members built the storage shed themselves, and in which the mission would provide for the reserve, also did not work as well as had been expected. In one parish, the shed was not completed in time, but it was still filled with 1000 bags of grain. The grain was soaked by rain, and eventually 400 bags rotted. In another parish the storage shed was finished on time and it was also filled with 1000 bags. But one night the reserve was stolen. The grain was loaded onto a truck and driven away. No one in the parish did anything about it.

Evaluation

The missions and NGOs came to the conclusion in 1997 that the rural area of Zambia was not suitable for a granary. The households were very far from each other. There were no villages to build the storage shed or to monitor the supply. There was also no village council to manage the grain reserve. Furthermore, the extension service was too weak to lead groups or to supervise them. The situation was very different than in Mali.

6.4 The Sesheke region, Zambia

Sesheke is located in southwest Zambia. The land is of a very poor quality. The population density is low and the households are spread far apart. There are few manageable roads and few markets.

Sesheke is largely a shortage area with an average rainfall of 500mm. The northeastern part is the only area that receives more rainfall. In that area there are large farms that produce goods for the markets.



Figure 18: The Sesheke region, Zambia

The grain problem

Some farmers are still building up their farming businesses, while others are already completely self-sufficient. The yields depend heavily on the rainfall. In normal years the price of grain increases by up to 50% in one season. In dry years a shortage of grain develops during the season. The price of grain can then increase by up to 250% compared to the price just after the harvest. Poor farmers are then forced to work for large-scale farmers and a dependence relationship develops.

Setting up granaries and the organisation

A foreign NGO tried to solve the grain problem in 1996 in a way that still seems to be working satisfactorily. Groups of farmers were cho-

sen to manage the granary. These groups were trained so that they could support the granary. A special method is used for this that can be described as ‘saving instead of giving’.

The groups were not given their reserve but they were expected to compile it themselves. This is done by one of two ways:

- Cultivating the field together. This field is one hectare in size. The harvest of this field is stored in a community storage shed. The reserve is then about 1000 kilos of grain.
- Storing grain together that came from the supplies of the individual farmers.

In choosing the groups, the NGOs used their own contacts in the region. These NGOs were already working in the whole province. They worked in the villages with groups of about 10 farmers.

Management and sale of the reserve

This reserve is sold to traders at the highest possible price. The grain is stored until it can be sold for the best price. The farmers can sell the grain just after the harvest or they can wait for awhile and sell the grain later in the season for a higher price.

The sale of the grain

The timing of the sale of the grain is important. The group has to decide when to sell it. To do this they have to meet. All of the members have to agree with the decision. If one of the members does not agree, he or she can decide to leave the group.

In a dry year, the group can wait and hope that the price will increase. They can't wait too long of course, because there is a risk that the reserve could become damaged. It is also possible that grain will become available from another source (a large-scale trader or a competitor, i.e. another granary), which would force down the price. In deciding when to sell the grain, it is therefore very important that the members are well informed. In a bad year the group can decide not to sell the grain until the following season.

6.5 Lessons learned

In this section we want to summarise the six most important lessons learned from the experiences in Zambia and Mali. These lessons can help the reader prepare for possible unexpected consequences that have to be considered and find new ideas that can be put into practice in operating a granary.

Lesson 1: Commitment of the population and the members is essential for the independent functioning of the granary.

For the granary to function independently, the members and also the local population affected by the granary must feel committed to the project. Too often initiatives have been made in which the members or the population were not really committed and the result was a waste of goodwill and time.

This commitment can be encouraged in a number of ways. Usually attention is paid to the following possibilities:

- The application for a granary has to come from the population itself; it should not be an idea generated from the outside. This way it is based on the needs of the population.
- The village, region or the people living in the direct vicinity of where the granary will be established must be well informed about the idea and they should learn how a granary works. Ideas about ways to establish a granary should also be exchanged. This can require extra village meetings and time. However, it also provides more opportunities for people to express and hopefully resolve their objections, which ensures broader support among the population.
- Leaders and committee members from other granaries can be given the opportunity to exchange ideas and experiences about the progress of a granary.
- The members can invest in the granary in a variety of ways: by depositing (part of) the necessary grain reserve, by helping to build or maintain the storage facility or by gathering together the necessary equipment.

Lesson 2: Choosing the type of granary should be a conscious decision

The surrounding population and all those involved in a granary must be well informed and aware of what the choice of granary type consists of. If this is not done, there is a danger that a lot of time, energy and money will be invested in something that is not an important priority for the population. This usually leads to disappointment. In the first phase of establishing a granary the population should not only be given the choice of whether or not to have a granary. Other alternatives must also be considered and the possible consequences of a granary should be thoroughly discussed.

Practical experience has shown that many granaries last only one or two years. These granaries are often set up too quickly. Not enough attention is paid to the selection of villages or communities, the organisational structure of the population and the village committee. This often happens in a time of severe drought. Emergency food is needed immediately to prevent widespread famine. It has also happened that, due to hasty preparations, no one wrote down the names of the households or the amount of the grain they received. The households also didn't all repay their loans and no record was kept of which households had not yet paid.

It is also important that the type of granary fits the area. In an area in which farmer families often produce a surplus, there is a greater need for ways to profit from the surplus, while areas that regularly experience shortages need ways to spread the risk of these shortages. Both goals can be supported with the establishment of a granary, but they do require different approaches.



Figure 19: Type of granary

Lesson 3: The committee must have broad support and clear tasks

In practice the committee does almost all the work. The secretary keeps track of the loans, the cashier organises the payments, the weigher weighs the grain. These tasks have a number of negative consequences for the committee members:

- The work requires too much time. The members have to put aside their own activities and be present to do this work.
- The committee is not paid for the work.
- Trading grain involves risks that have to be borne by the committee members: money can be lost, or the treasury can be full while the storage facility is empty, so that there is still no grain available for consumption.

The result is that the committee is sometimes too weak to trade the grain (there is not enough time to gather information, or too little experience with trading) and there is a good chance that the grain supply will ‘sleep’ because the members of the committee do not have enough time in a particular period to sell the grain or distribute it among the members.

It is therefore important that everyone understands the tasks delegated to the members of the committee, and that they be clearly established. In this way all of the committee members know what they have to do, which role they play and they can pressure each other to complete these tasks. It is also very important that the people who play a role in the committee are accepted by the other members in that role. If this is not the case, members will become disinterested, mutual trust in the functioning of the committee members will be lost, and it will be difficult if not impossible to keep the granary operating. For this reason, it is important that the members of the granary are informed of the status of the granary: what is the status of the reserve, repayments, grain sales, etc.



Figure 20: Type of granary

In the choice of members for the committee it is good to consider that these tasks are mostly unpaid and are performed on the basis of a sense of responsibility to the members. In an ideal situation the committee members are members of the group or village who can take on this responsibility and who can count on the goodwill of the members. If the committee is well chosen, the members will support them, but it is also possible that the administration, for example, is not well kept, people do not fulfil their commitments or that the committee does not invest any time in the organisation of the granary. If this occurs the commitment of the members in the proper functioning of the granary is undermined.

To determine the members' tasks and to periodically check the progress of the granary, it is extremely important that the bookkeeping be done well: How large is the reserve; which members have paid interest, etc. The members must have access to these records, to ensure a base for mutual trust.

Lesson 4: The origin of the grain reserve has an impact on the independence of the granary

The first deposit in a granary can come entirely from the outside, entirely from the members of the granary or a combination of the two. There are various arguments for these three options: To break a negative spiral, the government can provide the reserve, or to make sure that the granary truly belongs to the people they can make the first deposit themselves. In general, practical experience has shown that a reserve that comes from the outside does not contribute to the independent operation of the granary! Granaries that received the reserve from the outside and did not have to pay the loan back to the bank often eventually close down. To support continuance of the granary, there must be mechanisms by which the population can become the owner of the process, for example by repaying the grain the following season (in part or completely), or by responsibility for the construction and maintenance of the storage facility. Sometimes the reserve is donated from outside, not in the form of grain, but rather in money (the cash value of the grain reserve). The advantages are that money is easier to transport, it cannot rot, the granary learns to work with money, and the quality of the grain for repayment need not to be determined because the loans can be repaid in money. The granary uses the money to buy the reserve at the market. This method has had mostly positive results; the granaries generally want to sell the grain for a profit. An important requirement is that the harvest is good, so that there is enough grain available on the market.

Lesson 5: Reserve 'leakage' has to be taken into account in determining the size of the reserve

It often happens that part of the supply is sold for other purposes than the direct support of the grain reserve. This can be, for example, if something has to be repaired or replaced for community use, if travel costs have to be paid or unexpected visitors have to be supported. This has to be carefully monitored so that the members can be informed. Depending on the rate of 'leakage' of the reserve, it may be necessary to periodically replenish the supply.

A granary also has a number of fixed costs that have to be covered. These can be paid by the individual members or they be paid using the money that is earned by selling part of the reserve. The members have to agree on this ahead of time. These costs often have to do with transport, maintenance, unexpected repairs, etc.

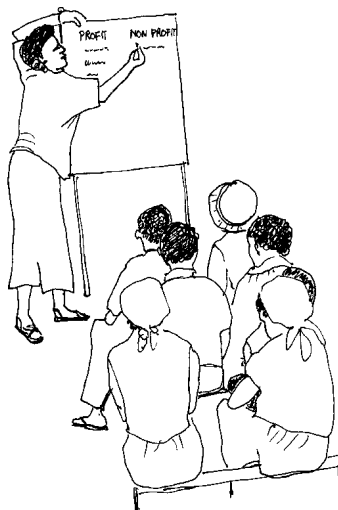


Figure 21: Finances

Lesson 6: The progression from food security to profit making requires a different type of organisation and more commitment from the members

If a granary is established with the main goal of making a profit (in surplus areas), or if a granary that was originally set up to provide food security decides to make a profit, then the trade of the surplus becomes very important. To do this, information is needed about the market (the current prices have to be determined, the grain has to be sold preferably when there are no or few other suppliers on the market), but the granary cannot wait too long because the price of the grain may fall.

The goal of the granary, whether it be food security or making a profit, has to be made clear to the members. This has an impact on the organisation of the granary. If the main objective is to make a profit, then the responsibility for the good functioning of the granary lies with the committee and the members themselves. The village council or the surrounding community do not play an important role. If food security is the main objective, then it is more important to involve the surrounding community with the granary because the granary then has more of an impact on the whole area.



Figure 22: Food security

Another difference is that a profit-making granary has to find a way to translate the profit into direct payments to the members. This can be done in various ways, but it must be agreed upon by the members ahead of time. Examples can be the purchase of equipment for the general use of the members, investment in other provisions from which everyone can profit, or saving the money and dividing it among the members.

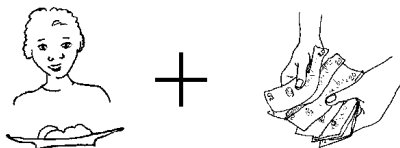


Figure 23: Food security and making profit

A profit-making granary also uses a different system for decision making. The members often make group decisions about topics that a food security granary need not make, such as the timing and price of the sale of grain, appointing

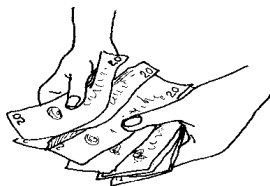


Figure 24: Making profit

someone to investigate the market and to sell the grain and deciding who to sell the grain to.

- A situation in which, during a certain period or season, a household spends more money than it takes in.
- Economies of scale means that the price of an individual product is less when it is part of a large volume of that product. This occurs because storage and transportation costs can then be shared by a larger number of people.

Further reading

Agrodok 31: **Storage of tropical agricultural products**, 1995.

Agrodok 18: **Protection of stored grains and pulses**, 1996.

The Agrodoks can be ordered at Agromisa, Wageningen, The Netherlands. The address is indicated on the cover of this booklet.

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United Nations Industrial Development Organization, **Information sources on grain processing and storage**. 1982, UNIDO guides to information sources, no. 40. UN, New York, USA.

Useful addresses

Natural Resources Institute

University of Greenwich
Central Avenue
Chatham Maritime
Kent
ME4 4TB
United Kingdom

Co-ordination of the Common Fund for Commodities (CFC), a UN institution supporting a credit programme in Ghana, Ethiopia and Zambia for farmers for technical assistance and capacity building in grain storage.

SNV

Dutch Development Co-operation Organisation
Bezuidenhoutseweg 161
2594 AG Den Haag
The Netherlands
Tel.: +31 70.344 02 44

Dutch NGO that has many years of experience with supporting (groups of) farmers establishing granaries in different parts of Africa (see also main body text).

ALIN/Senegal

Casier Postal 3
Dakar-Fan
Senegal
Tel.: +221 8251808
E-mail: Baobab@sonatel.senet.net

A Senegalese organisation that collects papers, articles and other documentation on Cereal Banking.

Glossary

- Cash flow:** Situation in which, during a certain period or season, a household spends more money than is flowing back into the household (f.e. by selling crops or other income generating activities).
- Economies of scale:** Refers to the advantage of price when goods, materials etc. are bought in bulk. The price of an individual product is less when it is part of a large volume of that product, compared to buying the product on its own. For example, storage or transportation costs can be shared by a large number of people when using the same storage or vehicle.
- Grain problem:** By the farming community or farming households perceived stress between the availability of grains or cereals, and their market price. A low availability of grain means a high purchase price and expensive meals, a high availability of grain means a low selling price and thus a low farm income. The type of problem can have different causes depending on the characteristics of the area (see chapter on the grain problem).
- Granary:** A general term for a form, cooperative or building structure in which grain is stored so that it can be distributed at a later date.
- Marketing:** Term used to refer to activities aimed at selling a product for a profit to clients, the consumers. Instead of using the product, goods etc. directly in the household or family, activities are employed to sell the product or goods at a profitable price.

- Overselling:** Situation in which households sell too much of their grain right after the harvest, so they are not able to sustain the household with their own production until the next harvest. Usually these households have to purchase extra grain to overcome shortage of food in the family, at a moment that there is scarcity, so they have to pay a relative high price.
- Prevoyance:** Literally means self-sustaining. Term used for granaries that are established with the main purposes of providing food for the farming families in times of scarcity.
- Surplus:** Excess production of a crop or yield, when the amount for sustaining the household of family is deducted from the total. This surplus is usually stored for periods of scarcity or sold on the market.
- Soudure:** This is the period in Mali, before a harvest. In this period the availability of grain is low and prices on the market are high.