

Realization:

FUNARBE  
FUNDAÇÃO ARTHUR BERNARDES

UFV  
Universidade Federal  
de Viçosa

IPPDS  
Instituto de Políticas Públicas e  
Desenvolvimento Sustentável

AKSAAM

Funding:

IFAD  
Investindo nas populações rurais

# Production of Creole Corn Seed

*in rural communities and territories:  
examples of the IFAD project*



## **Production of Corn Seeds in Rural Communities and Territories**

**Realization:** AKSAAM Project - Adapting Knowledge for Sustainable Agriculture and Market Access - IPPDS/ UFVFinanciamento:

**Funding:** International Fund for Agricultural Development (IFAD)

**Coordinator:** Marcelo José Braga

**Authorship:** Flaviane de O. Ribeiro, Department of Agronomy, UFV  
Antônio P. Melo, Eduardo Mondlane University  
Alex C. S. Pimentel, AKSAAM/IPPDS/UFV  
Rodrigo O. de Lima, Department of Agronomy, UFV  
Ricardo H. S. Santos, Department of Agronomy,  
AKSAAM/IPPDS, UFV

**Layout e Publishing:** Adriana Freitas

**Cover:** Adriana Freitas

**Spelling revision :** Marcelo Lima

**Ficha catalográfica elaborada pela Seção de Catalogação e  
Classificação da Biblioteca Central da Universidade Federal de Viçosa - Campus  
Viçosa**

P964  
2022

Produção de sementes de milho crioulo em comunidades rurais e  
territórios [recurso eletrônico] : exemplos dos projetos FIDA /  
Marcelo José Braga coordenador ; Ricardo H.S. Santos ... [et  
al.] -- Viçosa, MG : IPPS, UFV, 2022.  
1 cartilha eletrônica ( [30] p.) : il. color.

Disponível em: [www.aksaam.ufv.br](http://www.aksaam.ufv.br)  
ISBN 978-85-66148-23-7

1. Milho – Semente. 2. Projetos de desenvolvimento agrícola. 3.  
Milho – Rendimento. I. Braga, Marcelo José, 1969-. II. Santos,  
Ricardo H. S., 1963-. III. Lima, Rodrigo O. de, 1982-. IV. Pimentel,  
Alex C. S., 1979-. V. Melo, António P., 1981-. VI. Ribeiro,  
Flaviane de O., 1994-. VII. Fundo Internacional de  
Desenvolvimento Agrícola. VIII. Universidade Federal de Viçosa.  
Instituto de Políticas Públicas e Desenvolvimento Sustentável.

CDD 22. ed. 633.1521



# Table of contents

- 5** Importance of the seed, rescue of landraces and varieties adapted to local conditions
- 9** Why using creole varieties and producing your own seeds?
- 11** In the production of creole corn seeds, is there a risk of contamination by cross-breeding?
- 14** Verification and control of contamination by transgenic seeds
- 15** Social organization of houses of seeds
- 16** Steps for seed production
- 26** Seed storage

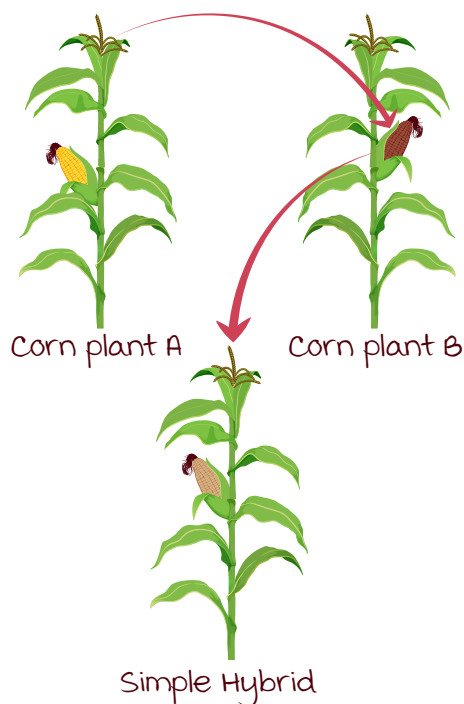


# 1. Importance of the seed, rescue of landraces and varieties adapted to local conditions

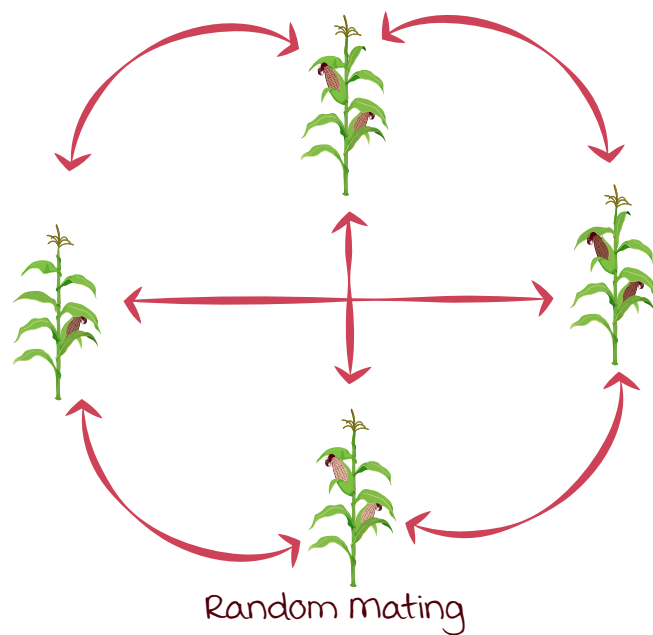
The seed is the **main agricultural input**. This is because it is the most important means of survival for most cultivated plant species, and also because it preserves the history of selection made by nature and humanity over the years.

For corn, there are two types of farming: the **hybrids** and the varieties.

- The **hybrid** seeds are produced by the **controlled cross-breeding** of corn plants, selected for this crossing, usually made and sold by companies.



The **varieties** are plant populations in which **no cross-breeding is made** between the plants in the population, that is, crossings occur randomly, and a plant has an equal chance of crossing with any other in the population.



The productivity of hybrids, when under ideal growing conditions, is generally higher than that of varieties. However, due to greater variability, the varieties are more rustic and better tolerate unfavorable growing conditions. Another big problem with hybrids for family farming is that their seeds need to be purchased every year — and they are expensive, since if the grains harvested in one harvest are used as seeds in the next harvest, the productive potential will be lower.

The rescue and preservation of crioula seeds has been the focus of many projects in the Brazilian semi-arid region. An example of this was the **Pró-Semiárido** initiative, a project financed by the International Fund for Agricultural Development (IFAD) in partnership with the organizations SASOP (Advisory Service to Popular Organizations) and CPC-BA (Mixed Cooperative of Peasant Production and Commercialization of Bahia), which, in 2019, launched actions to rescue, preserve and enhance Creole seeds in the semi-arid region of Bahia, and had the support of Embrapa Semiárido. The project was part of a set of actions by the government of Bahia to eradicate poverty in the semi-arid region. By producing the seed itself, it generates local **autonomy and food sovereignty** for the region.



**Check it out:**

<http://www.sdr.ba.gov.br/servicos/projeto-pro-semiarido>





# Pró-Semiárido Creole Seeds Project

The Pró-Semiárido Creole seed program is executed by the Government of the State of Bahia, through the coordination of the Regional Development and Action Company (CAR) and the execution of two civil society partners, the Advisory Service for Rural Popular Organizations (SASOP) and the Small Farmers Movement (MPA). The Program counts on the Continuous Technical Assistance (ATC) of the partner entities of the Pró-Semiárido for this purpose and on the Technical Cooperation of Embrapa Semiárido, responsible for the methodological execution of the plan, as well as for its monitoring and evaluation.

The project includes the Identity Territory of Sertão do São Francisco, Piemonte da Diamantina and Piemonte Norte do Itapicuru in the state of Bahia. Altogether, there are three Identity Territories, 27 municipalities, 27 rural territories (conglomerates of four or five nearby communities and with similar sociocultural characteristics), involving more than 1000 farming families.

The action of the Pró-Semiárido Creole Seeds project is based on a methodology to rescue agrobiodiversity and sociobiodiversity. The agrobiodiversity diagnoses already systematized, so far, indicate 147 plant varieties and 48 animal species.



Text and Images provided by  
the Pró-Semiárido Project

# Pró-Semiárido Project

Luzia Ferreira dos Santos (62 years old) and sir Jonas da Rocha (66 years old), the people responsible for distributing seeds from the Seed Bank of the Lagoinha community in the municipality of Casa Nova - BA, report the experience of one of the creole seed banks contemplated by the Pró-Semiárido Project. The Seed Bank involves 20 families and has 38 liters of fine capuco corn, in addition to 33 liters of beans, 2 liters of pumpkin, 2 liters of pigeon pea, 21 liters of sorghum, 5 liters of leucaena, among others. The fine capuco corn seeds were a donation from the Advisory Service to Rural Popular Organizations (SASOP).

Seed production is done in winter, but, due to the lack of rain at the time, production can be low. When the planting period comes, the guardians look for Luzia and remove it from the seed bank. The proposal is to return twice the amount withdrawn, for example, if you took a liter, you return 2 liters.

*“The production, harvesting and storage of seeds is so natural for us, it is so rooted in the lives of people who are born in the countryside like me. Keeping the seed comes from generation to generation. When we find a beautiful pumpkin, a beautiful watermelon, we say: I want to save the seed of this watermelon! Then we open, eat, take out the seed, put it to dry and save it to plant next year. And it is like that with the pumpkin, with the jerimum... then those best seeds are always kept. I was born with this tradition... then someone has a pumpkin different from the one with the neck or the seed, then we get it from the neighbor, exchange it so we can plant a different species. Today, wherever we go, we see a different seed, we bring it to us”, Maria Silvani Gonçalves dos Santos Paraíba.*

The farmer Adilma Pereira Fernandes,

49 years old, reports the experience with the creole seed bank in the Oziel Pereira Settlement in the municipality of Remigio - PB. In the community seed bank there are 240 kg of bean seeds, 240 kg of corn and 500 kg of cotton, in addition to some vegetable seeds. The varieties of corn they have are: Jaboação, pontinha and garajão. In this seed bank, 20 families are involved. In addition to the community bank, families also keep seeds on their properties.

The production of the seeds is done in a consortium system, and the harvest is manual. After harvesting, the seeds are placed to dry and, when there is a large amount, they are beaten in a threshing machine. After drying, the seeds are stored in plastic bottles and 60-liter cans. Seed management in the bank works as follows: the family takes 10 kg and returns 15 kg, that is, 5 kg more to increase the bank stock, and they are only distributed from the beginning of the good rains.





## 2. Why using creole varieties and producing your own seeds?

In family farming, one of the real treasures are the creole seeds. But what are Creole seeds? They are seeds of varieties cultivated by communities of farming families for decades.

- One of the varieties' great advantage is that the plants selection is done **in the environments in which they are cultivated**, that is, under the same cultural, economic and environmental conditions. Therefore, they are well adapted and present desirable characteristics for family farming, for example, **color, usage purpose, grain type, drought tolerance** , etc.
- In addition, in corn cultivation, a great advantage of the varieties is that the grains harvested in a season can be used as seeds **in the next harvest**, without reducing the production potential.
- Creole varieties are more rustic than hybrids. This means that they are usually **less demanding in soil fertility, less attacked** by diseases and insects, and **more tolerant** to climatic variations and farming management.

One way to strengthen farmer families' access to native corn seeds is through Community Seed Banks, where there is an organizational process for guarding and distributing seeds to all linked families. In this way, families will not incur costs with the purchase of seeds and will themselves control their seeds for production in their community.

The new legislation on organic products also favored the use and preservation of native corn seeds. This is because, for a production to be classified as organic, the use of treated and transgenic seeds is prohibited, in addition to being recommended that the seeds are obtained in organic production systems. In this way, the new law encourages and strengthens associations and cooperatives of families that cultivate in agroecological systems.

In order to encourage the production of creole corn in the producing municipalities of Sertão and Agreste in Sergipe, the state government acquired and distributed, for the 2020 harvest, 34.8 tons of corn seeds to farming families.

With the support of Projeto Dom Távora, FIDA and EMBRAPA, a part of the production obtained is selected and removed to be used as seed in next year and, thus, continue the cycle.



**Check it out:**

<https://www.seagri.se.gov.br/projeto/2/projeto-dom-tavora>



### 3. In the production of creole corn seeds, is there a risk of contamination by cross-breeding?

Yes, there is a risk of cross-breeding contamination. Therefore, knowledge about how crossing occurs in plants is important to define **the distance or the planting time between one farming to another** to avoid cross-breeding with plants that **are not the same as the cultivated variety**.

In cultures such as beans, the male and female parts are in the same flower, and when the flower opens, it is usually already fertilized. In this way, the plant mainly crosses with itself, and the risk of cross-breeding is small.

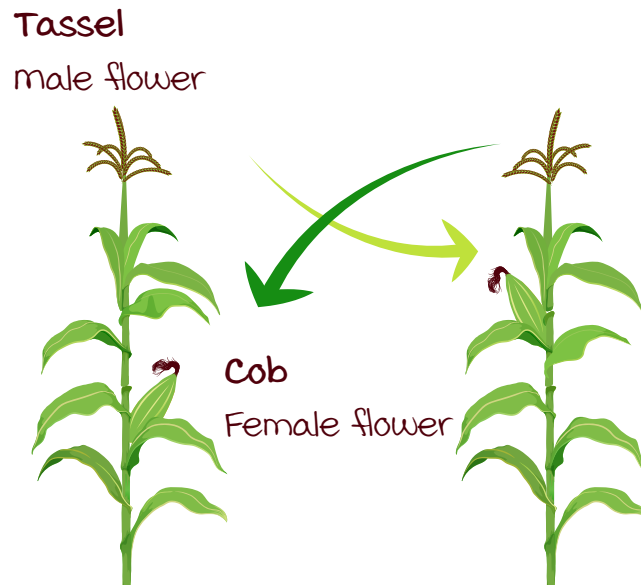
In the case of the corn, the male flower is the tassel and it contains the pollen. The female corn flower is the unripe cob of corn.



**Corn has mechanisms that make it difficult to cross a plant with itself. Therefore, a corn plant usually crosses with other corn plants, that is, 'cross-fertilization' happens**

Corn pollen is mainly spread by the wind and can travel long distances.

## CROSS-FERTILIZATION



A corn plant pollinates several plants spread in its own field and can even fertilize plants from the neighboring field, if the farming flowers at the same time, and if they are very close together. In the same way that plants in its field can pollinate those in neighboring fields, plants in its field can receive pollen from plants in neighboring fields.

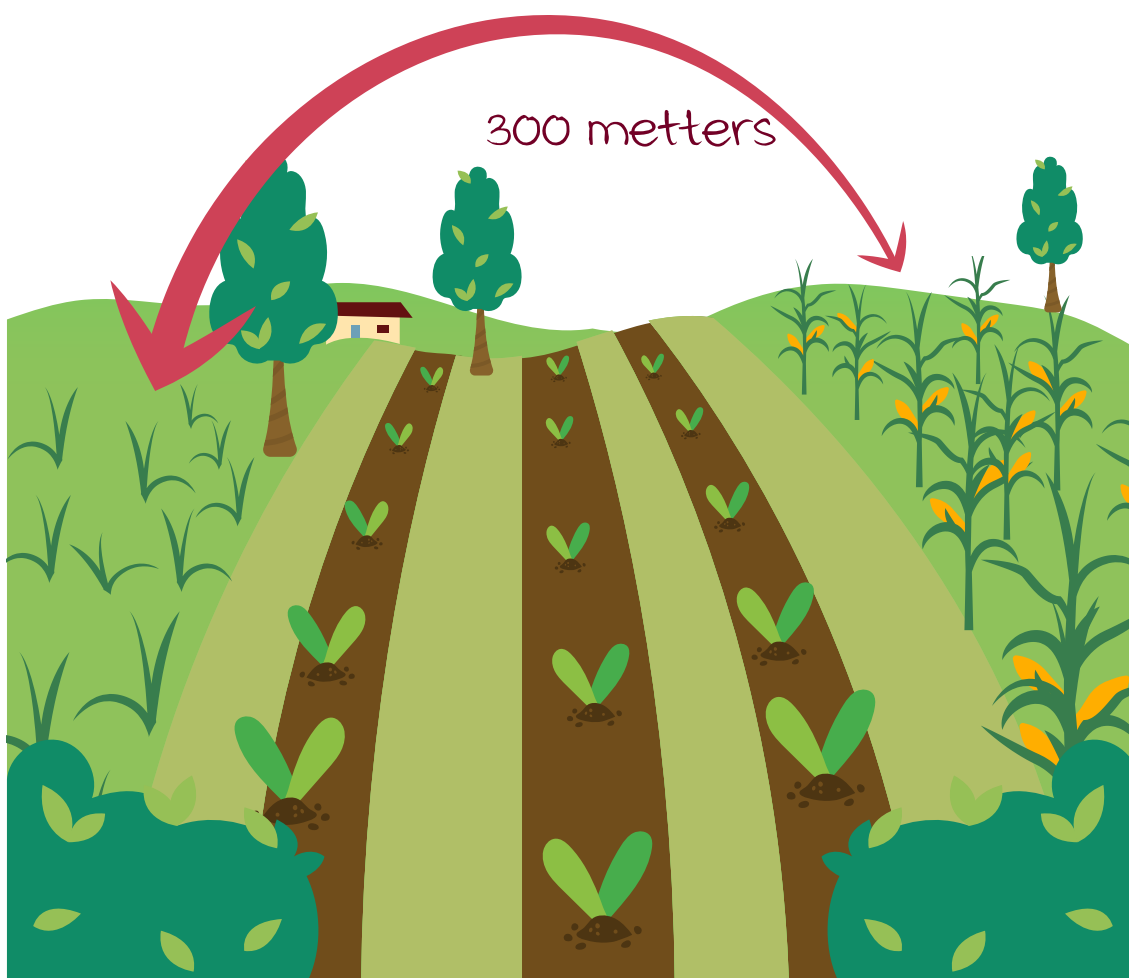
Crossing plants from the same crop is not a problem, as they belong to a single population, that is, to the same variety. **The problem lies in crossing with plants from neighboring farming, especially when there are transgenic plants in it.** Pollination by plants that are not of the same variety reduces the purity of the farming.

Plants that are cross-pollinated, such as corn, are more likely to be genetically contaminated. **The greater the separation between the farming, lower the chance of crossing.** Therefore, for the production of corn seeds, isolation is fundamental. The important thing is that the male flowering of a farming does not coincide with the female flowering of another farming that is nearby.

Isolation can be in space or in time. For corn isolation, farming with different varieties should:

- be at least **300 meters away** from each other and/or
- be sown **40 days apart** from the sowing of another farming

Complementary measures, such as the usage of barriers, can help increasing the isolation of the seed production field. Furthermore, **the ears of plants at the edges of the field should not be selected to be used as seeds.**



## 4. Verification and control of contamination by transgenic seeds

The main source of contamination with transgenic seeds is neighboring farming with seeds purchased in agricultural product stores. Farming families are often unaware of the risks of contamination, nor do they have information that it is a transgenic seed. One way to minimize the risk of contamination with transgenic seeds is to make farmers aware of the importance of crioulo seeds and encourage their use.

To check for contamination with transgenic corn, rapid tests for the detection of transgenic seeds can be done. There are kits for testing the presence of transgenes in seeds and leaves. GMO detection tests are important to ensure that the seeds are not contaminated. The test used to detect transgenic seeds in the field is the strip test, also known as the ribbon test. There are kits of these tests that can be purchased online, for example. The tests are done with crushed corn, they are fast, simple to take, with high precision and a response in 5 minutes. Seek help from your technical support!

The Creole Seeds Project, one of the strategic actions of the Pró-Semiárido, a project done by the Regional Development and Action Company (CAR), a public company linked to the Bahia Rural Development Secretariat (SDR), through a loan agreement between the state government and the International Agricultural Development Fund (IFAD), held, on November 20th, 2019, the II Agrobiodiversity Fair, which took place at the Semiárido Show, in Petrolina, Pernambuco. The fair was designed to provide guidance on how to produce, strengthening this practice in the municipalities where Pró-Semiárido is present, and also for the exchange of seeds, so that they could spread and be preserved.

IFAD's project analyst, Frederico Lacerda, reinforced: "The project represents a step forward in the process of implementing agroecological practices in the semiárido region. The II Agrobiodiversity Fair had about 55 fair stalls, with products from more than 120 farmers and guardians of seeds, from 23 municipalities in the semiárido region of Bahia. The fair received more than a thousand visitors.



**Check it out:**

<http://www.sdr.ba.gov.br/servicos/projeto-pro-semiarido>



## 5. Social organization of houses of seeds

According to the Map of Technologies for the Brazilian Semiarid Articulation (ASA Brasil), the Northeast has at least 793 Seed Banks. A map with the location of these banks can be found at <https://www.asabrasil.org.br/mapatecnologias/>. These spaces allow productive sovereignty to groups of farming families, guaranteeing the maintenance of varieties that are, sometimes, centuries old and adapted to their regional reality.

Each Bank or Houses of Seeds has its own stock and is governed by collective agreements that at least consider:

- The existence of Internal Regulations for asset management and operation;
- The existence of management instances;
- The definition of which farming will be worked, the amount of seeds to be loaned to each person, the amount to be returned, the period of time that the loan will last, the conditions for the seeds to be returned, and how the storage and conservation will be done.
- The definition of forms for managing inventory information, loans, exchanges and returns.

## 6. Steps for seed production

### A) PLANING

- **Choice of the area**

When choosing the area, it is important to pay attention to the **isolation from other farming**. In addition, areas cultivated with corn in the last two years should be avoided, if possible, to reduce problems with diseases and plagues.

The water stored in cisterns or water tanks can be used to irrigate the plants, increasing the productive potential. In this case, the seed production field must be installed close to cisterns, water tanks, underground dams, etc. and, mainly, next to the family's house to allow the control of the water use, as well as other activities related to the monitoring of the field.

- **Soil preparation**

The land must be in good condition to receive the seed. It is important to plant in contour lines, to avoid problems caused by floods that cut the farming area. And crop residues must be kept on the ground to prevent grass from growing and water loss.

- **Planting period**

The main factor to be considered when choosing the planting season is the water availability. Communities are well aware of the rainy season in their region, this information is important and should be considered.





In the case of irrigated farming, in addition to the advantage of the culture being able to present a greater productive potential, it is possible to cultivate the corn at a different time from the majority of the neighborhood, avoiding the risk of crossing the farming.

As already mentioned, isolation guarantees obtaining a seed without pollen contamination from other varieties, hybrids, transgenic, etc.

- **Planning from planting to harvest**

The planning of the seed production field, from its implantation to its harvest, is fundamental to guarantee the production of qualified seeds. Some care must be taken in production to ensure:

1. **physical quality:** free of impurities;
2. **sanitary quality:** disease and insect free;
3. **physiological quality:** high germination and vigor;
4. **genetic quality:** with known identity and without contamination by other farming.

In the semiarid region, there are initiatives for projects to capture and better use rainwater, which are of great importance. The implementation of underground cisterns and dams are simple and low-cost solutions to increase the availability of water for human and animal consumption and for food production. An initiative that deserves to be highlighted in this scenario is the **Paulo Freire Cisterns Project**, an action that is part of the Paulo Freire Project, sponsored by IFAD and the Ceará State Government's Agrarian Development Secretariat. The aim of the project is to build cisterns and treat water from any source, for example, the dams, to help farming families in Ceará.



**Check it out:**

<https://www.sda.ce.gov.br/ugp-paulo-freire/>



Para evitar problemas como misturas e desuniformidade da To avoid problems such as mixtures and unevenness of the crop, it is important **“pick up” the good seeds and do the germination test before sowing**. Sowing can be done in different ways, depending on the equipment availability.

The management of seed production fields is very similar to that done in production farming. However, in the fields of seed production, greater care must be taken, especially in regards to insects and diseases.

## Germination Test

To know the germination percentage, you can plant 400 seeds in the field, irrigate well and, after a few days, count the plants that germinated normally and divide by four, to find the percentage. From the result, it is possible to calculate how many more seeds will be placed to have the desired number of plants in the field.

Example: 400 seeds were sown. Of these, 340 germinated; dividing 340 by 4 it's 85, that is, the percentage of germination is 85%

To calculate how many seeds will be planted, the first step is to divide the germination percentage by 100. Considering the 85% germination in the example above, 85% divided by 100 equals 0.85. The next step is to define how many plants you want to have per hectare and divide the value by 0.85. If the goal is, for example, 50,000 plants per hectare,

50,000 divided by 0.85 is equal to 58,823.53, that is, if the producer wants to have 50,000 plants/ha, he will need to sow 58,824 seeds/ha.

## B) SEEDING

Recommended: 40 to 50 thousand plants per hectare

- To obtain 40,000 plants/ha, you can use a spacing of 25 cm between plants and 1 m between rows or 50 cm between holes with 2 plants per hole and 1 m between rows.
- To obtain 50,000 plants/ha, you can use a spacing of 25 cm between plants and 80 cm between rows or 50 cm between holes, with 2 plants per hole and 80 cm between rows.

Regarding the sowing depth, in light or sandy soils, sowing should be deeper (5 to 7 cm), and in heavy or clayey soils, more superficial (3 to 5 cm).

## C) FERTILIZING

The best fertilization is the green (pork beans, sunn hemp, velvet bean, forage peanuts, pigeon peas). These plants fix nitrogen in the soil, in addition to covering it, preventing erosion and water loss. Fertilization can be supplemented with residues from other farming, manure, or even ground rocks (limestone and natural phosphate). To improve a little, you can make applications of biofertilizers. It is also possible to use 40 t/ha (4 liters per meter) of bovine manure compound; for other stronger manures, it is recommended to use half this dosage.

## D) SPONTANEOUS PLANT MANAGEMENT

For the management of spontaneous plants, weeding or mowing can be done, so that the weeds do not reduce the yield of the varieties and, in addition, do not produce seeds that can be mixed with corn seeds.



**Up to 40 days of culture, the management of spontaneous plants must be more rigorous. However, for seed production, throughout the corn cycle, attention should be paid to the presence of spontaneous plants in the field.**

### E) PURIFICATION (*ROUGUING*)

The seed production area must be inspected frequently to **the elimination of plants with different characteristics from the standard of the cultivated variety**. Diseased plants, with a big difference in heights from other plants, broken or lying down, etc., should be eliminated. The ideal is to make an inspection in the area at least **three times during the crop cycle**, being the first in the vegetative phase, the second in the flowering and the last one before the harvest. The greater the number of farm inspections, the better.

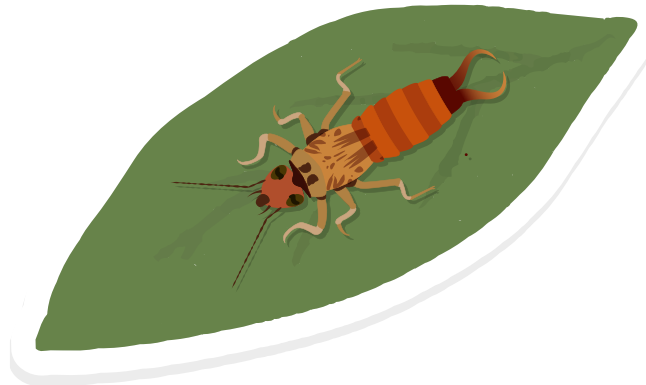


### F) INSECT CONTROL

Constant crop monitoring is essential to detect the presence of insects and, thus, be able to control them efficiently. Insect control by natural enemies is one of the most sustainable alternatives. Natural enemies are organisms (insects, fungi, viruses, bacteria, etc.) that are capable of controlling harmful insects. An important natural enemy of the fall armyworm, one of the main insects of corn, is the **"tesourinha"**.

The use of biological products also helps to control insects. For the control of caterpillars, for example, the main biological control agents in corn are: baculoviruses, *Bacillus thuringiensis* and *Trichogramma*. For bed bugs and leafhoppers, an alternative that can help in the control is to use the fungus *Metarhizium anisopliae*.

**Talk to the Technical Assistance and Rural Extension Service of your municipality, technicians will be able to help with the acquisition and application of this biological control.**



#### G) DISEASE CONTROL

The main measures to be taken to prevent the diseases attack are:

- Crop rotation - Crop rotation consists of alternating, in the same area, different cultures, in a planned way. Crops that are not attacked by the same diseases as corn should be used, such as common beans, black-eyed peas/ macassar;
- Usage of healthy seeds - Seeds must be disease free;
- Elimination of hosts - Some grasses are hosts of corn diseases, such as sorghum. These plants must be eliminated from the crop, as well as corn plants that grow spontaneously from grains lost at the harvest;
- Soil Fertilization – Well-nourished plants are more disease tolerant.

The presence of weeds is a sign of soil conditions, and the experience of older farmers can help in this interpretation. The castor bean or carrapateira (*Ricinus communis*), for example, is a sign of improvement in fragile soils, as it mobilizes boron and potassium in deficient soils. the mallow (*Mavastrum coromandelianum* e *Sida rhombifolia*) indicates a hard layer in the soils, compacted and with little depth. Learning to read what the soil and its components tell us is a good strategy for daily field work.



#### H) ) SELECTION OF PLANTS

Ccorn is a plant that spreads pollen, that is, the plants cross with each other, in the same farming there are plants that are very different from each other. For this reason, to harvest corn seeds, we must collect cobs from **as many plants as possible**.

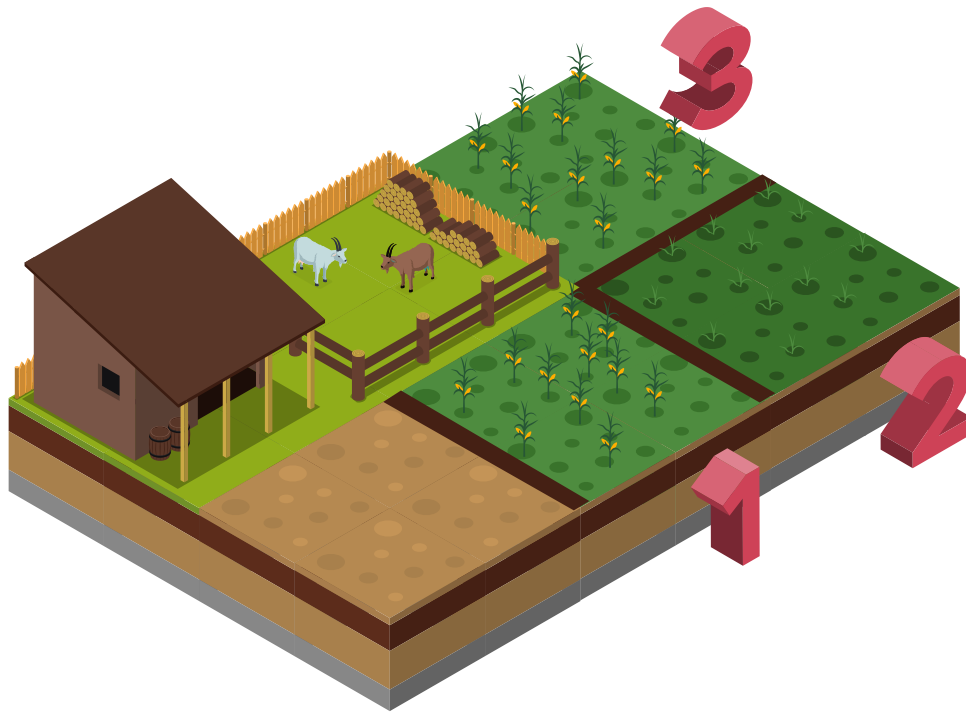


To maintain the genetic variability of the variety, the suggestion is that a single ear of at least 500 plants be harvested in the field and, after husking, 200 ears are selected. It is important to harvest only one cob per plant and always the first cob, that is, the highest cob on the plant.

Selection in the field is done by observing, mainly, the plant that gave rise to the cob. You should observe the plants and choose those that have desirable characteristics, for example, productivity, adequate height, resistance to insects and diseases, among others. Of the 500 best plants, the highest ear on the plant should be harvested. Remember not to harvest cob from plants that are on the edge of the field, which must be at least 3 meters. Then, in a shed or at home, the 200 best cobs will be chosen from among those harvested. Cobs should be spread out and those that are attacked by insects, fungi, rodents or with deficient seed formation and distribution should be discarded. At this stage, it is possible to select the cobs according to characteristics, such as grain type, color and purpose. **Seeds from the tip and base of each cob must be discarded.** To know how much to discard from the ends, just measure two fingers on each side. **From the central part of each cob, thresh an equal portion of seeds from each cob.**

A plant is good due to its genetics and its response to the effects of the environment. Genetics is the part that can be passed on to the next generations, but the effects of the environment cannot. If, for example, a plant grows in a part of the area that has better soil, it is likely to be stronger than a plant in an area with poorer soil. At the time of selection in the field, the cobs of the best plants will be selected, but if that plant produced well due to the environment, its offspring may not produce as well, because the effects of the environment are not passed on to the next generation.

**To reduce the interference of the environment in the selection, it is important to divide the crop into plots.** In each plot, the same number of plants will be selected to harvest the cobs. The number of plots will depend on soil and climate differences in the area. An example is dividing the crop into three portions, the highest part of the land, the median and the low part. As families know their area, it is also easier to separate areas that have soil stains, drier and more humid places, among other characteristics.



#### I) HARVEST



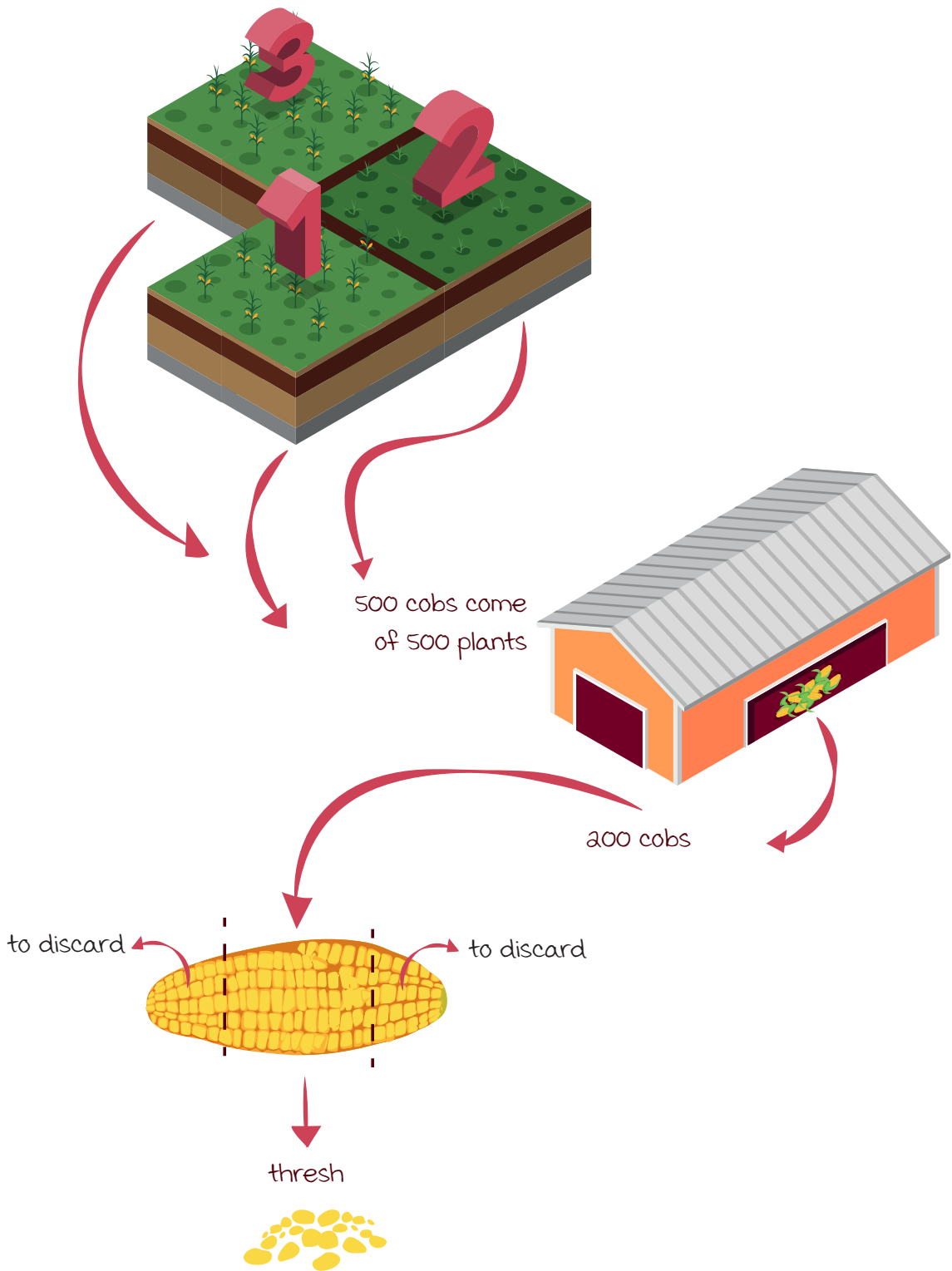
The harvest point is visually determined by the appearance of the black layer, or black tip, on the part that connects the grain to the cob, this being the phase in which the seeds have the highest quality.

The closer to maturation the harvest is done, the greater the germination, vigor and weight of the seeds. Unripe seeds should not be collected, but after the seeds ripe, the harvest should be done as soon as possible to avoid losses by weevils, rats and parrots, for example.

#### J) THRESHING

Threshing can be done by hand, which is better from the point of view of seed quality, because it does not damage the seed embryos (the embryo is that little kernel of the seed, from which the new plant will be born). In case of large quantities, you can use a thresher with a crank or an electric thresher. It is always necessary to observe that the thresher is not damaging the seeds. Usually, the hand crank thresher does less damage and less seeds are lost.





## 7. Seed storage

### A) GENERAL PRINCIPLES

One of the **biggest enemies** in seed storage is the **humidity**. Good drying is essential to ensure that the seeds preserve the quality acquired in the field. Ideally, the seed should have **humidity around 13%**.

There are equipment to measure seed humidity, but in the absence of it, farmers can check if the humidity is already good by biting the seed. If the seed cracks and there is no tooth mark, it can be stored.

After threshing, if the seeds are not at optimal humidity, they can be dried in the sun.



**For drying, a thin layer of seeds should be placed in the sun, in a cemented place or on a light tarpaulin. Black plastic tarpaulin should not be used, as it gets very hot and can burn the seed embryo.**



The place where the seeds will be spread must be clean, free of dust and away from bugs.

The seeds will be exposed for a few days until they reach the right humidity to store. Seeds usually need to stay a few days to reach the ideal humidity, but they should not stay in the sun for too long, as they can lose quality.

Very high temperatures can cause cracking and reduced vigor. Ideally, the seeds should be in the sun in the early morning and late afternoon. If it is not possible to remove the seeds from the exhibition during hot hours, it is important to move them around the yard. It's important to cover or remove them from outdoors overnight so they don't get dew.

As for the storage of corn seeds, one of the main problems is the weevils. There are several seed protection methods that help to avoid storage problems, mainly against the weevil attack, some of them are:

- Eucalyptus leaf: for every 5 kg of seeds, mix 100 grams of dry eucalyptus leaves;
- Black pepper: for every 5 kg of seeds, mix 10 grams of black pepper;
- Rock powder (basalt): for every 5 kg of seeds, mix 50 grams of rock powder;
- Wood ash: for every 20 kg of seeds, mix 1 kg of ash;
- Neem or nest: for every 1 kg of seeds, mix 5 kg of dried and ground leaves

#### B) CONTAINERS AND PACKAGING.



**The seeds can be stored in cans, plastic bottles and glasses. These are packages that seal well. Thus, they do not let the seeds get humid from the air and help controlling their breathing. It is important that the containers where the seeds will be stored are completely filled, so that there is no air inside them. Cloth, paper, or thin plastic bags are not recommended, as they allow moisture from the air to return to the seed.**

In the case of storage in houses of seeds, where the quantity is greater, big cans can be used.

Containers should only be opened at the time the seed will be used for planting. If the container is not completely full, a tip is to light a piece of candle and cover. The candle flame will consume all the oxygen in the container until it goes out.

### C) LOCATION (HOUSES OF SEEDS, ROOMS ETC.)

Seeds can be stored on the family property or in community banks. With the storage of seeds in community banks, families have the security of having the seed at the right time to plant and ensure the stock in case of crop losses. Besides, when groups organize and do joint projects, they are strengthened to continue organizing and conquering their demands.

The place for storage must be dry and ventilated. The containers where the seeds are kept must not be in contact with the floor and must be at least 10 cm from the wall. It is recommended to weigh the seeds before storing and have a complete record of the name of the variety, the crop harvested and the date; and in the case of community banks, the name of the guardian.



## Report of the Popular Peasant Movement (MCP) – Sergipe

The Popular Peasant Movement (MCP) is a social movement that seeks the social and productive organization of rural subjects, aiming at the training of farmers, the guarantee of basic rights in the countryside, the conservation of agrobiodiversity and the production of healthy foods. MCP operates in Sergipe, in the Metropolitan (Aracaju), South (Estância, Umbaúba, Itabaianinha, Indiaroba, Cristinápolis and Tomar do Geru) and Center-South regions (Tobias Barreto, Poço Verde and Lagarto).

In the aforementioned regions, since 2015 (the year in which the MCP started its work in the region), more than 100 tons of native corn seeds (various varieties) and more than 250 tons of corn grains for couscous have been produced (different varieties). About 20 tons of seeds have already been produced from beans and, with recent work started in the packaging of beans for consumption, about 12 tons have already been sold.

Around 250 families produce and multiply the seeds. The houses of seeds in Poço Verde (3 units) and Tobias Barreto (2 units) were built with funds from the federal government in partnership with the Brazilian Semi-arid Articulation (ASA). There are also 2 small seed processing units, one in the municipality of Lagarto and the other in the municipality of Cristinápolis, installed in assigned sheds and structured with their own resources and small projects.



Text and Images provided by  
the Popular Peasant Movement  
(MCP) – Sergipe





