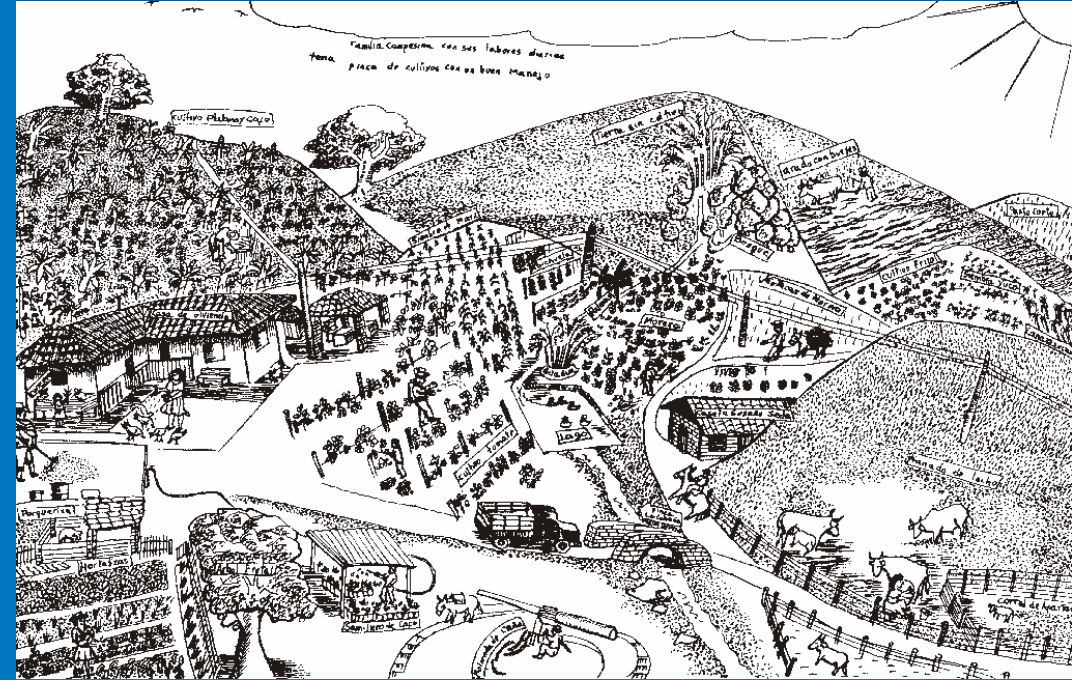


Our Experiment

01



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Fundación Carvajal



The International Center for Tropical Agriculture (CIAT) is dedicated to the alleviation of hunger and poverty in tropical developing countries, through the application of science to increase agricultural production while conserving natural resources. CIAT is one of 18 international centers of the Consultative Group for International Agricultural Research (CGIAR). The CGIAR is a group of 40 countries and international agencies that support agricultural research for development in the tropical countries of the world.

Participatory Research in Agriculture (IPRA) is a CIAT special project created in 1987 with the objective of developing methodology for involving small-scale farmers in the design and evaluation of appropriate agricultural technology. IPRA is sponsored by the W.K. Kellogg Foundation.

The Carvajal Foundation, located in Cali, Colombia, is a non-profit organization created in 1961 with the objective of promoting the social, economic and ecological development of low-income communities. The Foundation supports programs related to microenterprise, low-income housing, community radio, health, education, community recycling, crafts, and agricultural development. It contributes to the development of similar foundations nationally and internationally through sharing field experience.

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Handbooks for CIAL

Our Experiment

HANDBOOK No. 01



Fundación Carvajal



Presentation

This handbook is the result of participatory research carried out by several institutions and rural communities. The handbooks were designed by farmers. The examples are based on real cases and form part of the experience of the Local Agricultural Research Committees (CIALs) that participated in the project from the beginning. The following CIALs collaborated in the preparation of this handbook: Cinco Días, El Diviso, Pescador, San Bosco, Sotará and Portachuelo in the state of Cauca, Colombia.

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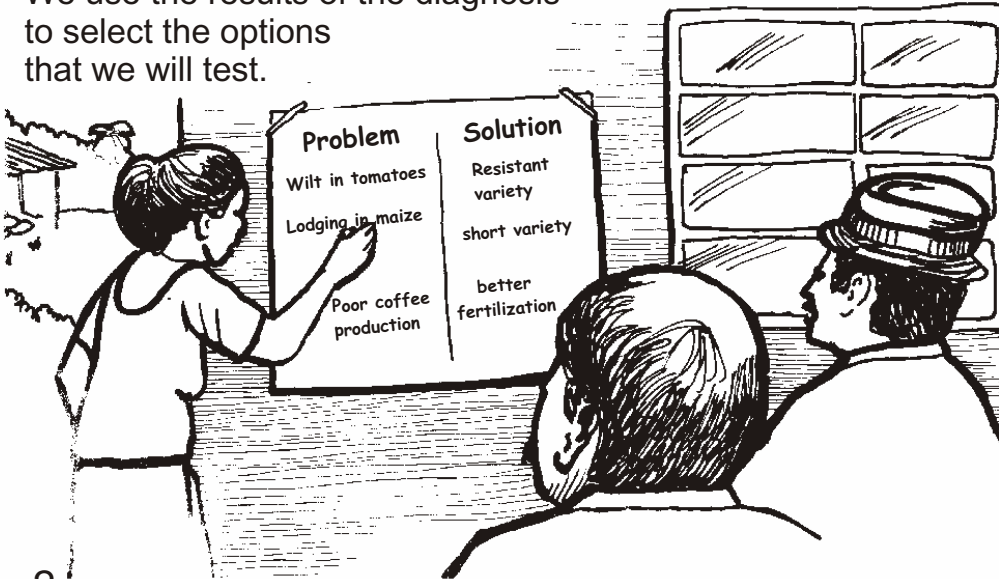
Local Agricultural Research Committees experiment with new ways to improve agriculture and conserve nature.



Before we begin experimenting we carry out a diagnosis to identify the agricultural needs of our community.



We use the results of the diagnosis to select the options that we will test.



What is an experiment?
An experiment is a way of comparing something we already know with something new.

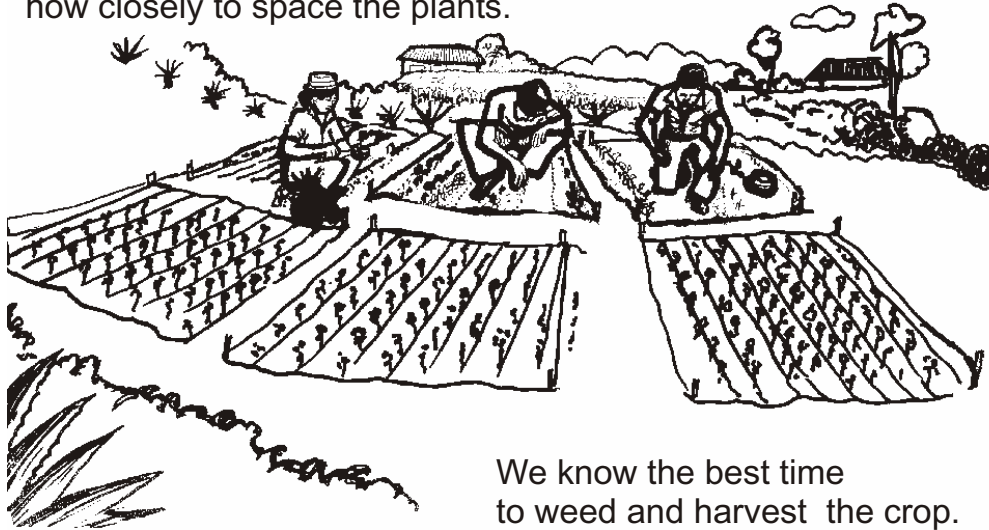


In our farming there are some things that we understand well.

For example, we know the cassava crop very well.



We know how to plant it and how closely to space the plants.



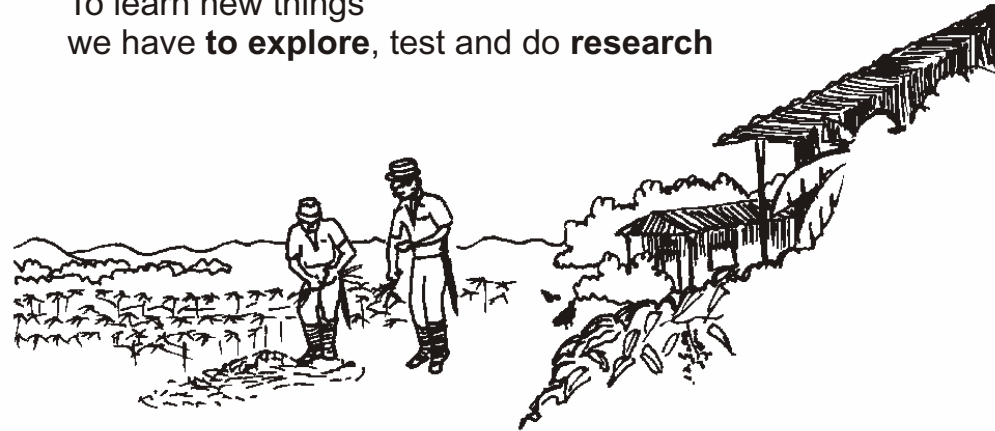
We know the best time to weed and harvest the crop.

There's an old saying that it's better to stick with things we know, even if they're not very good, instead of trying new things.

But if we always follow that advice we'll miss out on some good things.



To learn new things we have to **explore**, test and do **research**



We can experiment to compare

..... new seeds with the kind we already plant

.....a new way to apply fertiliser
with the way we always apply it



.....a different way of preparing
the soil with the way we've always prepared it.

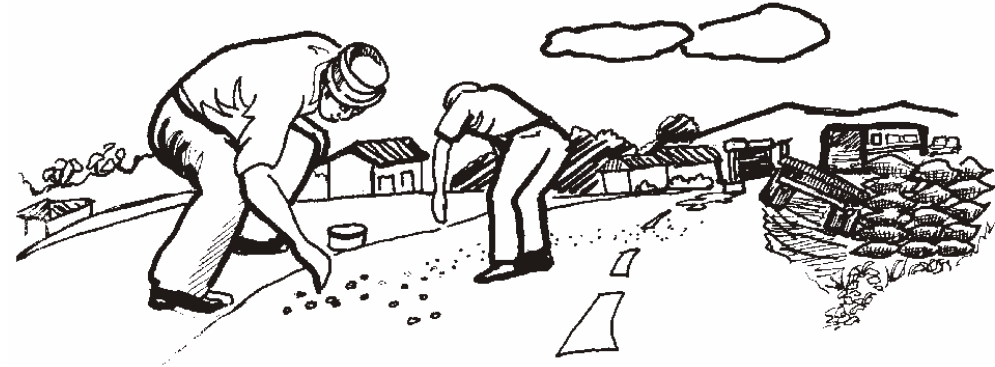
and many other things!



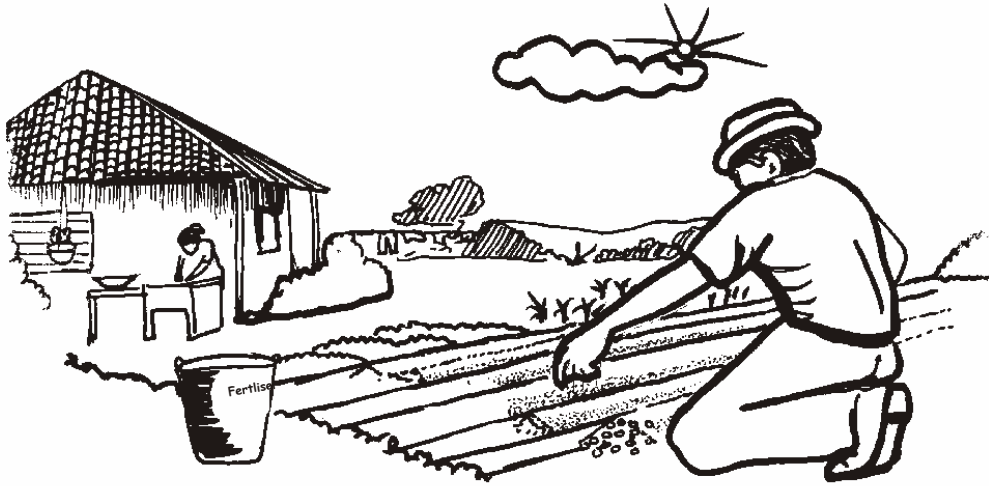
We farmers are always
trying out new things
to see how they work out.



Once some farmers
found some maize seed
that had fallen on
the road by accident.
They liked the color
and size of the kernels.



They decided to test it on Julia's farm.



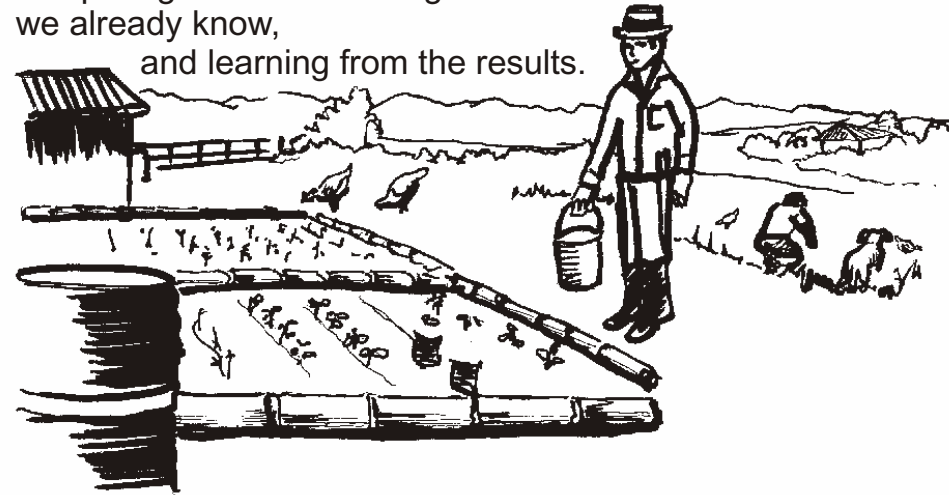
The seed was so good that today many farmers grow it. They call it "Julia."



Not all experiments turn out the way we would like, but we always learn something from them.



Experimenting is..... trying out something new, comparing it with something we already know, and learning from the results.

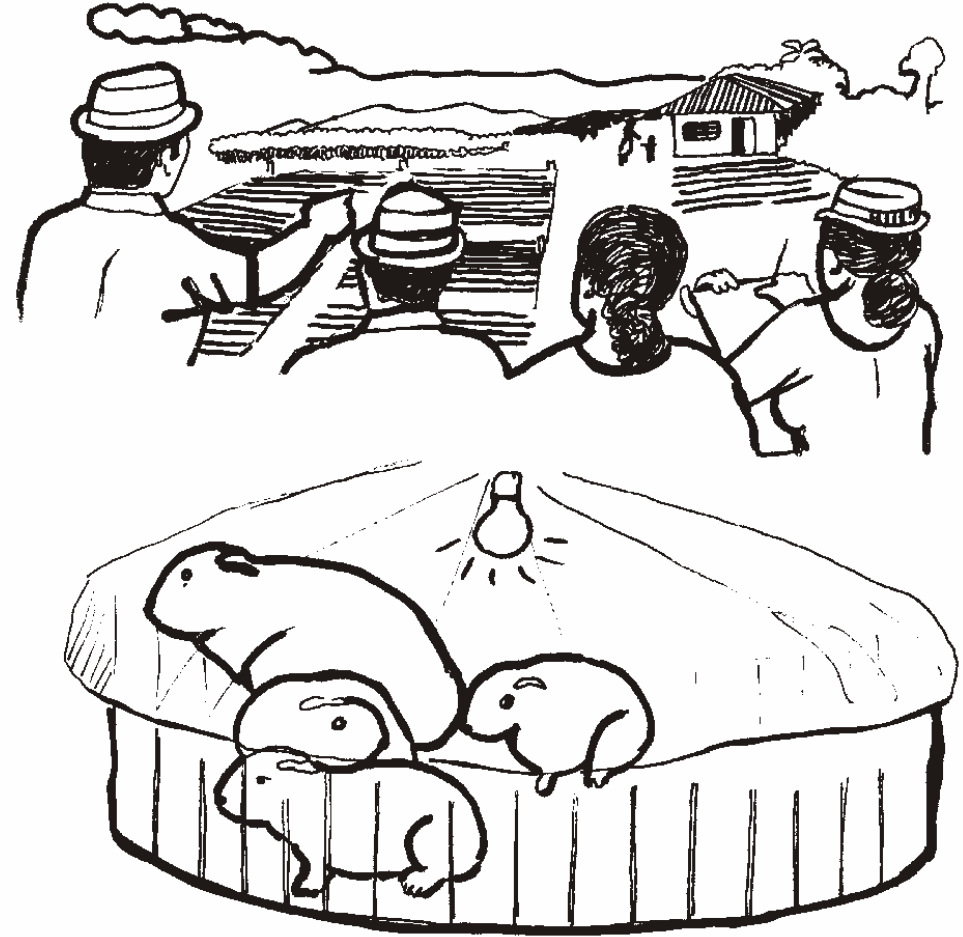


From experiments we can answer questions about the way we plant our crops or raise our animals.



Experiments help us to choose between new and old ways of doing things on our farm.

By experimenting we can decide what works well in our region and whether the agricultural services are giving us useful recommendations



An experiment **compares things.**

For example we want to know if.....

it's better to plant cucumbers in the same hole after harvesting tomatoes,
or whether we should plant maize instead

.....or if snapbeans produce more
with a string support or on a bamboo stake.

.....or if cut grass is better
than sugarcane for feeding cows.

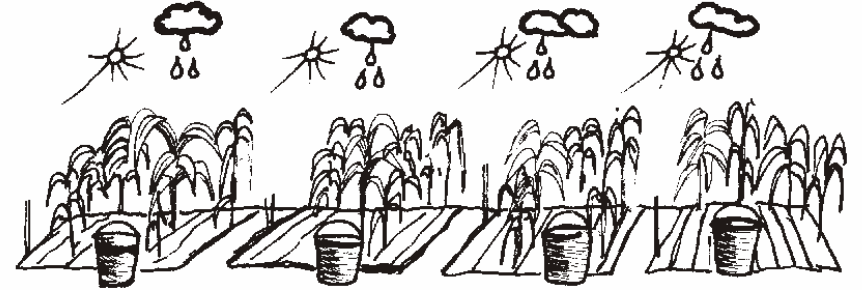
So we conduct an experiment.



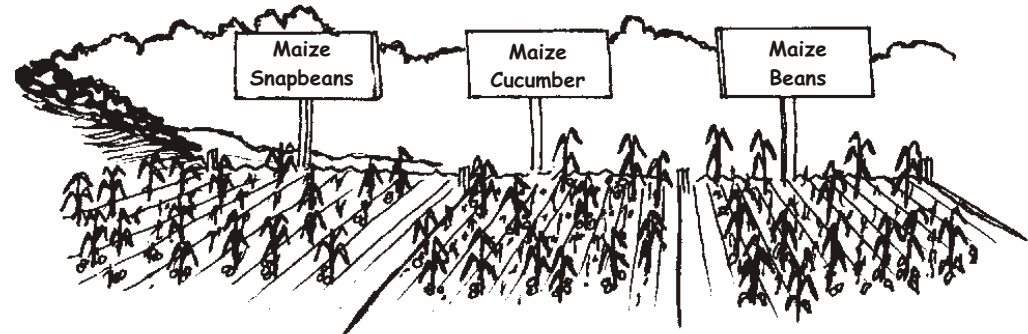
In our experiment we compare something
new **with something known.**

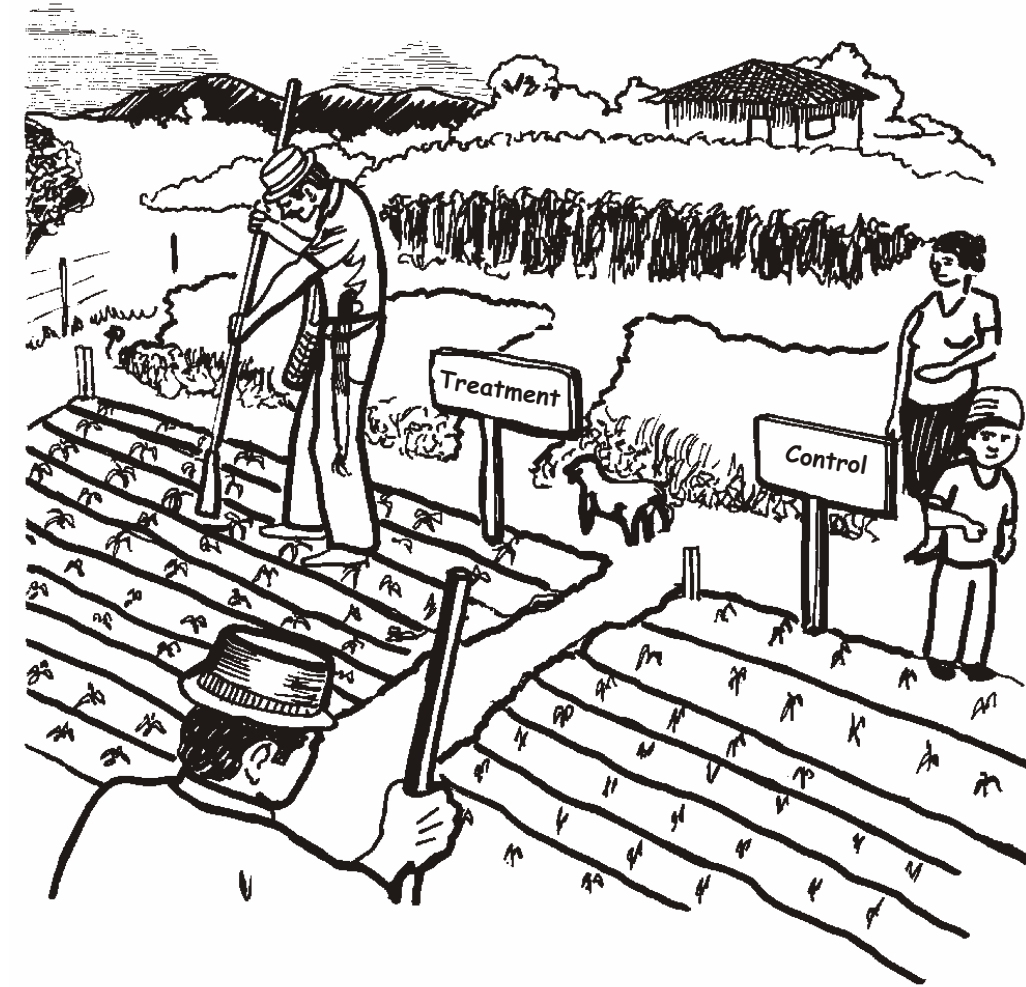


We manage both the new and the known in the same way.



We change only the thing we are testing.





The control is what we know.
The treatments are the new things that we want to try.



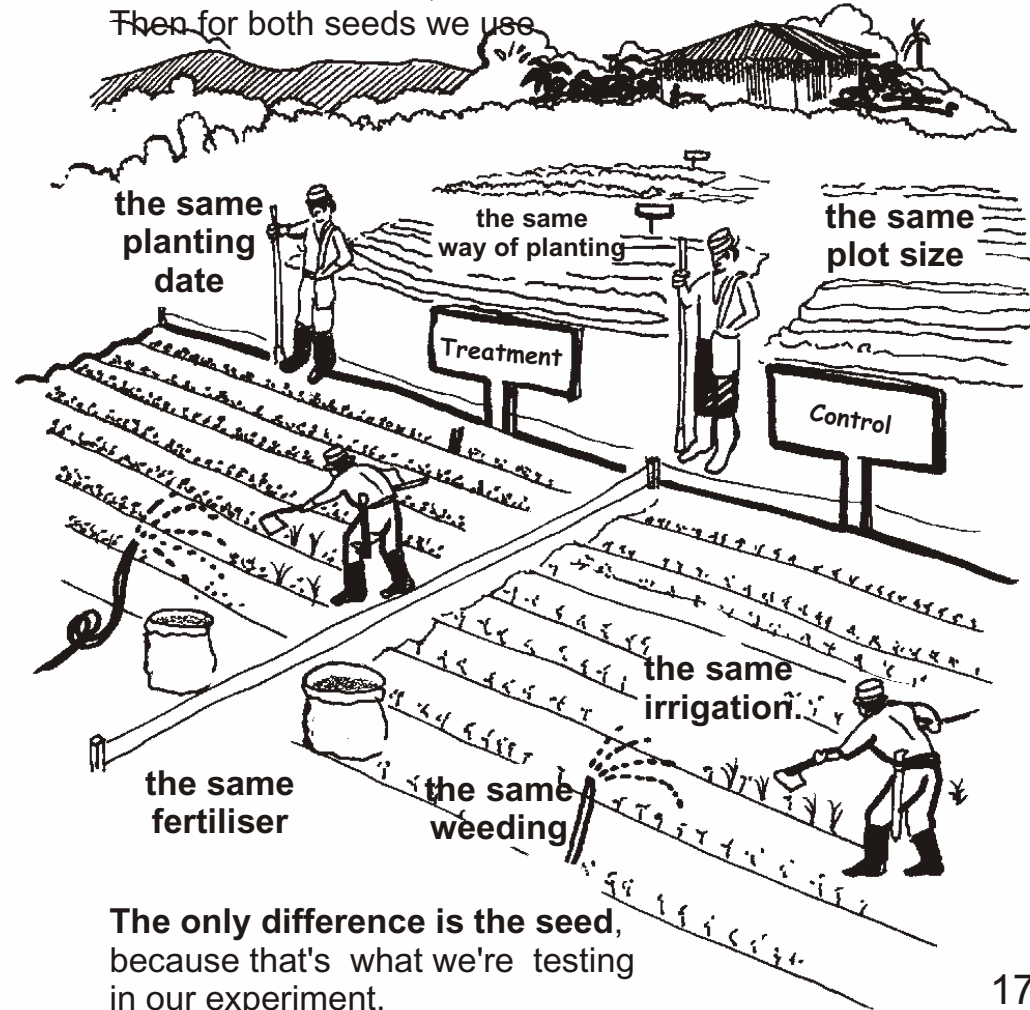
In an experiment we can compare one or more new things, called treatments, with what we already know, our control.

Once our neighbour Luis planted potatoes. He got good results, even though we don't normally grow potatoes in our area.



The Committee wanted to find out if it's a good idea to grow potatoes, so we tested 5 varieties or treatments. The **control** was the variety that Luis planted.

If an experiment compares the seed that we normally sow, called **the control**, with some seed that we brought from another area, called **the treatment**, Then for both seeds we use



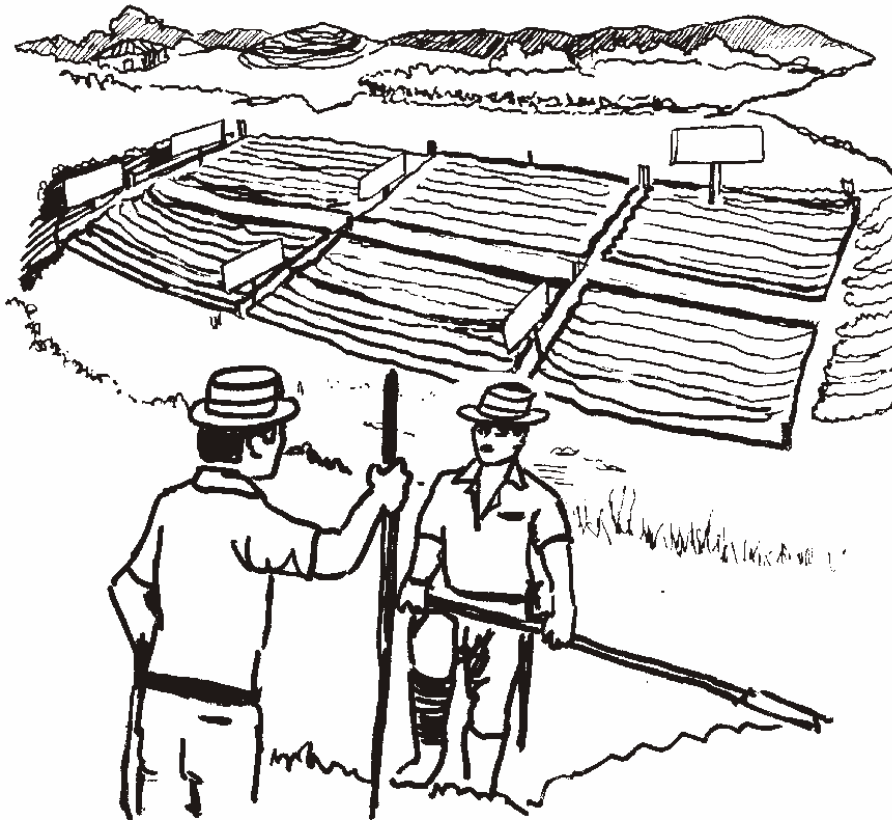
The only difference is the seed, because that's what we're testing in our experiment.

We choose a small part of an ordinary field for our experiment.

We divide the area

for the experiment into equal parts one for each treatment and for the control.

These smaller sections of the field are called **plots**.



We have to be careful

not to treat the control and the treatments in exactly the same way and not to favour one treatment over another.

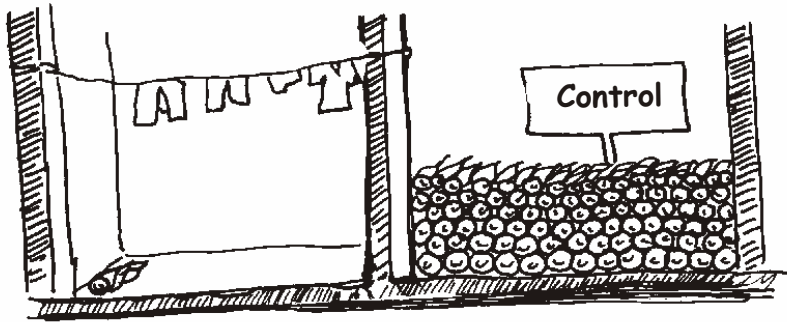
So we conduct a lottery to assign each treatment and the control to a plot.



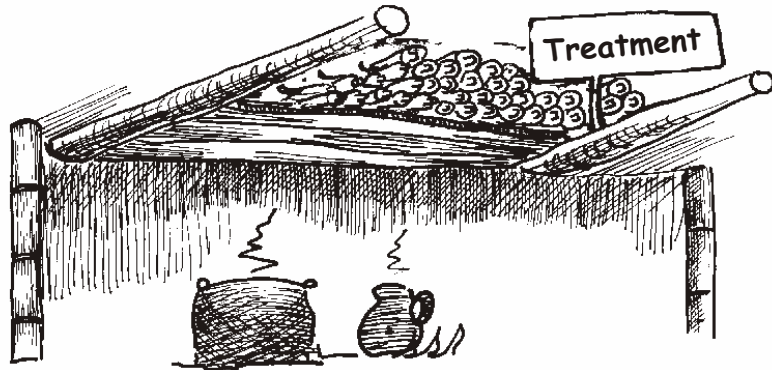
If we want to experiment
with a new way of storing maize

the control

is the way we already store it.



The treatment is
the new way of storing maize
that we're testing.



**We manage the control
and treatment exactly the same way.**

We use **the same amounts of maize.**

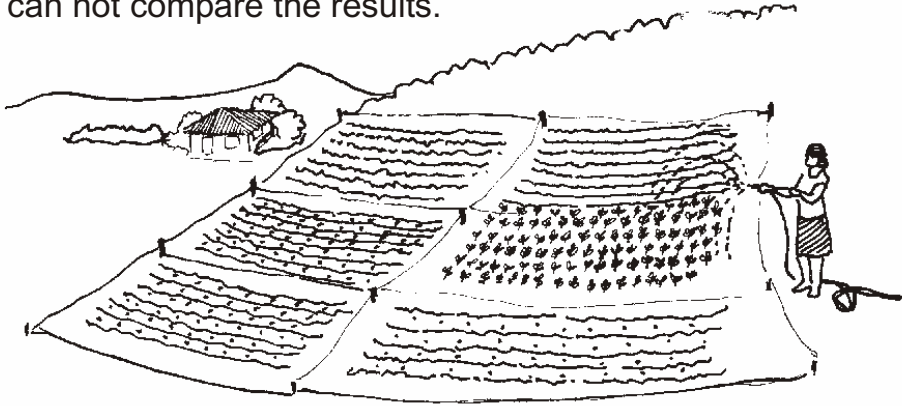
We store one part,
the control,
in our traditional way,

and the other part,
the treatment,
in the new way.

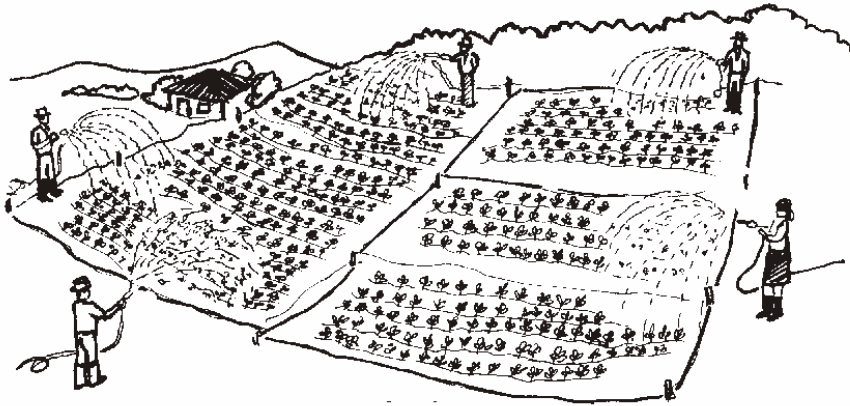


We put both maize stores in the same place.
To compare the two ways of storing maize
we check both from time to time,
one right after the other.

If the treatments and the control receive different handling or different conditions we can not compare the results.



We can only be sure of our conclusions if we manage the control and all the treatments in the same way and under the same conditions.

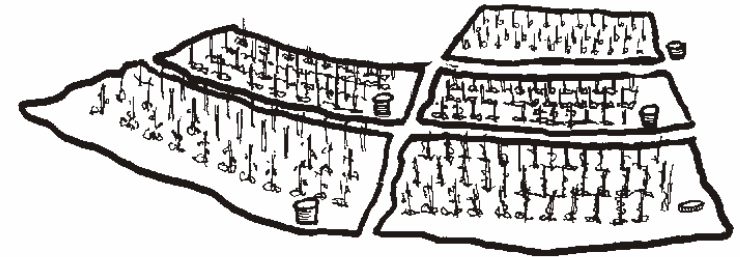


If we manage one of our treatments differently, we should not keep it in our experiment.

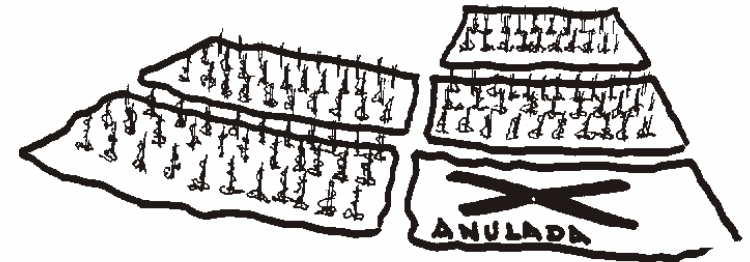
An example:
We were testing four new varieties of snapbean and the variety that we usually plant.



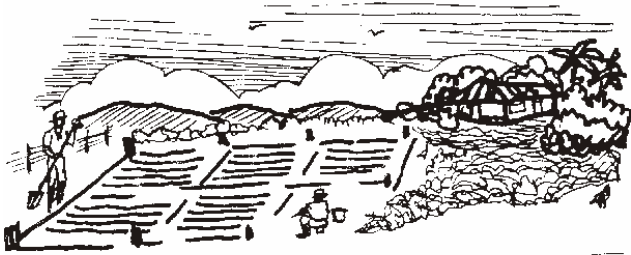
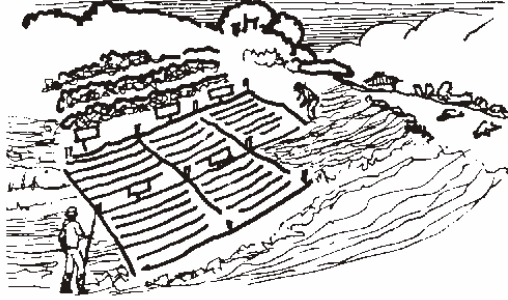
We managed all of them in the same way, except for the last variety, which received less fertilizer than the rest



We should not consider the results obtained for this last variety because it did not receive the same management as the others.



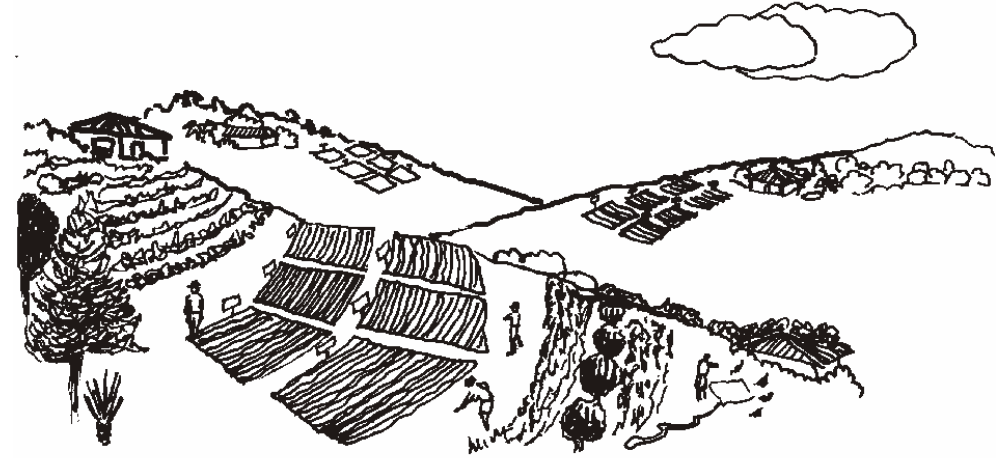
Repeating the same experiment in at least three paces at the same time **is like insurance against losses or damage.**



Repeating the same experiment is called replication. Each replication is an insurance against losses.

By conducting our experiment in several places at the same time we can reduce risks such as

.....an unusual soil influencing our results



.....losing the experiment because animals ate our only plots.

.....losing our experiment because of a hail storm.



When we want to test something very new or completely unknown we should take our time and experiment step by step..



If the results of all the repetitions are similar we can trust our results.



First we compare several treatments with a control.

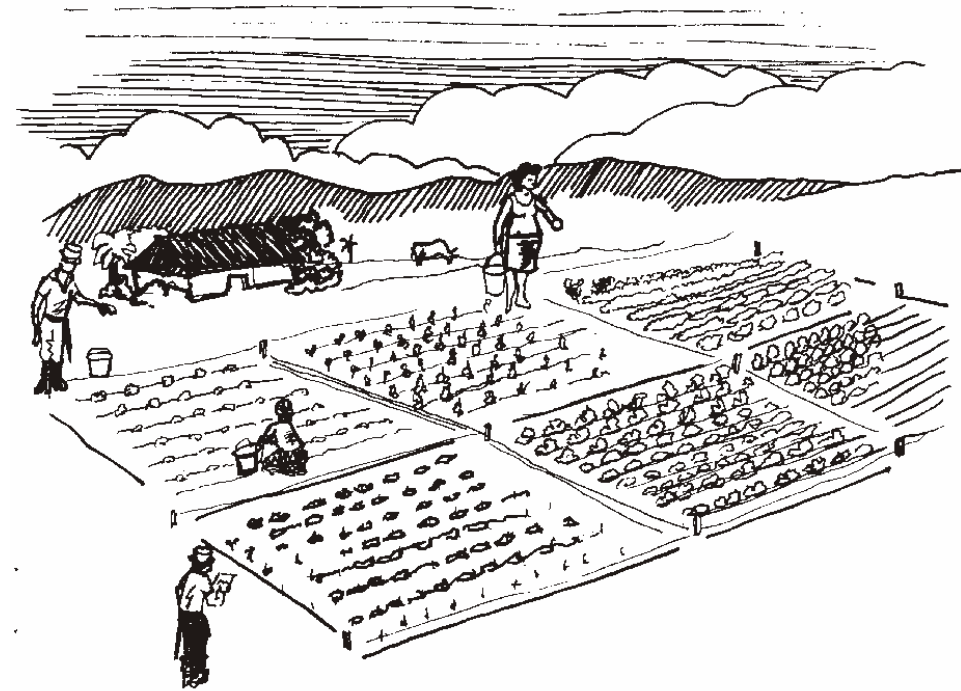


We don't know how these new treatments will turn out so we only test them on a small scale.

We call this first experiment our **preliminary experiment**.

In our **preliminary experiment** we are comparing many things that we don't know.

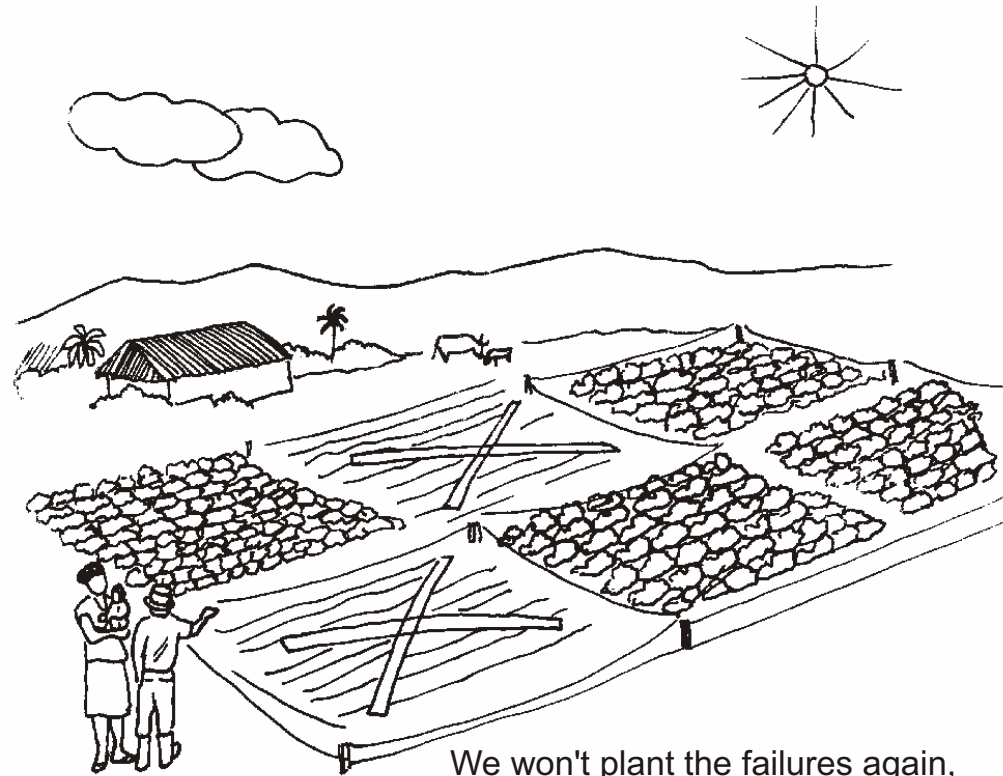
The risk is high, so we test on a small scale. We divide the experiment into many small plots of the same size for the treatments and the control.



In our preliminary experiment we ask ourselves....

**Which treatments are successful?
Which are failures?**

The preliminary experiment
show us which treatments are failures.

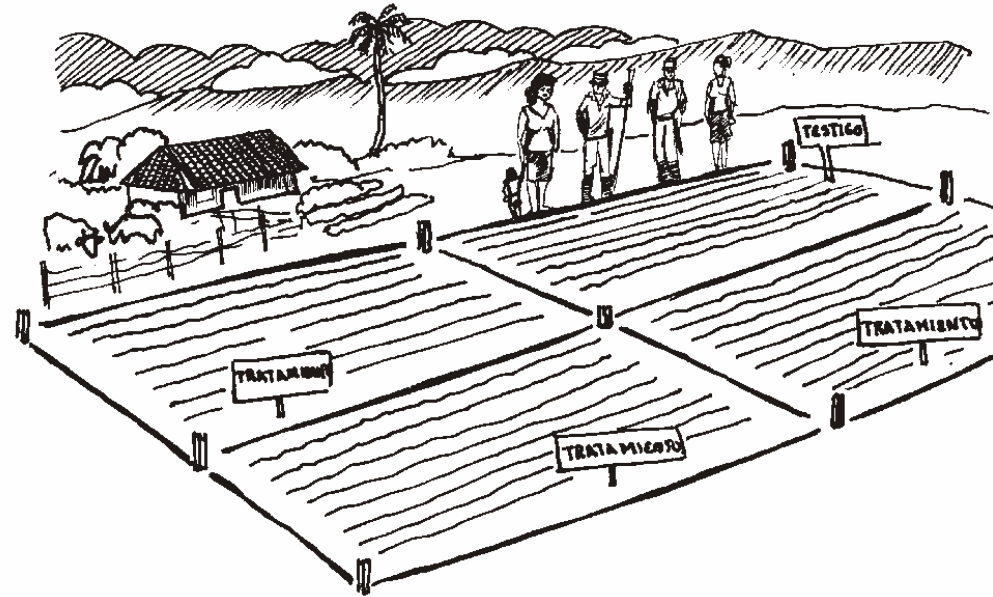


We won't plant the failures again,
but we repeat the successful
treatment in our next experiment.
We call it our **check experiment**.

The check experiment tells us
if we can trust the results
that we obtained in our preliminary experiment.

We test the successful treatments
and the control a second time to check the results.

In our check experiment we include our control
and only the treatments that were successful
in the preliminary experiment.



We conduct the check experiment
in three places at the same time.

In the check experiment we plant bigger plots to find out if there is
.....a treatment that is better adapted to our conditions
.....a treatment that needs special management.
.....a treatment that is difficult to manage.
Or if the experiment is with animals the check
experiment can tell us if there
is an animal that needs special feed.



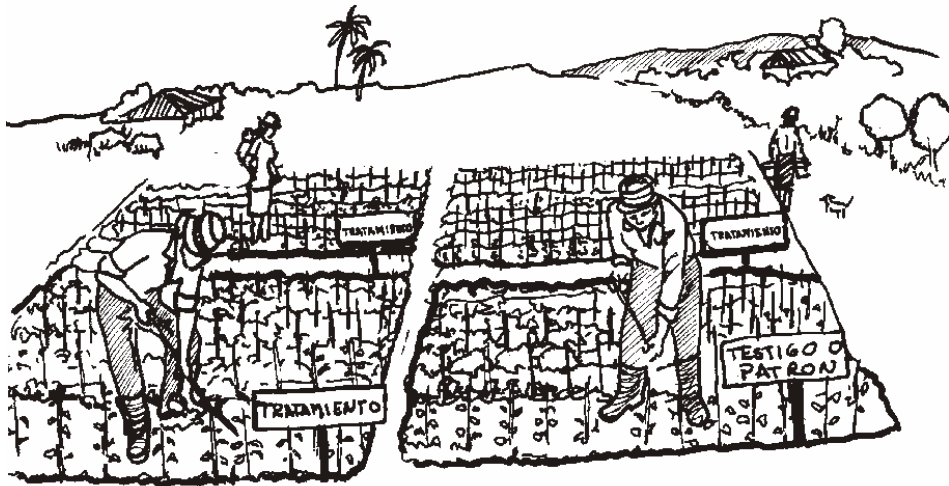
We stop testing treatments
that don't work well.
We keep testing treatments that we think may be useful.



We select the treatments
that did best in the **check experiment**
and compare them again with
the control in the **production experiment**.

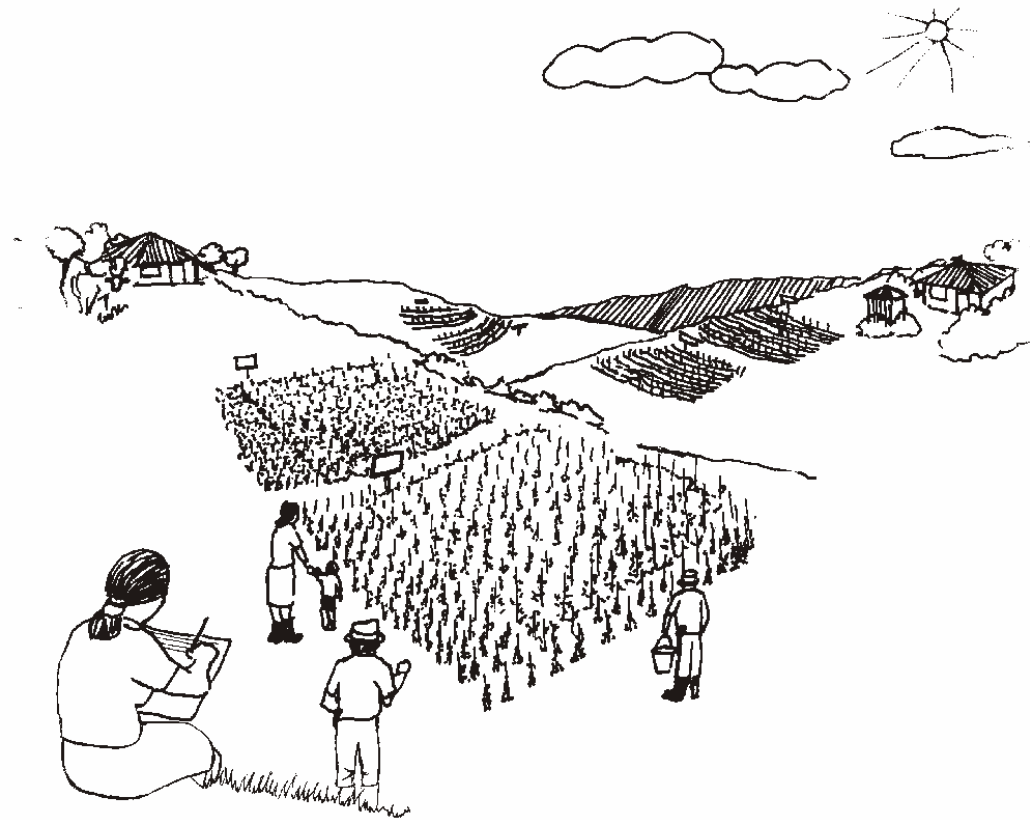
In our **production experiment** we compare **the control** with the treatments that did **best** in the check experiment.

We make plots of the same size for the treatments and the control.



We already know quite a lot about what we are testing, so there is less risk.

We conduct our experiment in at least three places at the same time so that we can be very sure of the results.

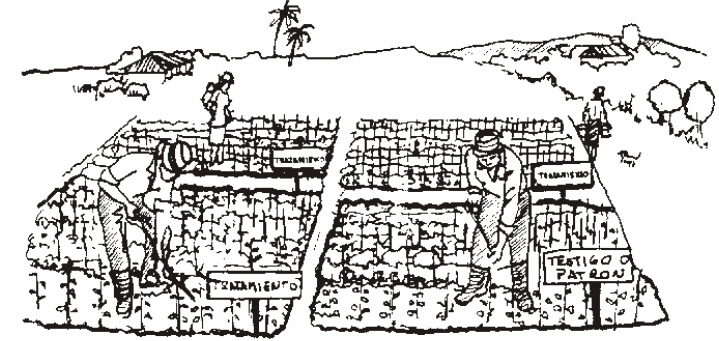
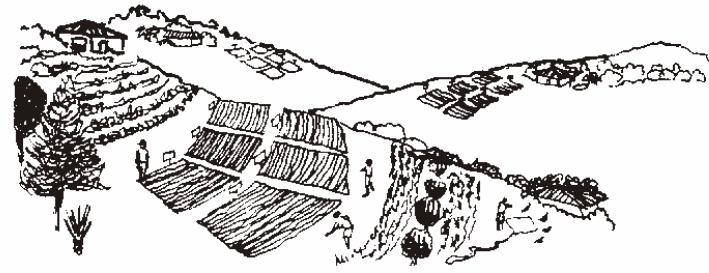


In the **production experiment** the plots are larger.

The production experiment is the same size as our usual commercial fields.

From our production experiment we can find out

-**how much labour** the treatments require
-**what the costs** are
-**which treatment** is most profitable
-**whether we can market** the produce easily



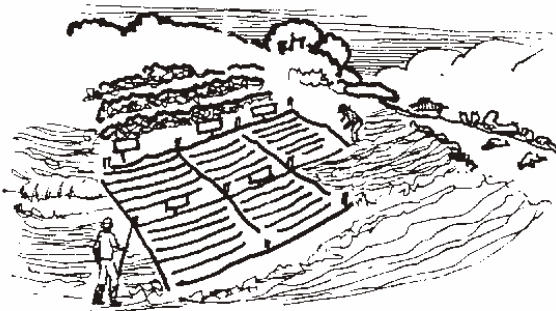
Comparing the control and the treatments
first in the preliminary experiment
then in the check experiment
and finally in the production experiment
we learn very important things
for our farming.

We can make recommendations
based on the results of our experiments
to help others in our community.

In the **preliminary experiment**
we are testing many new things.

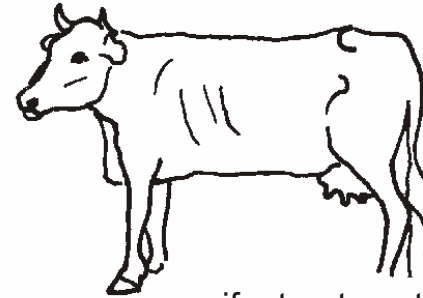
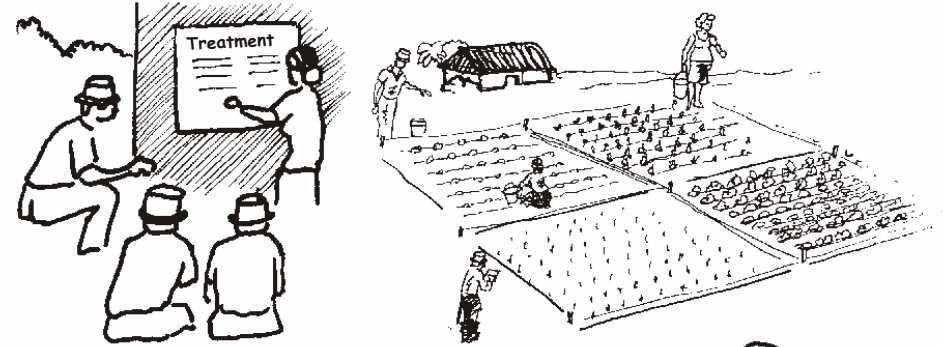
We should ask

.....which treatments are successful?
.....which treatments are failures?



In the **check experiment** we can tell

.....if a treatment is better adapted to our conditions
.... if a treatment needs special handling
.....if an animal needs special feed



.....if a treatment is
very easy or difficult to manage.

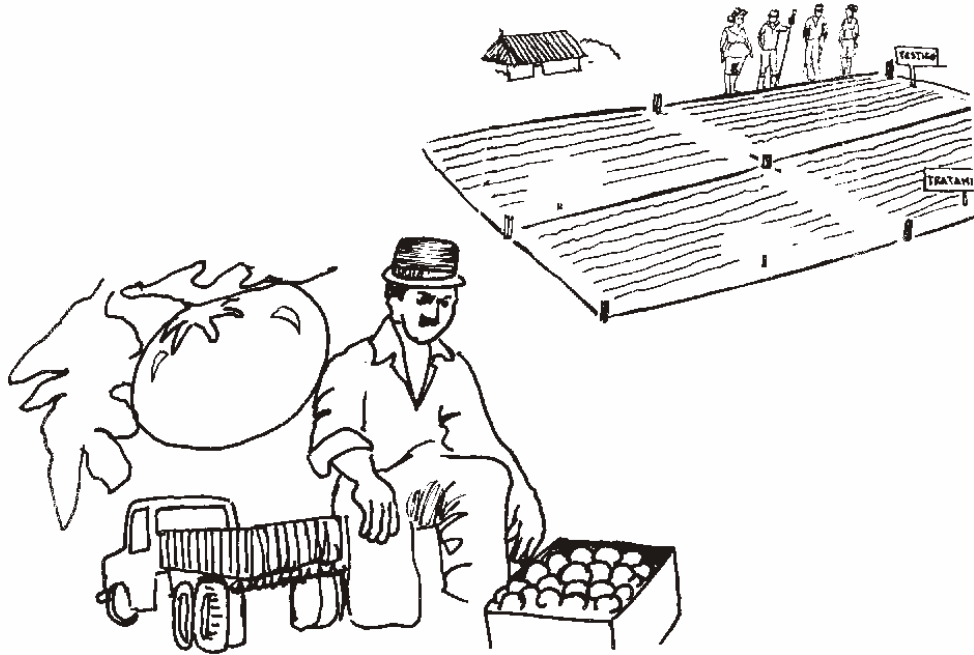


**We reject the treatments
that fail and continue testing
those that are successful.**

The **production experiment** is larger,
like an ordinary commercial field.

We can find out....

.....how much labour is required?



-what the costs are?
-which treatments are most profitable?
-are marketable?
-which are good for
cooking or feeding animals?

**When we compare the control
and the treatments in the replications
we can be sure about
the conclusions from our research.**





We tell others in our community about the advantages and disadvantages of the new things we have tested in our experiments.

