Annex – examples of experiments

This annex provides examples of Idea Sheets, Experiment Sheets, Activity Plans etc., which should give you an idea of the variety of experiments that can be thought of, and on the way outsiders and villagers filled in the different types of sheets. Most examples are from Vietnam, some are from India. Many of the Vietnam examples are from a Social Forestry Programme, whereas the remaining ones from Vietnam, and those from India are from programmes with an agricultural focus. In some cases, a combination of experiment design and activity plan was called «Action Sheet»; so please do not get confused about this expression. In most examples the names of the involved people and date and place were left out, since they are of no use to the readers of this document. Note that most examples were translated from Vietnamese and the English outcome is not always correct in terms of official language rules.

Contents

A. Overview of Idea Sheets

1. Planting timber trees (Dau Do, Sao Xanh) in allocated natural forest
2. Rattan management in allocated natural forest
3. Plant cinnamon in natural forest (in open places)
4. Planting fruit trees in home garden such as orange, mandarine, durian, mango, rambutan, ginger, pineapple and princess jackfruit
5. Planting cinnamon in coffee gardens
6. Bee raising in natural forest
7. Rattan propagation techniques
8. Planting young rattan in natural forest
9. Cinnamon germination in the nursery
10. Propagation methods for different types of rattan (Song Bot, Korlet)
11. Planting timber trees (Sao (Hopea species)) in open space in natural forest
12. Planting Beautiful Lady jackfruit (To Nu) on poor hill land near coffee garden but far away from water source
13. Planting Dong along streams in forest (dong leaves are used for wrapping sticky rice cakes)
14. Planting pepper in natural forest
15. Planting rattan (Song Bot) in natural forest
16. Planting bamboo (Luong) in natural forest
17. Propagation methods of precious timber tree (Cam Lai)
18. Planting timber trees (Cam Lai) in natural forest
19. Raising mushroom on dried, fallen trees in natural forest
20. Planting pepper, using live poles (Cassia (Muong Den), Erythrinia (Cay Vong))
21. Planting durian seedlings and grafted durian in coffee garden
22. Cinnamon nursery
23. Planting Muong Hoa Vang as hedgerow in coffee garden
24. Technique to graft durian
25. Plant timber trees (Dau Do, Sao Xanh) in natural forest
26. Mixed cropping of leafy vegetable and sun hemp
27. Enrichment of paddy straw (stack treatment)
28. Relay cropping after harvest of paddy crop
29. Breeding of improved variety of sheep
30. Dual purpose sorghum under rainfed condition

B. Overview of Experiment Sheets
1. Planting fruit trees (mango, orange, mandarine, rambutan, durian, princess jackfruit, ginger) in coffee gardens
2. Germination techniques for cinnamon seeds
3. Durian grafting technique
4. Propagation of Song Bot rattan in nursery
5. Planting Sao (Hopea species) in depleted forests
6. Planting pepper using live poles (Cassia and thorn Vong) in gardens

C. Overview of Experiment Sheets and Activity Plans
7. Planting grafted durian and durian grown from seed in coffee gardens
8. Planting princess jackfruit on uphill land where soil is poor and far from water sources
9. Management of 3 types of rattan (Song Bot, May Ruot Ga, May Cat) in allocated natural forests
D. **Overview of Action Sheets (a combination of experiment design and action plan)**

1. New rice variety (Q63) with new practices for summer/autumn crop on terrace fields
2. Production of non-seed persimmon seedlings in local nursery
3. Variety screening experiment of Bioseed (hybrid), CV1 and Q2 (non hybrid)
4. Trial on growing some new vegetable species
5. Growing soy bean DT 84 in autumn season
6. Trial on growing of autumn maize
7. Planting Do Trong (a medical plant) in home gardens
8. Growing some fodder plants for domestic animals
9. Growing wheat in spring season
10. Trial on growing spring water melon
11. Growing some short duration rice varieties as spring crop
12. Growing some maize varieties in autumn season
13. Propagation of Vai Thieu (improved litchi) by bud grafting
14. Trial on growing consecutive late autumn crop after spring rice with 3 rice varieties: Lai, Khang Dan and Bao Thai Lun
15. Trial on Q 63 ratoon crop in autumn season
A. Idea Sheets

Idea Sheet 1

Topic
Planting timber trees (Dau Do, Sao Xanh) in allocated natural forest

What do we want to investigate?
• Find out which one is stronger, the young seedlings picked from the forest or the ones germinated in the nursery
• Find out what is appropriate clearing dimension

Why do we want to investigate this?
• Economic value
• Enriching the forest for the next generations

Persons involved in developing the idea
Dieu Mip, Thi Chen, Thi Noch, Thi Grang, Cau, Toan, Phyong, Tuoi, Sen

Date and place
March 2000, Thon Hai (Dak R’Tih), Vietnam

---

Idea Sheet 2

Topic
Rattan management in allocated natural forest

What do we want to investigate?
• To find out the appropriate rattan management technique
• Does it need:
  + clearing around the rattan bush
  + pruning
  + fertilizer in the first year?

Why do we want to investigate this?
• Increase income
• Domestic use
• Protect forest
Idea Sheet 3

Topic
Plant cinnamon in natural forest (in open places)

What do we want to investigate?
Appropriate size of seedling for planting

Why do we want to investigate this?
Increase income from allocated forest

---

Idea Sheet 4

Topic
Planting fruit trees in home garden such as orange, mandarine, durian, mango, rambutan, ginger, pineapple and princess jackfruit

What do we want to investigate?
Nobody does it at the village; therefore we want to find out whether it is suitable to local conditions

Why do we want to investigate this?

- Meet local fruit requirements
- Unstable coffee price \(\Rightarrow\) diversifying income sources
- Take advantage of empty land in home gardens
Idea Sheet 5

Topic

Planting cinnamon in coffee garden

What do we want to investigate?

- Technique to cultivate cinnamon
- Appropriate spacing of cinnamon, with monospecies planted, interplanted with coffee and line planting around coffee gardens

Why do we want to investigate this?

- Economic value (bark used as medicine and spice)
- Protection function for coffee trees
- Soil enrichment
- Easy to be harvested

Idea Sheet 6

Topic

Bee raising in natural forest

What do we want to investigate?

Find out the way to raise bees in natural forest

Why do we want to investigate this?

- Take advantage of coffee flower, rubber flower and wild flowers in natural forest
- Easily consumed product
- Has good market
Idea Sheet 7

**Topic**
Rattan propagation techniques

**What do we want to investigate?**

Two suggested techniques to propagate rattan for planting in natural forest:
- Pick young rattan plant in the forest, take care of it in home nursery and bring it back to the forest
- Find out a technique for mass propagation from seed

**Why do we want to investigate this?**

- Need high numbers of rattan plants in rainy season
- Nursery technique for rattan product

---

Idea Sheet 8

**Topic**
Planting young rattan in natural forest

**What do we want to investigate?**

So far no experience and no trials in rattan planting in natural forest

✧ need to do a trial to know whether the planted rattan can survive and develop as well as natural rattan

**Why do we want to investigate this?**

- Protect natural forest
- Increase income
- Regular income because it is easy to sell in local area and in other places
- Preserve natural rattan which gradually becomes rare
- Domestic demand
- Contribute to confirm the ownership of natural forest
Idea Sheet 9

Topic
Cinnamon germination in the nursery

What do we want to investigate?
Find out appropriate nursery technique for cinnamon in local area

Why do we want to investigate this?
• To have a local supply source for seedlings
• The price of seedlings is lower if we ourselves can do the nursery

Idea Sheet 10

Topic
Propagation methods of rattan (Song Bot, Korlet)

What do we want to investigate?
Be able to propagate rattan at home

Why do we want to investigate this?
We want to have many seedlings at the same time to be planted in forest

Idea Sheet 11

Topic
Planting timber trees (Sao (Hopea species)) in open space in natural forest

What do we want to investigate?
There are already seedlings. Try to plant them in natural forest to see if they can survive

Why do we want to investigate this?
• Timber for the next generations
• Enrich poor forest by precious timber trees
Idea Sheet 12

Topic

Planting Beautiful Lady jackfruit (To Nu) in poor hill land near coffee garden but far away from water source

What do we want to investigate?

• To find out whether Beautiful Lady jackfruit can survive and produce fruit
• To find out whether Beautiful Lady jackfruit planting can decrease the erosion

Why do we want to investigate this?

• Sell fruits
• Take wood and timber

Idea Sheet 13

Topic

Planting Dong along streams in forest (Dong leaves are used for wrapping sticky rice cakes)

What do we want to investigate?

• To find out if this plant can survive
• To find out whether its leaves are as big as natural ones

Why do we want to investigate this?

• Easy to sell
• Improve the livelihood
Idea Sheet 14

Topic

Planting pepper in natural forest

What do we want to investigate?

• to find out if it can survive and produce fruit
• to find out which trees can used as pepper trellis
• to find out in which kind of forest pepper can survive (dense or clear forest; old or young forest)

Why do we want to investigate this?

• It is worth to take a trial because this idea is new
• Preserve forest trees (used as pepper trellis)
• Increase income
• Already seen people using live trees as pepper trellis

Idea Sheet 15

Topic

Planting rattan (Song Bot) in natural forest

What do we want to investigate?

To find out if it can survive because nobody has not done such thing

Why do we want to investigate this?

• Preserve natural forest
• Increase income
Idea Sheet 16

Topic
Planting bamboo (Luong) in natural forest

What do we want to investigate?
To find out whether it survives in natural forest

Why do we want to investigate this?
- Utilise bamboo shoots
- Take bamboo poles for making domestic tools
- Preserve and enrich forest

Idea Sheet 17

Topic
Propagation methods for precious timber tree (Cam Lai)

What do we want to investigate?
To find out the best way to propagate seedlings of Cam Lai

Why do we want to investigate this?
Make a trial to plant it in soft soil (in coffee garden or natural forest) because Cam Lai grows only on stony soil in the natural forest

Idea Sheet 18

Topic
Planting timber trees (Cam Lai) in natural forest

What do we want to investigate?
- To find out whether Cam Lai can survive in soft soil (no stones)
- The timber has high quality?

Why do we want to investigate this?
- The current natural forests have no longer precious timber trees
- For next generation
Idea Sheet 19

Topic
Raising mushroom on dried, fallen trees in natural forest

What do we want to investigate?
• To find out which species have high productivity
• To find out which species produce big and high quality mushroom

Why do we want to investigate this?
• There are many dried, fallen trees in natural forest
• Diversification of food resource for family
• Sell it to increase income
• Take advantage of dried, fallen trees in natural forest

Idea Sheet 20

Topic
Planting pepper, using live poles (Cassia *(Muong Den)*, Erythrinia *(Cay Vong)*)

What do we want to investigate?
To compare the productivity of pepper plants
• when using wooden pole and live one as pepper trellis
• when using Cassia and Erythrinia trees as pepper trellis

Why do we want to investigate this?
• Erythrinia (Cay Vong) is available in local area
• Cheap, appropriate for poor households (who have not enough money to buy wooden poles)
• Wooden poles are expensive (60,000 VND/one)
• Forest protection organisation catches anyone who cuts forest trees for wooden poles
• Leaves can be used as cattle feed and compost
Idea Sheet 21

Topic
Planting durian seedlings and grafted durian in coffee garden

What do we want to investigate?
- To find out the function of durian as wind barrier and shading tree
- To compare the effectiveness of coffee and mixed coffee/durian plantation

Why do we want to investigate this?
- To set up wind barrier for coffee
- Durian gives first harvest in short time and fruit production lasts for a long time.
- To know what is more advantageous, grafted or seed-grown durian
- Increase income

Idea Sheet 22

Topic
Cinnamon nursery

What do we want to investigate?
To find out the nursery technique for cinnamon plant production

Why do we want to investigate this?
- Want to plant cinnamon on the upper part of coffee garden because there is a difficulty of watering coffee plants there
- High demand in local area
Idea Sheet 23

Topic

Planting *Muong Hoa Vang* as hedgerow in coffee garden

What do we want to investigate?

To find out whether such a hedgerow functions as wind barrier, shading, erosion protection in coffee garden

Why do we want to investigate this?

- The current coffee garden is in bad condition due to strong wind
- Stop erosion in sloping land
- Increase the productivity of coffee in the garden with hedgerow

Idea Sheet 24

Topic

Technique to graft durian

What do we want to investigate?

To find out whether we can graft durian in the village

Why do we want to investigate this?

- High demand
- Do not know how to graft durian
- Grafted durian quickly produces fruit
- Saplings can be sold at high price (25000VND/plant)
Idea Sheet 25

Topic

Plant timber trees (*Dau Do, Sao Xanh*) in natural forest

What do we want to investigate?

- To find out which seedlings are stronger, the young ones picked in natural forest or the germinated ones in nursery
- Appropriate clearing dimension

Why do we want to investigate this?

- It is possible to take the seeds and germinate them in the nursery
- High economic value
- Forest enrichment and value for next generations

---

Idea Sheet 26

Topic

Mixed cropping of leafy vegetable and sun hemp

What do we want to investigate?

To grow leafy vegetable and sun hemp together and assess how far this will be useful. A small portion of the field will be allotted to grow only the leafy vegetable and the rest will have mixed crop (leafy vegetable and sun hemp). This will be used as a trial to compare the yield and also the profit.

Why do we want to investigate this?

- Sun hemp hay will be available during summer
- A portion of the sun hemp can be left for seed purpose which can either be sold or used for next season
- Selling of leafy vegetable yields income
- Feeding of sun hemp increases the fat content of milk
- Animals get more protein
- The health of the animal is improved
Idea Sheet 27

Topic
Enrichment of paddy straw (stack treatment)

What do we want to investigate?
To improve the nutritional value of paddy straw by stack treatment

Why do we want to investigate this?
• As green fodder is available during summer months, the treated urea straw when fed to milk animals, will yield the same amount of milk as in other seasons
• Farmers with more milk cattle can adopt this method as it saves time and labour
• It is economical for the farmers

Idea Sheet 28

Topic
Relay cropping after harvest of paddy crop

What do we want to investigate?
Relay cropping of Pillipesara and sun hemp after paddy crop harvesting, in order to have more leguminous fodder grass for animals available and for a more effective utilization of land in between two crops

Why do we want to investigate this?
• There is a gap of two months time between two paddy crops. So far the land is kept vacant in this time. With relay cropping the farmers get some fodder for their animals.
Idea Sheet 29

Topic
Breeding of improved variety of sheep

What do we want to investigate?
To improve the flock of Deccan black sheep by cross-breeding with the Nellore type of brown sheep

Why do we want to investigate this?
• Brown lambs grow faster and gain more weight compared to the black variety
• There is no need to remove hairy wool if the sheep are of brown type
• Disease resistance is more in brown variety when compared to black variety of sheep

Idea Sheet 30

Topic
Dual purpose sorghum under rainfed condition

What do we want to investigate?
To cultivate a new Jowar variety which yields more fodder and more grains.

Why do we want to investigate this?
• We think we can obtain more Jowar and more fodder through cultivating DPS under rainfed conditions.
B. Experiment Sheets

Experiment Sheet 1

Topic
Planting fruit trees (mango, orange, mandarine, rambutan, durian, princess jackfruit, ginger) in coffee gardens

What do we want to investigate?
Whether various types of fruit trees are suitable for cultivation in the village

Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?

• Intensification of land use
• Nutrition improvement
• Diversification and increase in household income

What exactly do we want to find out? What are the questions which the experiment should answer?

• Which fruit trees are the most suitable ones under the existing conditions?
• Is this type of orchard suitable in current situation?

What will be the design of the experiment?
Jackfruit and mango planted on boundaries
Orange: 12 plants (6 x 5 m)
Mandarine: 15 plants (6 x 5 m)
Custard apple: 40 plants (4 x 5 m)
Durian: 8 plants (10 x 12 m)
Rambutan: (10 x 12 m)
Total area: 8000 m²

What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?

• Yield, quality, economics of each tested species
• Economic potential of whole orchard

Where can we get additional information regarding this experiment?

Extension centre in Dak R'Lap
Long Dinh research centre
Tay Nguyen University
Experiment Sheet 2

Topic
Germination techniques for cinnamon seeds

What do we want to investigate?
Find out a locally functioning germination technique for cinnamon

Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?

- Need cinnamon for planting, but seedlings are expensive compared to those produced at home
- Farmers do not know seed germination techniques
- Seeds are not available locally
- Forestry enterprise has already done this, and can provide technical assistance
- Some farmers were trained
- Want to have more seedlings for planting

What exactly do we want to find out? What are the questions which the experiment should answer?
Find out germination techniques of cinnamon in home conditions
- seed treatment
- germination
- management at home

What will be the design of the experiment?
Seed treatment, then put in polythene bags, management, gradually reduce shade

What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?

- Number and quality of seedlings
- Quality: height, leaf stages, survival rate, strength of seedlings

Where can we get additional information regarding this experiment?
Quang Tan forestry enterprise
Farmers trained already
Experiment Sheet 3

Topic
Durian grafting technique

What do we want to investigate?
Find out suitable grafting technique: bud grafting, canopy grafting

Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?
- Unsuccessful grafting in home garden before
- Extension will assist in grafting techniques
- Will be able to produce large quantities of good quality durian seedlings
- Save money because grafted seedlings from outside are expensive

What exactly do we want to find out? What are the questions which the experiment should answer?
- Suitable techniques of grafting
- Rate of survival
- Number of fruits for each harvest
- Quality of the fruits

What will be the design of the experiment?
Find out suitable age for root stock: 6 months, 12 months; bud grafting, canopy grafting

What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?
- Growth of grafted durian
- Survival rate
- When is the first harvest?
- Economics

Where can we get additional information regarding this experiment?
Extension centre, Tay Nguyen university, Long Dinh research centre
**Experiment Sheet 4**

**Topic**

Propagation of *Song Bot* rattan in nursery

**What do we want to investigate?**

Find out technique of propagation

**Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?**

- There is need for seedlings
- Soil is suitable, *Song Bot* was tested in the area
- No available experience in *Song Bot* propagation
- So far seeds are not seen, small plants in the forest are scarce
- Labour/maintenance is not complicated (maintenance needed only in the first year)

**What exactly do we want to find out? What are the questions which the experiment should answer?**

- Suitable methods to produce seedlings from trunk, root, seeds
- What treatment must be applied for each organ to get seedlings
- Best techniques in nursery (watering, fertilisers applied, shed)

**What will be the design of the experiment?**

*(Drawing)*

**What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?**

- Number of surviving seedlings
- Measure: quality, height, colour

**Where can we get additional information regarding this experiment?**

Literature in library
Experiment Sheet 5

Topic

Planting Sao (Hopea species) in depleted forests

What do we want to investigate?

Can Sao planted by people survive in the forest?

Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?

- Availability of seedlings (propagation technique known)
- Sao is a tree which grows naturally in the area
- Current forest is very poor
- Create timber for next generations
- Contribute to natural forest conservation
- Successful experiment can be replicated

What exactly do we want to find out? What are the questions which the experiment should answer?

- Can it survive?
- Comparison of survival rate between seedlings from nursery and those taken from the forest
- Find out what is the most easy method for planting (less cost and suitable for farmers)

What will be the design of the experiment?

- Selection of site in the forest
- One plot will be planted with nursery seedlings (100), one with bare root plants (100)

What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?

- If 4/10 survive $\Rightarrow$ success (after 1 year)
- Quality of plants
- Cost of inputs, labour, seedlings

Where can we get additional information regarding this experiment?

Quang Tan forestry enterprise
Experiment Sheet 6

Topic

Planting pepper using live poles (Cassia and thorn Vong) in gardens

What do we want to investigate?

- Capacity of producing fruit of pepper on live poles
- Yield of pepper on 2 types of live poles

Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?

- Planting pepper on live poles can reduce cost
- Increase income for households
- Planting pepper on live poles can create shade for pepper, so reduce watering

What exactly do we want to find out? What are the questions which the experiment should answer?

- Can Cassia and thorn Vong be used as live poles for pepper?
- Which live pole is the best for pepper?
- How do live poles compare with the commonly used timber poles, e.g. economically, concerning labour requirements, longevity etc.?

What will be the design of the experiment?

- 20 pepper plants for each type of poles
- Doing experiment in separate plots for comparison

What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?

- If 15/20 survive ⇒ success
- Pepper bear fruits after 3 years of planting ⇒ success
- After 5 years, each pole gives 1 kg of dried pepper ⇒ success
- Yield of pepper on each type of pole

Where can we get additional information regarding this experiment?

- Experience exchange with other places (Gia Nghia, Dak Nong)
- Thanh Son farm
C. Experiment Sheets and Activity Plans

Experiment Sheet 7

Topic
Planting grafted durian and durian grown from seeds in coffee gardens

What do we want to investigate?
- Yield of coffee with and without durian
- Yield of grafted durian and durian grown from seed
- Compare quality and yield of fruit of grafted durian and durian grown from seed
- Overall income from coffee gardens with grafted durian and durian grown from seed

Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?
- It would be good to have durian as shade for coffee
- Grafted durian is expensive, so want to try whether durian grown from seed is beneficial too
- High price of durian and easy to market, so increase income for households

What exactly do we want to find out? What are the questions which the experiment should answer?
- Find out efficiency of durian trees as shade for coffee
- Compare grafted durian and durian grown from seeds to see which type is better
- Whether durian affects coffee yield

What will be the design of the experiment?
Total area for trial: 3000 sq.m., divided into 3 plots, each plot 1000 sq.m.: coffee with grafted durian, coffee with durian planted by seeds, coffee alone

What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?
- Yield of coffee
- Ability of durian to bear fruits
- Costs for labour and inputs
- Prices of the 2 types of durian
- Overall income from 3 plots

Where can we get additional information regarding this experiment?
Dak R'Lap extension station, household gardens in Dak Mil, Tay Nguyen University
## Activity Plan

<table>
<thead>
<tr>
<th>Activity</th>
<th>Month</th>
<th>Materials</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Study visit to Long Khanh</td>
<td>1</td>
<td>x</td>
<td>SFSP, TN Uni, enterprise</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2. Site selection</td>
<td>3</td>
<td>x</td>
<td>TN Uni, Ext., HHs</td>
</tr>
<tr>
<td>3. Experiment design</td>
<td>4</td>
<td>x</td>
<td>TN Uni, Ext., HHs</td>
</tr>
<tr>
<td>2. Making pits for planting</td>
<td>5</td>
<td>x</td>
<td>13 households</td>
</tr>
<tr>
<td>3. Manuring (organic, phosphate)</td>
<td>6</td>
<td>x</td>
<td>Households, TN Uni, Extension</td>
</tr>
<tr>
<td>4. Looking for suitable seed and seedlings</td>
<td>7</td>
<td>x</td>
<td>TN Uni, SFSP</td>
</tr>
<tr>
<td>5. Transportation of seedlings to the site</td>
<td>8</td>
<td>x</td>
<td>Households</td>
</tr>
<tr>
<td>6. Planting</td>
<td>9</td>
<td>x</td>
<td>Households</td>
</tr>
<tr>
<td>7. Fencing</td>
<td>10</td>
<td>x</td>
<td>Households</td>
</tr>
<tr>
<td>8. Observation (replacement of dead plants)</td>
<td>11</td>
<td>x</td>
<td>Households</td>
</tr>
<tr>
<td>9. Fertilising with inorganic fertiliser (3 times)</td>
<td>12</td>
<td>x</td>
<td>410 kg of NPK</td>
</tr>
<tr>
<td>10. Follow-up</td>
<td></td>
<td>x</td>
<td>Households, TN Uni, Extension</td>
</tr>
<tr>
<td>11. Weeding</td>
<td></td>
<td>x</td>
<td>Households</td>
</tr>
<tr>
<td>12. Watering</td>
<td></td>
<td>x</td>
<td>Households</td>
</tr>
<tr>
<td>13. Progress reports</td>
<td></td>
<td>x</td>
<td>Commune ext.</td>
</tr>
</tbody>
</table>

Grafted seedlings: 205; seedlings from seeds: 205; total area: 5 ha with 13 households. Organic manure: 4100 kg; NPK: 410 kg; pesticide: Paradan: 8 kg, Avil: 1 litre. 13 households: Dieu Lanh, Dieu Glah, Dieu Raih, Dieu Tam, Thi Loi, Thi Gion, Thi Dem, Thi Djang, Dieu Ndai, Thi Don A, Thi chen, Thi Noch, Thi Nonh
Experiment Sheet 8

Topic

Planting princess jackfruit on uphill where soil is poor and far from water sources

What do we want to investigate?

• Whether the jackfruit can survive
• Whether the jackfruit can bear fruits
• Whether the jackfruit can reduce soil erosion

Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?

• No one has planted the jackfruit uphill yet
• We can sell the fruit
• Timber can be used for households use and firewood
• Can be used as cattle grazing area
• Large areas with poor soil in the village will be utilized

What exactly do we want to find out? What are the questions which the experiment should answer?

Find out whether the jackfruit is suitable and brings income for family on the poor soil areas

What will be the design of the experiment?

10 households participate, each household 0.1 ha

Density of the trees: 3m x 5m, 4 x 5, 5 x 5, depending on topography of the area

What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?

• 7 out of 10 survive ⇒ successful
• After 3-5 years, the trees bear fruits ⇒ successful

Where can we get additional information regarding this experiment?

Extension station in Long Khanh, Dong Nai

Tay Nguyen University
## Activity Plan

<table>
<thead>
<tr>
<th>Activity</th>
<th>Month</th>
<th>Materials</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Study trip to Long Khanh, Dong Nai</td>
<td></td>
<td>vehicle, accommodation, per diem</td>
<td>SFSP, TN uni, enterprise</td>
</tr>
<tr>
<td>2. Site selection</td>
<td></td>
<td>vehicle, accommodation, per diem</td>
<td>Ext., TN uni, farmers</td>
</tr>
<tr>
<td>3. Experiment design</td>
<td></td>
<td>vehicle, accommodation, per diem</td>
<td>Ext., TN uni, farmers</td>
</tr>
<tr>
<td>4. Clear vegetation</td>
<td></td>
<td></td>
<td>10 households</td>
</tr>
<tr>
<td>5. Making pits for planting</td>
<td></td>
<td></td>
<td>10 households</td>
</tr>
<tr>
<td>6. Manuring, filling up the holes</td>
<td></td>
<td>organic manure</td>
<td>10 households</td>
</tr>
<tr>
<td>7. Fencing</td>
<td></td>
<td></td>
<td>10 households</td>
</tr>
<tr>
<td>8. Transportation of seedlings and fertilisers to the sites</td>
<td></td>
<td>500 seedlings, vehicle, fertilisers</td>
<td>SFSP, TN uni, ext.</td>
</tr>
<tr>
<td>10. Maintenance</td>
<td></td>
<td></td>
<td>Farmers, Ext.</td>
</tr>
<tr>
<td>11. Fertilising</td>
<td></td>
<td>inorganic fertilisers, vehicle, accommodation, per diem</td>
<td>SFSP, Ext, TN uni, farmers</td>
</tr>
<tr>
<td>12. Replacement of dead plants</td>
<td></td>
<td></td>
<td>Farmers, Ext.</td>
</tr>
<tr>
<td>13. Observation</td>
<td></td>
<td></td>
<td>Ext, TN uni, farmers</td>
</tr>
<tr>
<td>14. Protection work</td>
<td></td>
<td></td>
<td>Farmers</td>
</tr>
<tr>
<td>15. Progress reports</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Experiment Sheet 9

Topic
Management of 3 types of rattan (*Song Bot, May Ruot Ga, May Cat*) in allocated natural forests

What do we want to investigate?

• Find out suitable management practices
• Compare productivity of non-managed rattan and managed rattan

Why exactly do we want to investigate this? What is the underlying problem or opportunity? What would be the benefit if the experiment is successful?

• Rattan would have more rapid growth, quick harvest
• Increase household income
• To contribute to the management and preservation of natural forest

What exactly do we want to find out? What are the questions which the experiment should answer?

• Comparison of economic efficiency with and without maintenance
• Compare the differences between rattan with and without fertiliser
• Rattan bushes in experiment must be cleared around the bush, weak branches must be pruned

What will be the design of the experiment?

Select 1 ha of natural forest with 3 types of rattan, clearing around the bushes, pruning of weak branches. Using green manure in the forest and inorganic fertiliser (NPK)

Select 20 bushes for each type (relatively similar) and put fertilisers as mentioned before

What do we need to know to be able to tell whether the experiment was successful? What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?

• Growth rate of rattan (length of branches, quality of rattan: crispy or flexible)
• Comparison of length, girth in each bush
• Labour, input and other costs
• Income from each type of fertiliser used

Where can we get additional information regarding this experiment?

• Local experiences from other villages
• Extension centre and research organisation
<table>
<thead>
<tr>
<th>Activity</th>
<th>Month</th>
<th>Responsibility</th>
<th>Materials</th>
<th>Activity Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Selection of experiment plots</td>
<td>1</td>
<td>Dieu Mea, 9 HHS, TN Uni, Extension, Enterprise</td>
<td>3 colour paints</td>
<td></td>
</tr>
<tr>
<td>2. Clearing small bushes</td>
<td>2</td>
<td></td>
<td>Scissors</td>
<td></td>
</tr>
<tr>
<td>3. Embedding</td>
<td>3</td>
<td></td>
<td>Bags to carry fertilisers, NPK 60 kg, 1 bush/2 times/year</td>
<td></td>
</tr>
<tr>
<td>4. Fertilising</td>
<td>4</td>
<td></td>
<td>paints, ruler, x</td>
<td></td>
</tr>
<tr>
<td>5. Observation</td>
<td>5</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6. Measurement</td>
<td>6</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>7. Harvesting after 3 years</td>
<td>7</td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Activity 4: Fertilising includes the application of NPK 60 kg per bush twice a year.
- Activity 5: Observation involves the use of paints and a ruler.
- Activity 7: Harvesting after 3 years refers to the final step in the activity plan, indicating the completion of the experiments.
D. Action Sheets

Action Sheet 1

1. Name of experiment

New rice variety (Q63) with new practices for summer/autumn crop on terrace fields

2. Place

Nam Cam village, Cao Thuong commune, Ba Be district

3. Involved persons

<table>
<thead>
<tr>
<th>Farmers</th>
<th>Supporting persons</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nhat, Nhat, Si, Nam</td>
<td>Helvetas staff, extensionists, farmer trainers</td>
<td></td>
</tr>
</tbody>
</table>

4. What will be done?

- Plant and manage Q63 in summer/autumn crop from April to July
- Each household plants on 500m²

5. Reasons for doing this experiment

- Never uses Q63 before
- Increase the yield, income for HHs

6. What question will be answered?

- Is it possible to cultivate Q63 in Nam Cam
- Yield in comparison with local variety
- Learn about the appropriate practices for Q63

7. Expected results

- Higher yield: 7 ganh/500 m²
- New practices can be expanded to other villagers
- Q63 is suitable for local use

8. Assessment and evaluation

8a. Criteria for measurement

- Length of the ears
- Number of grains per ear
- Number of ganh/500m²
- Labour requirements, investment
8b. General evaluation

- Field visit
- Pilot harvest
- Economic results

9. Action plan

<table>
<thead>
<tr>
<th>Activity</th>
<th>People</th>
<th>Time</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Design experiment and a journal format to keep track of on-going activities</td>
<td>PO, farmers</td>
<td>24.03</td>
<td></td>
</tr>
<tr>
<td>2. Form an implementation group (group leader, participants), discuss and agree on experiment design, journal format</td>
<td>PO, farmers</td>
<td>24.03</td>
<td></td>
</tr>
<tr>
<td>3. Have a look and select experiment field and practice fields</td>
<td>PO, FT, HHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Seed, training on IPM method</td>
<td>PO, IPM farmer trainer</td>
<td>03.00</td>
<td></td>
</tr>
<tr>
<td>5. Soil preparation for sowing</td>
<td>HHs, FT</td>
<td>04.00</td>
<td>Green manure</td>
</tr>
<tr>
<td>6. Taking care</td>
<td>HHs, FT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Soil prepare for transplanting</td>
<td>HHs, FT</td>
<td>05.00</td>
<td>Green manure, fertiliser</td>
</tr>
<tr>
<td>8. Transplanting</td>
<td>HHs, PO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. First weeding and hoeing and 1st application of fertilizer</td>
<td>HHs</td>
<td>06.00</td>
<td>NPK fertilizers</td>
</tr>
<tr>
<td>10. Second weeding and 2nd fertilizer application</td>
<td>HHs</td>
<td>07.00</td>
<td>K fertilizer</td>
</tr>
<tr>
<td>11. Field visit</td>
<td>HHs</td>
<td>07.00</td>
<td>Journal</td>
</tr>
<tr>
<td>12. Sample harvest</td>
<td>HHs, PO</td>
<td>07.00</td>
<td></td>
</tr>
<tr>
<td>13. Final evaluation and, plan for future</td>
<td>Nam Cam</td>
<td></td>
<td>Documents, papers</td>
</tr>
</tbody>
</table>

Journal book for experiment

1. Experiment layout
Who does what, where

2. Diary

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>HH 1</th>
<th>HH 2</th>
<th>HH 3</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Date of sowing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Date of transplanting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>First fertiliser application</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>First weeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Take care, find out pests</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Second weeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Second fertiliser application</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Applying fertiliser when young flowers come up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Date of flowering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Date of maturity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11 Field visit and sample harvest
12 Harvest
13 Final evaluation

3. Criteria for evaluation

<table>
<thead>
<tr>
<th>Variety</th>
<th>Criteria</th>
<th>HH1</th>
<th>HH 2</th>
<th>HH3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Field area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kg of seeds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average length of 10 ears</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of grains/10 ears</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of ganh/500 m²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of labour hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investments (for fertilizer, insecticide and fungicide, seed)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Field visits – observations, comments and solutions suggested by visiting person(s)

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>HHs present</th>
<th>Findings, remarks</th>
<th>Solutions</th>
<th>Name/signature of visitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Evaluation within experiment group or experiment interest group

- Growth duration of the plant
- Yield
- Economic data

6. Final evaluation of experiment

- Lessons learnt: good, bad, what to be improved
- Programme for next crop experiments (next year)
- Proposal/recommendation to share the results of experiment (with the communes, district)
Action Sheet 2

1. Name of experiment

Production of non-seed persimmon seedlings in local nursery

2. Place

Khuoi Tang village, Cao Thuong Commune, Ba Be district

3. Involved persons

<table>
<thead>
<tr>
<th>Farmers</th>
<th>Supporting persons</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoang Van Thang, Nguyen Van Chu</td>
<td>Khanh, Helvetas staff, Babe ARDO staff</td>
<td>Son (TNUN)</td>
</tr>
</tbody>
</table>

4. What will be done?

- Produce persimmon seedlings by 2 methods: root cutting and grafting
- Hoang Van Thang: 300 seedlings
- Nguyen Van Chu: 200 seedlings
- Start in November 2000 and finish by March 2002

5. Reasons for doing this experiment

- Lack of the seedlings
- Seedlings produced with local method (root cutting) do not grow well
- Farmers do not trust the seedlings in the market even if they look good (high plant)
- Local variety is of good quality, good price

6. What questions will be answered?

- The persimmon which produce roots itself die soon
- Learn method to graft, make roots
- Able to produce persimmon seedlings

7. Expected results

- Successful seedlings: 80%
- High quality seedlings to be sold to farmers
- Expand the knowledge largely to the villagers, commune
8. Assessment and evaluation

8a. Criteria for measurement

• Measurement:
  Number of seedlings alive after grafting, root cutting
  High quality of seedling after grafting and root cutting which can be sold

8b. General evaluation

9. Action plan

<table>
<thead>
<tr>
<th>Activity</th>
<th>People responsible</th>
<th>Time</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Design experiment and journal format to keep track of on-going activities</td>
<td>Khanh, HHs</td>
<td>07.00</td>
<td></td>
</tr>
<tr>
<td>2. Form an implementation group (group leader, participants), discuss and agree on experiment design, journal format</td>
<td>Khanh, HHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Have a look and select experiment garden</td>
<td>Khanh, HHs, ARDO</td>
<td>08.00</td>
<td></td>
</tr>
<tr>
<td>4. Design the garden</td>
<td>Khanh, HHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Look for varieties, fertilizer</td>
<td>Khanh, ARDO</td>
<td>11-12.00</td>
<td>Varieties, fertiliser</td>
</tr>
<tr>
<td>6. Soil preparation, fence making</td>
<td>HHs</td>
<td>11-12.00</td>
<td>Working tools</td>
</tr>
<tr>
<td>7. Sowing</td>
<td>HHs, Khanh, ARDO</td>
<td>01.01</td>
<td>Variety</td>
</tr>
<tr>
<td>8. Take care, protection</td>
<td>HHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Grafting</td>
<td>ARDO, Khanh, HHs</td>
<td>12 – 01.02</td>
<td>Scissors, knife, plastic bag, chemicals</td>
</tr>
<tr>
<td>11. Take care</td>
<td>HHs</td>
<td></td>
<td>Journal</td>
</tr>
<tr>
<td>12. Summary, plan for future</td>
<td>Nam Cam</td>
<td></td>
<td>Documents, papers</td>
</tr>
</tbody>
</table>
Journal book for experiment

1. Experiment chart
Who does what, where

2. Diary

<table>
<thead>
<tr>
<th>No</th>
<th>Activities</th>
<th>HH 1</th>
<th>HH 2</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date of sowing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Date of emergence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of shoots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Date of grafting, root cut</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Numbers of well growing graft, roots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Date of exporting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: No numbers here, leave space for more activities to be inserted like information on weather conditions etc.

3. Criteria for evaluation

<table>
<thead>
<tr>
<th>Variety</th>
<th>Criteria</th>
<th>HH 1</th>
<th>HH 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-seed persimmon</td>
<td>Number of seedlings alive after sowing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of seedling alive after grafting, root cutting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of seedlings with quality enough to be sold</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Solutions applied

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>HHs present</th>
<th>Findings, remarks</th>
<th>Solutions</th>
<th>Name/signature of visitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Evaluation within conducting group
Comparison of the two methods (grafting, root cutting)

- Grafting: … … % seedling alive
- Root cutting: … … % seedlings alive

6. Summary of experiment

- Lessons learnt: good or bad things, what to be improved
- Programme for next experiment (next year)
- Proposal/recommendation to share the results of experiment (with the communes, district). Should be able to answer the question: why the local practice does not work (the seedlings die soon).
Action Sheet 3

1. Name of experiment
Variety screening experiment of Bioseed (hybrid), CV1 and Q2 (non hybrid)

2. Place
At Nam Cam village, Cao Thuong commune, Ba Be district

3. Involved persons

<table>
<thead>
<tr>
<th>Farmers</th>
<th>Supporting persons</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nhey, Yeu, Nheu</td>
<td>Le Thi Luong – Helvetas staff, Nong Thi Loan – IPM farmer trainer of Cao Thuong commune, Hoang Thi Sen – farmer trainer on IPM from other commune</td>
<td></td>
</tr>
</tbody>
</table>

4. What will be done?
• Test the suitability of the 3 varieties for the summer/autumn crop on hill land (screening experiment of 3 varieties)
• Each household gets 1 kg of each variety, total 3 kg per household on the area of 600 m2
• Use new cultivation techniques to plant maize
• Arrange one field per household for the experiment, not too far away (easy to access). Should not be flooded in rainy season
• The other two do the experiments in the home field according to their traditional practices and their economic condition

5. Reasons for doing this experiment
• Local maize varieties are degenerated, too low yield which cause shortage of food
• These new varieties have never been planted before
• To learn appropriate cultivation techniques

6. What question will be answered?
• Are these varieties suitable to local conditions for autumn season on slopy land?
• Which one is the best?
• Which has the highest yield?
• How do the new technologies for these differ from those for local varieties?
• Which varieties will be able to produce seed locally for next crop?
• How to combine new technology and local knowledge. What to keep, what to be replaced?
7. Expected results

- Able to select the suitable one for producing seed for next crop
- Have enough food for daily consumption of people and animals
- Expand the knowledge and experiences gained and extend them throughout the village

8. Assessment and evaluation

8a. Criteria for measurement

- How many seed per cob (count 10 cobs for each variety)
- How many plants have 2 cobs?
- Weight of fresh cobs from a given area (how many baskets of fresh cobs per area)
- How many fallen plants in a certain area

8b. General evaluation

- Is the duration shorter or longer than local variety (how many days)
- Which variety has high pest resistance compared to local varieties
- Number of cobs eaten by termites after 2 months of storage
9. Action plan

<table>
<thead>
<tr>
<th>Activity</th>
<th>People in charge</th>
<th>Time</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Design a experiment and journal format to keep track of ongoing activities</td>
<td>Helvetas staff, farmers</td>
<td>24.03</td>
<td>Papers, format</td>
</tr>
<tr>
<td>2. Form an experiment group (group leader, discuss and agree on experiment sheet, journal format)</td>
<td>Luong, Loan, 3 HHs</td>
<td>03.00</td>
<td></td>
</tr>
<tr>
<td>3. Field visit and select experiment fields and site preparation (site selection, design experiment layout)</td>
<td>Luong, 3 HHs, farmer trainers</td>
<td>03.00</td>
<td></td>
</tr>
<tr>
<td>4. Prepare and distribute seeds and technical guidelines (papers on IPM on maize)</td>
<td>Luong, Loan, Sen</td>
<td>Before 30.03</td>
<td>6 kg of Q2 and CV1 (NB help)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 kg of Bioseed purchased by BB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IPM Guidelines</td>
</tr>
<tr>
<td>5. Soil preparation and setting up the experiment fields</td>
<td>HHs, Loan</td>
<td>Before 30.03</td>
<td>P fertilizer for each experiment field</td>
</tr>
<tr>
<td>6. Sow maize.</td>
<td>HHs, Loan, Luong</td>
<td>10-12.03</td>
<td>Seeds</td>
</tr>
<tr>
<td>7. Re-sow death plants, thinning (keep 2 plants/hole)</td>
<td>HHs, Loan</td>
<td>20-27.03</td>
<td>Seeds</td>
</tr>
<tr>
<td>8. First earthing-up and hoeing and fertilizer application, discussion on the site (when 2/3 of the plants have 3 to 4 leaves)</td>
<td>Luong, Loan, Sen, 3 HHs, interested farmers</td>
<td></td>
<td>N&amp;P fertilizers, journal</td>
</tr>
<tr>
<td>9. Second earthing-up and hoeing and fertilizer application, discussion (when 2/3 of plants have 7 to 9 leaves)</td>
<td>Luong, Loan, Sen, 3 HHs, interested farmers</td>
<td></td>
<td>N&amp;P fertilizers, journal</td>
</tr>
<tr>
<td>10. Field visit, discussion before harvest (2/3 of the plant have corn cover turning yellow) and discussion, do pre-evaluation of experiment measures, count fallen plants and set the day for harvesting and do evaluation of each experiment</td>
<td>Luong, Loan, Sen, 3 HHs, interested villagers</td>
<td></td>
<td>Journal</td>
</tr>
<tr>
<td>11. Harvest and evaluation (weigh, count the seeds)</td>
<td>HHs, Loan, Luong</td>
<td></td>
<td>Journal</td>
</tr>
<tr>
<td>12. Final evaluation of the experiment and plan for future</td>
<td>Luong, Loan, commune leaders, villagers of Nam Cam</td>
<td></td>
<td>Documents, papers</td>
</tr>
</tbody>
</table>

From 6 to 10 steps, the PTD experiment is combined with IPM-FFS (transfer techniques and discuss at the field in practical way).

Journal book for experiment

1. Experiment layout
Name of HH, field size, who does what, where (how are the practices and experiment fields arranged)

2. Diary work

<table>
<thead>
<tr>
<th>No</th>
<th>Activities</th>
<th>HH 1</th>
<th>HH 2</th>
<th>HH 3</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Date of sowing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Date of beating up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 3  | Rate of germination
Growth status
Weather impact on plants (e.g. draught, rain) |      |      |      |        |
<table>
<thead>
<tr>
<th></th>
<th>First earthing up, hoeing and fertiliser application (NPK)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Pests (date of appearance, date of pesticide application)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diseases (when, how treated)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Second hoeing, earthing up and fertiliser application</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>The date that 2/3 of plants have cob cover turning yellow (ripening)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Harvesting day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Final evaluation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3. Criteria for evaluation

<table>
<thead>
<tr>
<th>Variety</th>
<th>Criteria</th>
<th>HH 1</th>
<th>HH 2</th>
<th>HH 3</th>
</tr>
</thead>
</table>
| CV 1    | • Fallen plants  
          • Number of basket/ 600m2  
          • No. of plants having 2 cobs  
          • Number of cobs eaten by termites |   |   |   |
| Q 2     | ...       |   |   |   |
| Bioseed | ...       |   |   |   |

### 4. Field visits – observations, comments and solutions suggested by visiting person(s)

<table>
<thead>
<tr>
<th>No</th>
<th>Date</th>
<th>HHs present</th>
<th>Observations and comments</th>
<th>Solutions suggested</th>
<th>Name/signature of visitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 5. Evaluation within experiment group

- Prioritize / determine variety as the best one: 1. ... due to ..., 2. ... due to ..., 3. ... due to ...
- Determine which variety is best for seed production: ... because ...

### 6. Final evaluation of experiment

- Lessons learnt: good, bad, what to be improved
- Programme for next crop experiments (next year)
- Proposal/recommendation to share the results of experiment (with the communes, district)
Action Sheet 4

1. Name of experiment

Trial on growing some new vegetable species

2. What will be done?

- Grow vegetables in vegetable gardens in May and harvest them in September
- The households sow the seeds and transplant them after 40 days
- Helvetas project will support them with seeds and the group heads will divide the seeds among the groups

3. Reasons for doing this experiment

- Local cabbage and kohlrabi are no longer good; they yield small kohlrabi and cabbages and low percentage of forming heads.
- They want to make trial on growing onion
- Lung Rao is a good place for growing vegetables and there is a market for it

4. What question will be answered?

- Whether cabbage will make big heads and the percentage of forming heads is better?
- If kohlrabi will be big?
- To find out if farmers can grow onions in Lung Rao? Will they get big onions?
- Can they produce cabbage and onion seeds at Lung rao?

5. Expected results

Cabbage
- Big heads and 90% of cabbage plants will form heads
- Farmers can produce seeds for at least 5 years
- They can sell them with high price
- The whole village can grow this kind of vegetable
- It’s less affected by pest and diseases

Kohlrabi
Big kohlrabi, high prices, less pest and the whole village can grow it

Onions
Onions can grow well at Lung Rao with big onions and can produce seeds

6. Assessment and evaluation

6a. Criteria for measurement
- Count the number of plants which offer big head and the number of plants which yield at all
• weigh each head to see how many kilo per head

6b. General evaluation
• Interest group and farmers in the village will visit each garden to assess which garden is good and which garden is bad to draw experience
• The possibility to sell them to markets: Can the farmers sell them for high price?
• How many other households would want to grow these new species?

7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule</th>
<th>Material needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation of 3 groups according to what they are interested in</td>
<td>3 groups - cabbage, onion, - kohlrabi</td>
<td>May</td>
<td>3 interest groups</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Seeking for seeds</td>
<td>Helvetas staff</td>
<td>May</td>
<td>Funds, document</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Soil preparation for seed sowing at small garden</td>
<td>The 3 groups and their group heads</td>
<td>Mid May</td>
<td>Seeds</td>
<td>Farmers will prepare manure, fences and material to cover seed beds</td>
</tr>
<tr>
<td>4</td>
<td>Preparation of soil in big gardens, fencing</td>
<td>Every household of the groups</td>
<td>Mid June</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Evaluation of nursery gardens</td>
<td>Households, group heads and village head, helvetas project staff</td>
<td>End of June</td>
<td>Notebooks, pens</td>
<td>Group heads will note down comments and observations</td>
</tr>
<tr>
<td>6</td>
<td>Begin to transplant vegetables</td>
<td></td>
<td>End of June</td>
<td>Young plants, Nursery men</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Looking after the vegetables (water, fertilizer, pesticide)</td>
<td>Households</td>
<td>From June to November</td>
<td>Manure, fertilizers, pesticides</td>
<td>Each household will do it by themselves</td>
</tr>
<tr>
<td>8</td>
<td>Pre-harvest evaluation</td>
<td>Households, villagers, commune, helvetas project staff</td>
<td>September</td>
<td>Pens, notebooks</td>
<td>Some products</td>
</tr>
<tr>
<td>9</td>
<td>Harvest</td>
<td>Households</td>
<td>September - November</td>
<td>Manure, fertilizer</td>
<td>Roots of some cabbage which offer big heads</td>
</tr>
<tr>
<td>10</td>
<td>Production of seeds for next crops (cabbage, onion)</td>
<td>Households</td>
<td>November to March</td>
<td>Supporting poles</td>
<td></td>
</tr>
</tbody>
</table>
Action Sheet 5

1. Name of experiment
Growing soy bean DT 84 in autumn season

2. Place
Hilly fields of interested farmers at Thai Hoc commune, Lung Rao village, Nguyen Binh district

3. What will be done?
- To explore the suitability of soya-bean grown according to technical guidance on soil for maize
- Each household will do the experiment in an area of not more than 200 m²

4. Reasons for doing this experiment
- Their old soya-bean variety is long duration and low yield
- Farmers mostly grow soya-bean according to their traditional practices
- Soya-bean leaves make soil more fertile

5. What questions will be answered?
- Is the variety DT 84 high yielding under the local conditions?
- Is DT 84 suitable in autumn season in the soils of Lung Rao commune?
- Will the involved households learn and follow the technical guidance?

6. Expected results
- Soya-bean DT 84 will offer high yield and is suitable with the conditions of soils in Lung rao
- Households will learn and know how to grow soya-beans according to the technical guidance

7. Assessment and evaluation

7a. Criteria for measurement
- Weigh or measure the quantity of harvested soya-beans and compare them with initial seeds
- Time from sowing to harvesting

7b. General evaluation
- Make comparison on yield, growing duration of DT 84 with old local varieties
- How many more households would want to grow this variety of soya-bean
- Evaluate the influence of farming techniques to yield
- Make assessment in plenary to find out what is good, what is not good, to draw experience
## 8. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (lunar calendar)</th>
<th>Material needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation of interest group</td>
<td>Interested farmers, head: Mr. Dieu</td>
<td>May</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Clarification of each household's area</td>
<td>Group head with interested farmers</td>
<td>Beginning of June</td>
<td></td>
<td>Group head: responsible for clarification of area Helvetas staff: responsible for seeds</td>
</tr>
<tr>
<td>3</td>
<td>Learning new techniques designing one model plot on land of one household</td>
<td>Interest group Helvetas project staff</td>
<td>Mid June</td>
<td>• Seeds • Nitrogen fertilizer • Potassium</td>
<td>Notebook and pens for group head</td>
</tr>
<tr>
<td>4</td>
<td>Sowing soya-bean</td>
<td>Farmers help each other</td>
<td>Mid June</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Looking after soya-bean</td>
<td>Interest group Helvetas project staff</td>
<td>June, July, August</td>
<td>• Potassium</td>
<td>One model plot, then each household will follow</td>
</tr>
<tr>
<td>6</td>
<td>Pre-harvest evaluation</td>
<td>Interest group Helvetas project staff</td>
<td>August, September</td>
<td></td>
<td>General comments</td>
</tr>
<tr>
<td>7</td>
<td>Harvest</td>
<td>Household</td>
<td>September</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Post-harvest evaluation</td>
<td>Group head with interested farmers</td>
<td></td>
<td></td>
<td>Weighing the yield / 200 m²</td>
</tr>
<tr>
<td>9</td>
<td>Propaganda and encouragement for this soya-bean and ready to supply the seeds to other farmers</td>
<td>Interest group</td>
<td>After September</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Action Sheet 6

1. Name of experiment
Trial on growing of autumn maize

2. What will be done?
• Exploring the suitability of three maize varieties DK 888, CV1, Q 2 as an autumn crop
• This trial will link with the program of IPM Farmer Field School on maize
• 5 households will do the experiment on one variety each on an area of 200 m² / household

3. Reasons for doing this experiment
• Autumn maize grain is easier to preserve (than others)
• Farmers here want to have a short duration, high yield maize variety for autumn crop
• They want to have maize varieties which can be used for own production of seed

4. What question will be answered?
• Which maize variety can be grown as an autumn crop with high yield and is easy to preserve (the grain)?
• Which variety they can use to produce seeds themselves?

5. Expected results
• They can identify a high yielding maize variety which is easy to preserve (the grain)
• A maize variety suitable to produce seeds themselves
• To increase family income and have more fodder for animals

6. Assessment and evaluation
6a. Criteria for measurement
• Follow the criteria and ways for measurement from IPM class on maize
• Weigh the yield
• Percentage of rotten cobs for each variety 2 months after harvest

6b. General evaluation
• Among the three maize varieties, which variety offers highest yield and has least rotten cobs
• In which variety there are more farmers interested in growing it on a larger scale
• Evaluation on criteria from IPM class on maize
• Discussion to select variety for seed production
• Discussion to find out what is good, what is bad (in the experiment)
## 7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (lunar calendar)</th>
<th>Material needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation of IPM group of village, selecting group head</td>
<td>Interested farmers</td>
<td>May</td>
<td></td>
<td>IPM class of the commune consists of 30 participants</td>
</tr>
<tr>
<td>2</td>
<td>Field trip to IPM class at Don Ru, Tam Kim</td>
<td>Farmers, Helvetas project staff, Mr. Dang, Mr. Heo</td>
<td>May</td>
<td></td>
<td>Project staff and IPM teachers will contact with IPM class in Don Ru</td>
</tr>
<tr>
<td>3</td>
<td>Clarification of experimental areas, requirements for seed and fertilizer</td>
<td>Group head</td>
<td>End of May</td>
<td></td>
<td>Project staff in charge of finding out seeds and fertilizer</td>
</tr>
<tr>
<td>4</td>
<td>Learning and keeping track with technical guidance from IPM class</td>
<td>Farmers, Mr. Dang, Mr. Heo</td>
<td>From June to October</td>
<td>Documents, seeds, fertilizer</td>
<td>Learning through 7 steps</td>
</tr>
<tr>
<td>5</td>
<td>Pre-harvest evaluation</td>
<td>IPM class</td>
<td>October</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Harvest</td>
<td>Group head and farmers</td>
<td>October</td>
<td></td>
<td>Weighing the yield per area</td>
</tr>
<tr>
<td>7</td>
<td>Post-harvest evaluation</td>
<td>Group head and interest group</td>
<td>December</td>
<td></td>
<td>Count the rotten cobs</td>
</tr>
</tbody>
</table>
Action Sheet 7

1. Name of experiment

Planting *Do Trong* (a medicinal plant) in home gardens

2. Place

Mr. Chieu’s home garden at Lung Rao village, Thai Hoc commune, Nguyen Binh district

3. What will be done?

• grow *Do Trong* to find out its suitability in the local condition
• one household will plant between 10 and 20 trees as a trial in their medicinal plant garden

4. Reasons for doing this experiment

• there aren’t any *Do Trong* trees in their garden and they want to have many kinds of good medicinal plants/trees for the family and the neighbours
• they can obtain some experiences in growing this tree, if their soil will be suitable
• they can sell this medicine (*Do Trong*) to traditional pharmacies

5. What question will be answered?

• Will this tree grow well in their garden?
• How many years will it take to get the medicine?
• How can they get the medicine? They will use the bark, leaves, roots?
• What is the best technique to grow and look after *Do Trong*?
• Can they propagate it? Their grandsons and granddaughters want to plant it also?

6. Expected results

• They can raise *Do Trong* at Lung rao and after two years they can get medicine
• They can use both leaves and bark as medicine
• *Do Trong* is easy to grow and look after and will offer much medicine
• *Do Trong* can be propagated for other villagers

7. Assessment and evaluation

7a. Criteria for measurement

• number of trees surviving after planting and growing well / number of planted trees

7b. General evaluation

• discussion and comments on growing process of the trees
• exchange experiences with other people on how to grow and use the medicine
• anyone who needs medicine and seeds can come and ask for
8. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (lunar calendar)</th>
<th>material needed</th>
<th>remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Looking for seeds</td>
<td>Helvetas project</td>
<td>Sept, Oct</td>
<td>Young trees</td>
<td>Instructional documents</td>
</tr>
<tr>
<td>2</td>
<td>Begin to grow</td>
<td>Mr. Chieu</td>
<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Looking after the trees</td>
<td>Mr. Chieu</td>
<td>After growing the trees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Observation</td>
<td>Mr. Chieu</td>
<td>Notebook, pens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Finding out the use of medicine and harvest</td>
<td>Mr. Chieu, Helvetas project and experienced persons</td>
<td></td>
<td></td>
<td>How to use the medicine?</td>
</tr>
<tr>
<td>6</td>
<td>Evaluation</td>
<td>Mr. Chieu, Helvetas project, experienced persons and medicine users</td>
<td>Two years after growing</td>
<td></td>
<td>Usage documents, experience ...</td>
</tr>
</tbody>
</table>
Action Sheet 8

1. **Name of experiment**

Growing some fodder plants for domestic animals (priority 5)

2. **What will be done?**

- Find and grow to see the suitability, yield, use of some local and imported grasses as fodder for cattle and pigs;
- Which grass can offer green leaves in winter season and can be harvested in the whole year as elephant grass, Desmodium, stylo
- The types of grasses can be grown around the houses and fallow hilly fields

3. **Reasons for doing this experiment**

- There is a shortage of green fodder for domestic animals in winter
- Lots of labour is needed to seek for fodder in forests for cattle and pigs

4. **What question will be answered?**

- Which kinds of grass are green all year round and can be cut many times and can be storaged?
- Which grass is most preferable to cattle and pigs?
- Which grass can be propagated and by what way?

5. **Expected results**

- They can find out some grass varieties which are always green in winter and can be cut many times.
- They can obtain hay for winter season.
- They can find some kind of grass which are preferred by both cattle and pigs.
- Some of grass varieties can be propagated to larger areas.

6. **Assessment and evaluation**

- According to criteria from PRA – marking and selecting the experimented grasses
## 7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (lunar calendar)</th>
<th>Material needed</th>
<th>remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation of interest group</td>
<td>Interest group, group head Mr. Hin</td>
<td>May</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Selection of grass varieties</td>
<td>Interest group and Helvetas project staff</td>
<td>Early May</td>
<td>Elephant grass can be grown on May</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Technical instruction</td>
<td>Interest group and Helvetas project staff</td>
<td>From June onwards</td>
<td>Varieties and documents</td>
<td>Right on the field</td>
</tr>
<tr>
<td>4</td>
<td>Begin to grow grass</td>
<td>Households</td>
<td>From June onwards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Making fence</td>
<td>Households</td>
<td>June</td>
<td>Poles, branches</td>
<td>Farmers will do themselves</td>
</tr>
<tr>
<td>6</td>
<td>looking after the grass</td>
<td>Households</td>
<td>July</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cutting the grass to make hay</td>
<td>Households</td>
<td>from August onwards</td>
<td>Each household will evaluate the time and quantity of grass cut</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Post harvest evaluation</td>
<td>Households, villagers, Helvetas project staff</td>
<td>June 2000</td>
<td>Notebooks, pens</td>
<td>Group head’s notebook</td>
</tr>
<tr>
<td>9</td>
<td>Propagation of seeds for other interested farmers</td>
<td>The whole group</td>
<td>After June 2000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Action Sheet 9**

1. **Name of experiment**

Growing wheat in spring season.

2. **What will be done?**

- growing wheat in terraced fields in winter-spring season to see its suitability in local condition
- area of experiment: 1000m²
- time of experiment: 6 months

3. **Reasons for doing this experiment**

- farmers want to change cropping mechanism
- it is impossible to supply water for this field in winter time
- there are a lot of terraced fields in the village

4. **What question will be answered?**

- Will wheat be suitable in local conditions?
- Will it offer high economic value?
- Will it possible to be enlarged?
- Are there any difficulties in protecting it?

5. **Expected results**

- This wheat variety will grow and develop well at Na roong village.
- It will offer higher economic value as compared with other agricultural crops.
- It will enable to increase family’s income.
- More and more farmers in the village and commune want to grow wheat.

6. **Assessment and evaluation**

6a. **Criteria for measurement**

- Yield
- Growth duration
- Economical effectiveness is higher than other crops

6b. **General evaluation**

- Its suitability in local conditions
- Its possibilities to resist to pest and diseases
- Its possibility to be enlarged
## 7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>activities</th>
<th>involved persons</th>
<th>schedule (lunar calendar)</th>
<th>material needed</th>
<th>remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>soil preparation</td>
<td>Bau Mui Kieu</td>
<td>Oct 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>seeking for seeds</td>
<td>Helvetas project staff</td>
<td>Sept 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>technical training and guidance</td>
<td>technician(s) in charge of the experiment</td>
<td>Oct 1999</td>
<td>documents, technical guidance</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>preparation for fertilizers</td>
<td>Helvetas project staff</td>
<td>Oct 1999</td>
<td>chemical fertilizers</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>making fences</td>
<td>Bau Mui Kieu</td>
<td>Sept 1999</td>
<td>poles, branches</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>sowing seeds</td>
<td>Bau Mui Kieu technician</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>observation and looking after wheat</td>
<td>Bau Mui Kieu technician</td>
<td>Oct 1999 - March 2000</td>
<td>fertilizers, pesticides</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>field trip evaluation check plot harvest</td>
<td>Bau Mui Kieu technician villagers</td>
<td>March 2000</td>
<td>scale, ruler, weigh data for report</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>harvest</td>
<td>Bau Mui Kieu</td>
<td>March 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>final report</td>
<td>Bau Mui Kieu technician</td>
<td>April 2000</td>
<td>journals</td>
<td></td>
</tr>
</tbody>
</table>
Action Sheet 10

1. Name of experiment

Trial on growing spring water melon.

2. What will be done?

- Three water melon varieties (Chinese, Taiwanese, American) will be grown in rice paddy fields as a spring crop.
- The cultivated area per household: 300m² / 3 varieties

3. Reasons for doing this experiment

- There were some villagers who had grown water melon this year, but yield and quality of the melons weren’t high; so they want to grow these 3 varieties as trial.

4. What question will be answered?

- Which of these varieties will offer high yield with good quality and be suitable in local conditions?
- Will these new varieties offer more and big fruits which are sweet?

5. Expected results

- They hope to select a good water melon which offer high yield, good quality (more and big fruits) and be suitable in local condition

6. Assessment and evaluation

6a. Criteria for measurement

- Weight of fruits
- Yield
- Quality
- Economic effectiveness
- Growth duration

6b. General evaluation

- Which variety is suitable in local condition?
- Pest and diseases level
- Color of pulp
- Comparison of quality among these varieties
- Possibility to enlarge them
### 7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (lunar calendar)</th>
<th>Material needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Seeking for seeds</td>
<td>Helvetas project staff</td>
<td>October 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Soil preparation</td>
<td>Households</td>
<td>November 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Technical guidance</td>
<td>Responsible technician</td>
<td>November 1999</td>
<td>Documents</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Preparations for fertilizer</td>
<td>Helvetas project staff</td>
<td>December 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Sowing of watermelon seeds</td>
<td>Households, responsible technician</td>
<td>January 2000</td>
<td>Seeds, Fertilizers</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Observation and looking after</td>
<td>Households, responsible technician</td>
<td>January - April 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Field trips and evaluation</td>
<td>Households, villagers, responsible technician</td>
<td>April 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Harvest</td>
<td>Households</td>
<td>April 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Final report</td>
<td>Households, responsible technician</td>
<td>May 2000</td>
<td>Journal</td>
<td></td>
</tr>
</tbody>
</table>
Action Sheet 1

1. Name of experiment
Growing some short duration rice varieties as spring crop.

2. What will be done?
- 3 short duration rice varieties Q 2, Khang dan, Kim cuong will be grown as a spring crop
- Scale per household: 600 m² / 3 rice variety (each variety on 200 m²)
- Time of experiment: 6 months

3. Reasons for doing this experiment
- After spring crop rice paddies are left fallow
- Farmers haven’t got experiences with short duration rice varieties
- They have enough conditions to grow spring rice (enough water available in the fields)

4. What question will be answered?
- Which variety will be short duration, high yield and suitable in local condition to put into production in spring season?

5. Expected results
- Farmers can obtain a short duration, high yield, rice variety which is suitable in local condition
- Which rice variety can be enlarged to larger area?

6. Assessment and evaluation
6a. Criteria for measurement
- Growth duration
- Yield
6b. General evaluation
- Pest and disease level
- Area will be covered by this rice variety in the following year
## 7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (lunar calendar)</th>
<th>Material needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Soil preparation</td>
<td>Households</td>
<td>November 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Seeking for seeds</td>
<td>Helvetas project staff</td>
<td>December 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Technical training or guidance</td>
<td>Responsible technician</td>
<td>January 2000</td>
<td>Document</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Preparation for fertilizers</td>
<td>Helvetas project staff</td>
<td>January 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Sowing of seeds and transplanting seedlings</td>
<td>Households, responsible technician</td>
<td>January - February 2000</td>
<td>Seeds, fertilizers</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Observation and looking after</td>
<td>Households, responsible technician</td>
<td>February - May 2000</td>
<td>Fertilizers</td>
<td>Pesticides</td>
</tr>
<tr>
<td>7</td>
<td>Field trip, evaluation, check plot harvest</td>
<td>Households, villagers, responsible technician</td>
<td>May 2000</td>
<td>Ruler, scale</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Harvest</td>
<td>Households</td>
<td>May 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Final report</td>
<td>Households, responsible technician</td>
<td>June 2000</td>
<td>Journals</td>
<td></td>
</tr>
</tbody>
</table>
Action Sheet 12

1. **Name of experiment**
Growing some maize varieties in autumn season.

2. **What will be done?**
   - Checking the suitability of two maize varieties Q2 and TS5 in autumn season
   - The scale of the experiment: 4 households will carry out the experiment with 2 varieties on the area of 500 m² / household
   - Method: applying the method from IPM class on maize

3. **Reasons for doing this experiment**
   - Farmers have never grown autumn maize before
   - Local maize variety is degenerate, low yield, high plant, which is easy to fall
   - They want to have two maize crop

4. **What question will be answered?**
   - Can they obtain a short duration, short term and high yield maize variety, which is suitable as an autumn crop in their locality?
   - Will this variety easy fall as the local one?
   - Will it be resistant to diseases as the local variety?

5. **Expected results**
   - They can obtain a short duration, short stem and high yield maize variety.
   - This variety can be grown in autumn season.
   - TS 5 and Q 2 maize varieties will offer higher yields as compared with the local variety.
   - A good variety can be chosen for seed production in the village.

6. **Assessment and evaluation**

   8a. **Criteria for measurement**
   - Number of plants fallen
   - Percentage of rotten grain after 2 months
   - Growth duration
   - Other criteria from IPM class on maize

   8b. **General evaluation**
   - Quality of maize grain
   - Solution for pest and diseases
   - Possibility for preservation of grain and seeds
### 7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>activities</th>
<th>involved persons</th>
<th>schedule (solar calendar)</th>
<th>material needed</th>
<th>remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>formation of group and picking up group head</td>
<td>interest group</td>
<td>July 1999</td>
<td>notebook, pens</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>study tour to learn about growing techniques</td>
<td>interest group, Helvetas project staff, households</td>
<td>July 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>finding seeds</td>
<td>Helvetas project staff</td>
<td>July 1999</td>
<td>fund</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>soil selection and preparation, designing of experimental plot</td>
<td>interest group, households, IPM teachers</td>
<td>August 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>preparation for fertilizers</td>
<td>Helvetas project staff, households</td>
<td>August 1999</td>
<td>chemical fertilizers (Helvetas project)</td>
<td>manure (households)</td>
</tr>
<tr>
<td>6</td>
<td>sowing maize</td>
<td>interest group, households, IPM teachers</td>
<td>August 1999</td>
<td>seeds fertilizers</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>looking after plants and observation on pest and diseases</td>
<td>interest group, households, IPM teachers</td>
<td>August - October 1999</td>
<td>notebook, pens</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>field trip for evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>harvest</td>
<td>interest group, households</td>
<td>November 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>final report</td>
<td>interest group, households</td>
<td>November 1999</td>
<td>notebook, pens</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>seminar</td>
<td>interest group, households, technicians and villagers</td>
<td>November 1999</td>
<td>fund, data, paper, pens</td>
<td></td>
</tr>
</tbody>
</table>
Action Sheet 13

1. Name of experiment

Propagation of Vai Thieu (improved litchi) by bud grafting

2. What will be done?

• to explore how the grafted improved litchi buds survive on the local mother litchis
• how the grafted improved litchi develop in nursery garden after 1 or 2 years
• the scale of the experiment:

<table>
<thead>
<tr>
<th>Farmers</th>
<th>Nursery garden</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area m²</td>
<td>Number of trees</td>
</tr>
<tr>
<td>Nong Van Ung</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Nong Hoang Khanh</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Nong Van The</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Nong Van Hoan</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Nong Van Lanh</td>
<td>4</td>
<td>25</td>
</tr>
</tbody>
</table>

3. Reasons for doing this experiment

• local litchi develop well but the quality of the fruits is low
• the local litchi is less affected with diseases compared with other fruit trees

4. What question will be answered?

• Will the whole group be successful with grafting?
• Will 70% of grafted buds survive?

5. Expected results

• they can propagate improved litchi for their families and for local requirement
• they will have improved litchi to transform their mixed gardens
• they can increase their income

6. Assessment and evaluation

6a. Criteria for measurement

• surviving rate of grafted buds in nursery gardens
• surviving rate of grafted trees after planting
• How do the grafted litchi develop in growing?

6b. General evaluation

• technique that should be added to litchi bud grafting
• Pest and disease situation
• Possibility to enlarge litchi propagation
7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (solar calendar)</th>
<th>Material needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>- Formation of interest group, - Field trip - Training on grafting techniques</td>
<td>Interest group, Helvetas project staff</td>
<td>15 - 30.06.99</td>
<td>Fund, note books, pens</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Collecting litchi seed + young litchi</td>
<td>Interest group and households</td>
<td>15 - 30.06.99</td>
<td>In village</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Germination of seed, soil treatment, making seed beds, manure preparation</td>
<td>Interest group and households</td>
<td>From 20.06. to 01.07.99</td>
<td>In each household</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sow seeds into earth balls, and looking after the young litchi (mother trees)</td>
<td>Interest group</td>
<td>From 25.06. to 05.07.99</td>
<td>Watering pot and sprays</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Clarification and selection of mother litchi for grafting</td>
<td>Interest group and households</td>
<td>December 2000</td>
<td>Households</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Finding buds for grafting and then do grafting</td>
<td>Interest group, Helvetas project staff, Mr. Bang</td>
<td>September 2000</td>
<td>Grafting buds, knives, scissors, plastic, paper</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Looking after</td>
<td>Interest group and households</td>
<td>September to October 2000</td>
<td>Watering pot and sprays</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Observation on criteria for evaluation</td>
<td>Interest group and households, Helvetas project staff, villagers and communes</td>
<td>1 month after the grafting is done</td>
<td>Pens and notebooks</td>
<td></td>
</tr>
</tbody>
</table>
Action Sheet 14

1. Name of experiment

Trial on growing consecutive late autumn crop after spring rice in 1999 with 3 rice varieties: Lai, Khang dan and Bao thai lun.

2. What will be done?

- To explore the suitability of these three rice varieties
- Group discussion on different growing periods of rice
- To find out which rice variety can be grown after spring rice crop
- Scale of experiment:

<table>
<thead>
<tr>
<th>Name</th>
<th>Scale</th>
<th>Seeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nong Van Tuyen</td>
<td>1000 m²</td>
<td>Lai</td>
</tr>
<tr>
<td>Nong Van The</td>
<td>300 m²</td>
<td>Khang dan</td>
</tr>
<tr>
<td>Nong Van Cau</td>
<td>300 m²</td>
<td>Bao thai lun</td>
</tr>
</tbody>
</table>

3. Reasons for doing this experiment

- They have never done late summer rice before.
- They can’t do ratoon crop on sandy soils.
- These rice varieties have been grown in early spring and in summer season rice crop (Lai, Khang dan)

4. What question will be answered?

- Will it be possible for farmers here to grow these rice varieties in autumn season (or late summer rice)?
- Will these varieties offer high yield?

5. Expected results

- Lai and Khang dan varieties will offer the yield of 80 % of the main crop (spring crop) in 1999.
- Bao thai lun will offer the same yield as Lai in main crop.

6. Assessment and evaluation

6a. Criteria for measurement

- Observation on growth duration of each variety
- Weigh to see the yield after harvest

6b. General evaluation

- How the rice grows and develops?
- The influence of pest, diseases and weather on these rice varieties.
### 7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (solar calendar)</th>
<th>Material needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation of group - picking up group head</td>
<td>3 interest groups</td>
<td>20 June 1999</td>
<td>Notebook and pens</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Seeking for seeds</td>
<td>Helvetas project staff</td>
<td>June 1999</td>
<td>Seeds</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Preparation of the soil and nursery</td>
<td>Households</td>
<td>27-30 June 1999</td>
<td>Seeds</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Transplanting rice seedlings</td>
<td>Households</td>
<td></td>
<td>Seedlings, fertilizer</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Group discussions according to growth duration of rice</td>
<td>Interest group and teacher from IPM class</td>
<td>According to techniques from IPM class</td>
<td>Notebooks and pens</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Looking after rice</td>
<td>Households</td>
<td>According to techniques from IPM class</td>
<td>Fertilizer</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Evaluation</td>
<td>Interest groups</td>
<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Harvest</td>
<td>Households</td>
<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Final report</td>
<td>Interest groups and households</td>
<td>After harvest</td>
<td>Data for report</td>
<td></td>
</tr>
</tbody>
</table>
Action Sheet 15

1. Name of experiment

Trial on Q 63 ratoon crop in autumn season 1999

2. What will be done?

- Exploring the growth and development of ratoon crop and its ability to offer yield
- The experiment will be conducted on harvested rice fields of spring 1999
- Group discussion will be made according to each development period of ratoon crop

3. Reasons for doing this experiment

- To recheck the advice and encouragement on technique of ratoon crop
- Farmers here have never done ratoon crop before
- They can save labour, seeds and fertilizer
- To increase crops
- There is still water on the field so farmers can’t grow other crops

4. What question will be answered?

- Will ratoon rice offer higher yield?
- Can we enlarge the area of ratoon crop in the village?
- Can we save labour?

5. Expected results

- Ratoon crop will offer the yield of 60 % as compared with spring crop

6. Assessment and evaluation

6a. Criteria for measurement

- Observation on growth duration (days/crop)
- Weighing the yield (kg/m²)
- Making economic balance like IPM on maize

6b. General evaluation

- Evaluation on growth and development periods of ratoon rice and solution for pest and diseases
### 7. Action plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Involved persons</th>
<th>Schedule (lunar calendar)</th>
<th>Material needed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation of group - picking up group head</td>
<td>Interest group</td>
<td>June 1999</td>
<td>Notebooks and pens</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Applying manure and fertilizers to feed young rice buds</td>
<td>Interest group</td>
<td>Oct 1999</td>
<td>Chemical fertilizers</td>
<td>According to technical guidance</td>
</tr>
<tr>
<td>3</td>
<td>Harvesting of 1999 spring rice</td>
<td>Interest group</td>
<td>August 1999</td>
<td></td>
<td>Households</td>
</tr>
<tr>
<td>4</td>
<td>Observation and looking after ratoon rice</td>
<td>Interest group</td>
<td>October 1999</td>
<td>Chemical fertilizers</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Group discussion</td>
<td>Interest group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Evaluation</td>
<td>Interest group, households, villagers</td>
<td>September 1999</td>
<td>Notebooks and pens</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Harvest</td>
<td>Households</td>
<td>October 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Final report</td>
<td>Interest group and households</td>
<td>November 1999</td>
<td>Data for report</td>
<td></td>
</tr>
</tbody>
</table>