

COFFEE PRUNING

COFFEE PRUNING AS A TOOL FOR CONTROLLING RUST
DISEASE AND INCREASE THE PRODUCTION

TOPICS TO DEVELOP

- INTRODUCTION
- RUST DISEASE CONTROL (WAYS)
- COFFEE RENOVATION
- How to decide when to renovate a plantation
- How we can renovate a plantation, ways to renovate
- Advantages/disadvantage when renewing a plantation

OBJECTIVES

- Learn how to prune an old coffee plantation
- Understand how pruning increase the yield in a coffee plantation
- Know pruning as a way of disease control
- Learn how and when to renew a coffee plantation through pruning
- Learn about the advantages of Pruning versus establishing a new coffee plantation

Introduction

- Pruning in coffee is a practice that lets the farmers produce a new plant from an old one. There are different kinds and system of pruning coffee. When coffee plants get old do not produce enough beans so the yield is reduced greatly and farmers should renew the plantation with new plants but making a new plantation is costly and not every farmer can afford it. Throuhg pruning farmers can recover the original yield and it does not take too much time as the new plantation would take for producing

Introducction

- Pest and diseases normally destroy the plant tissue and sometimes sanitation pruning is needed. The plants produce the beans in the nodes but every node produce only one time and new nodes would grow for producing the next cycle, year by year the production área is moving farther from the stem and from the ground and the plant spends more energy in moving the wáter and nutrients to this área. Pruning makes the plant shorter reducing the spend of this energy in the plant.

Pruning or tissue management in coffee



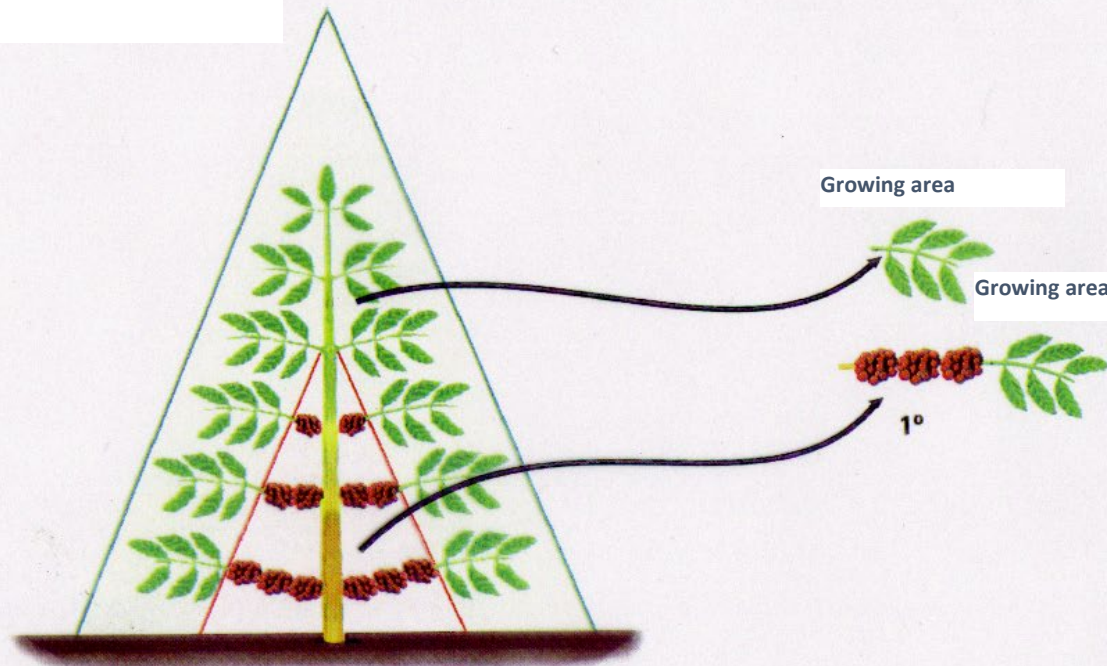


Purpose of pruning .

1. Renew the plant tissue
2. Stimulate the production through the entering of more sunlight in the plantation.
3. Keep good ratio between harvest and foliage
4. Reduce the favorable conditions for pest and disease attack
5. Make the harvest easier
6. Facilitate the crop management
7. Reduce the biannually harvest variation
8. Eliminate the damaged and sick tissue

Productive nodes Distribution Per Cycle (years)

Third Year=First Harvest



The harvest (beans) is developed in the growing area of the last cycle.
The plant continues growing every year
First Harvest Produce 360-450 kg/ha

Productive Nodes Distribución Per Cycle (year)

Fourth Year=Second Harvest



Growing area

Growing area

Growing area



Productive Nodes Distribución Per Cycle (year)

Growing area

Growing area

Growing area

Growing area

A photograph of several coffee plant seedlings in a nursery bed. The seedlings have small green leaves and some have developed small, light-colored flowers. They are growing in a row, with a white plastic mulch visible between them.

Kinds of Pruning in Coffee

- Low pruning
- High Pruning
- Top Cut
- Pruning after Bending the plants
- Skeleton Shape

Kinds of Pruning

1) Low pruning

It consist of cutting the coffee plants at 30-40 centimeters above the ground with the aim of eliminating most of the aerial part of the plants.

Low pruning, leaving
some leaves



Without leaves



Shoots regulation

It consists of choosing the suckers that grow after pruning

We leave the most vigorous and best placed in the stem and a good distance of the cutting.

First regulation is made when suckers are 15 – 20 cm. of height, a second and third pruning is done to chose the best suckers placed in the stem



KINDS OF PRUNING

2) High pruning

It consist of eliminating the exhausted material of the plant through cutting the top of the plant leaving the rest of the tissue without pruning, we made the cut at 1.20 m of height.

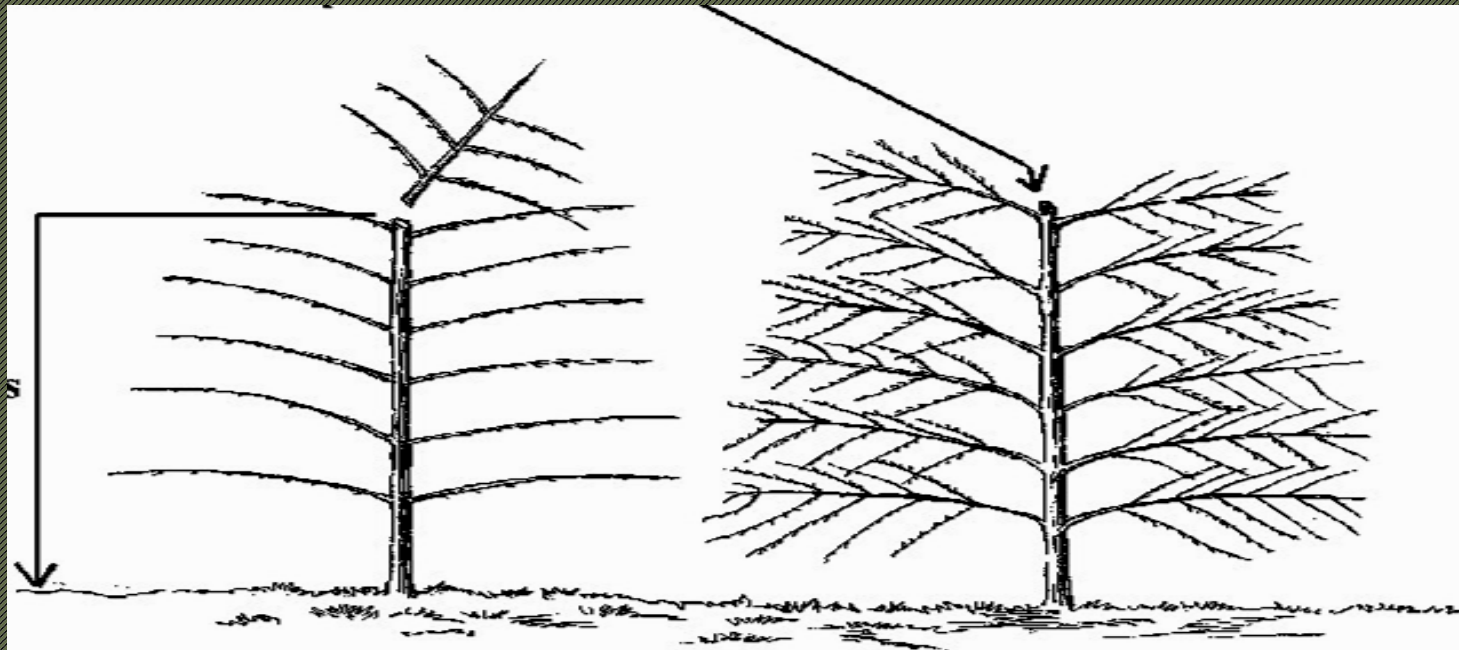


KINDS OF PRUNING

3) Top cut

It is done at 1.70 m of height and we use only the lateral shoots, we need to prune the shoots two or three times a year.

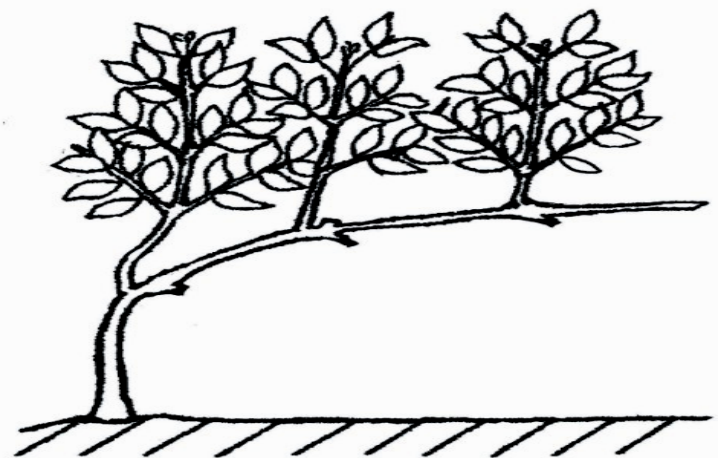
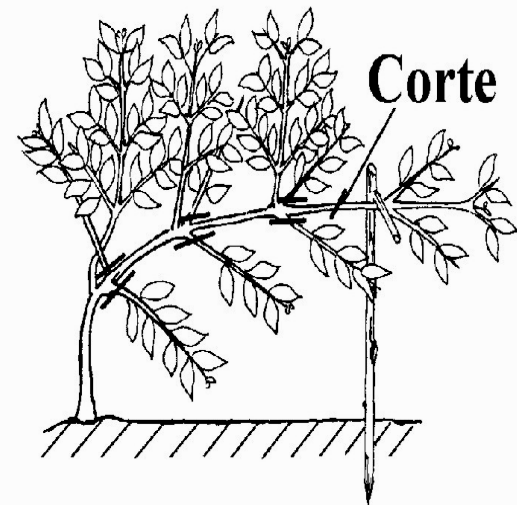
170 Cm



KINDS OF PRUNING

4) Bending

1. Bend the plant out and tie it to stick on the ground
2. The bending will make an angle of 45 degree with the ground.
3. Take out the shoots that grow in lower part of the stem.
4. When choosing the new shoots cut the terminal part of the plant.



Kinds of pruning

5) Skeleton shape

- We cut all the branches after 30-40 cm from the main stem
- The goal is to induce the vigorous growing of new secondary and tertiary shoots



Kind of pruning

5) Skeleton shape

- We recommend this kind of pruning in coffee plantation with Young tissue
- This kind of pruning is costly





SYSTEMS OF PRUNING

- Selective Pruning: In this system we can apply the different kinds of pruning
- Pruning Per Row: We only apply the low pruning
- Pruning Per Plot: Only low pruning is used

Pruning Systems

1) Selective pruning

It consists of choosing the plants to do the tissue management or pruning inside the coffee plantation, making individual pruning per plant or per group of plant according to their conditions

There are 3 kinds of selective pruning :

- a)- Pruning of vertical branches (Sanitation pruning)
- b)- Pruning per plant (high pruning, top cut y low pruning)
- c)- Pruning per group of plants (high pruning, top cut and low pruning)

SISTEMES OF PRUNING

1) SELECTIVE PRUNING

Advantages:

1. We chose very well the vegetative material to prune
2. It lets us to have good harvest (Does not affect the harvest too much)


Disadvantages

1. It require specialized labor or skilled workers
2. Good criterion for the person who does the pruning
3. It require more time to do it
4. Increases the labor cost
5. Does not favor the distribution of air and sunlight (Specially with plantation with high plant population)

PRUNING SYSTEMS

KINDS OF PRUNING

SELECTIVE PRUNING



- Low pruning
- High pruning
- Top cut (Topping)
- Skeleton shape
- Sanitation pruning (branches)
- Etc....all kind of pruning

PRUNING SYSTEMS

2) PRUNING PER ROWS

It consists of developing an organized program of pruning according to an established scheme where the renovation of a plantation is completed in a period of time defined in years.

<u>3 years cycle</u>		<u>4 years cycle</u>		<u>5 years cycle</u>	
Year	Rows pruned	Year	Rows pruned	Year	Rows pruned
1	1	1	1	1	1
2	3	2	3	2	3
3	2	3	2	3	5
		4	4	4	2
				5	4

PRUNING SYSTEMS

2) PRUNING PER ROW



Advantages:

1. It is adapted to every weather condition.
2. It provides stabilized production in the long term.
3. Make easier the crop management.
4. Lets us do replanting.
5. More sunlight in the plantation.
6. Inputs reduction in the farm.
7. Can plant another crop the first year in the pruned rows.

Disadvantages

- We lose production from those plants still vigorous.
- It Requires good planning.
- New shoots grow in limited space (when having tall plants)
- Sometimes we damage new shoots when pruning the other rows.

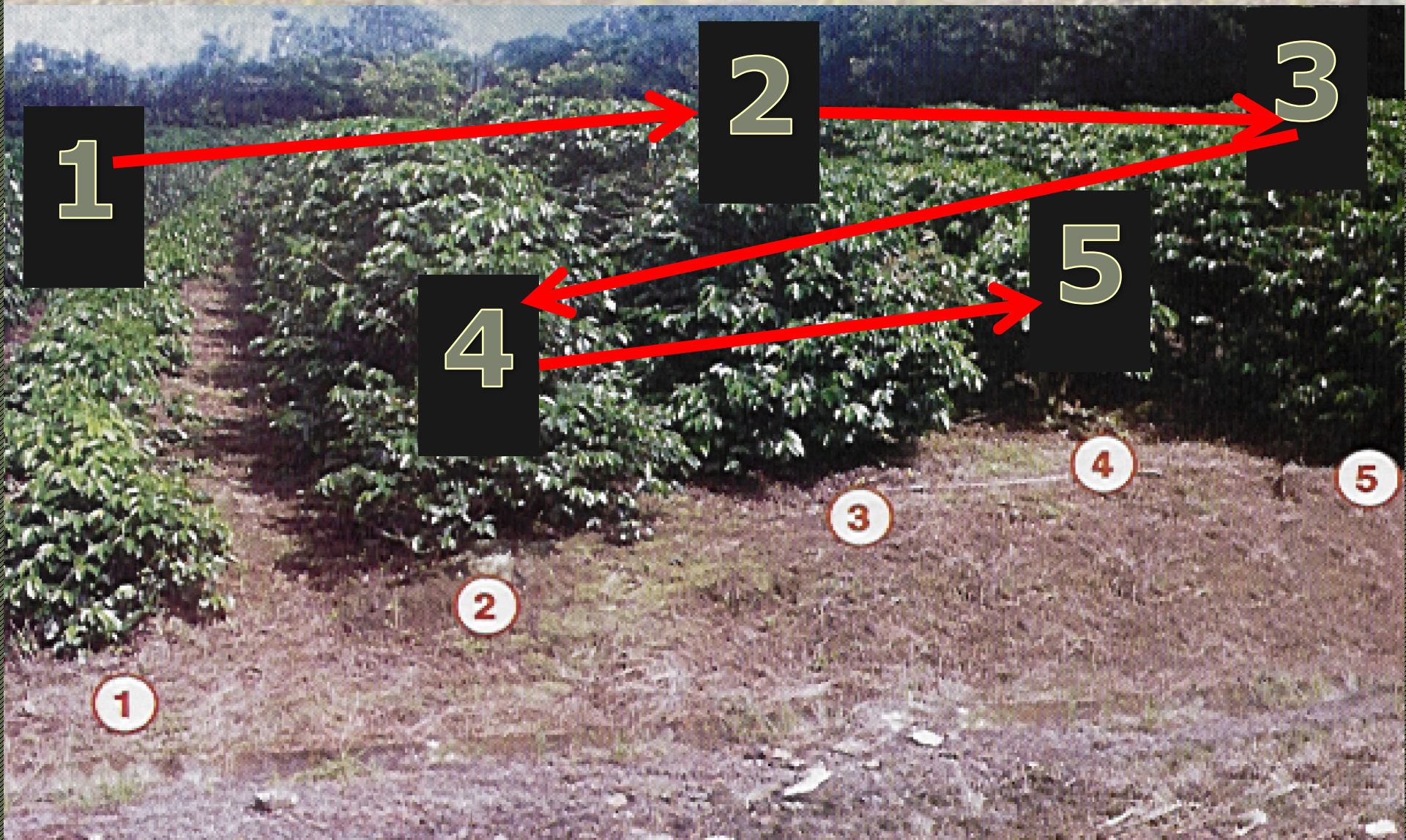
2) PRUNING PER ROW. Low pruning



2) PRUNING PER ROW. Low pruning



2) PRUNING PER ROW: 5 Years cycle. Low pruning





PRUNING SYSTEMS

3) PRUNING PER PLOT

It consists of systemic pruning in all the coffee plants in a plot applying the kind of pruning that require the plantation that generally are exhausted plants that need to produce new tissue.

SYSTEMS OF PRUNING

1) PRUNING PER PLOT. Low pruning





PRUNING SYSTEMS

3) PRUNING PER PLOT ADVANTAGES

- It lets us make some modifications
- Easy to make or supervise
- Very fast to do
- Does not require skilled labor
- Uniform growing and ripening at harvest
- Shoots grow without limitation
- Easy control of pest and diseases
- It lets us grow another crop the first year



PRUNING SYSTEMS

3) PRUNING PER PLOT

DISADVANTAGES

1. Sloped areas would be eroded
2. The production is drastically reduced in the plot
3. The farmer's economic condition limits this kind of pruning because the incomes from the pruning plot is reduced to zero



FACTORS TO TAKE INTO ACCOUNT FOR CHOOSING THE SYSTEM OF PRUNING

1. Weather conditions (°T and rainfall)
2. Technological level (Organic production, low or high use of inputs)
3. DIAGNOSIS OF THE PLOT TO PRUNE: Productivity, pest and diseases, shade, soil fertility, age of the plantation, density of plants, etc.)
4. SIZE OF THE FARM
5. **SOCIO ECONOMIC CONDITION AND EXPECTATION OF THE FARMER INVOLVED**



When to prune

The best time to prune coffee plants is just after harvest; 15 days after we harvest the plot to prune.

Low land : Should be early because the harvest is also early

Upland: one or two months later than the low land

CLIMATE CHANGE HAS MODIFIED THE TIME TO PRUNE IN SOME AREAS



TOOLS USED IN PRUNING

- SMALL SAW
- PRUNING SCISSORS
- CHAINSAW





PICTURES



