



INTEGRATED WEED MANAGEMENT IN THE COFFEE FARM

PARTNERS



August, 2022

FOREWORD

Coffee plantation areas in Vietnam are located in warm and rainy climate zone which is favorable for development of various types of weed and plant cover, including man-grown and natural species. Natural weeds are very diversifying and well grown in different conditions and they will negatively affect labor productivity, crop quality and yield if they are not well managed.

This handbook will provide farmers with better knowledge to manage natural weed. With a good weed management method, suitable for each farming household, natural weed can also bring many benefits for coffee farmers.

This handbook was secondly reprinted in 08/2022, with an additional chapter on Occupational Safety and Health in weed management in coffee farms.



I. DEFINITION OF WEED

Weeds are any plants that grow in an unwanted area (e.g. in a garden or field) where they compete with the cultivated plants for light, water and nutrients. Weeds, however can also have a number of benefits.

Common types of weeds in the coffee farm



Imperata cylindrica
(L.) Beauv.)



Ageratum conyzoides L.



Bidens pilosa L.



Commelina communis



Mimosa diplotricha



S. pallide-fusca (Schum.)
Stapf. & Hubb

Mimosa pudica L.

II. WEED BENEFITS

1. Create humus and nutrition for soil;
2. Maintain moisture, limit water evaporation and stabilize soil temperature;
3. Prevent soil erosion;
4. Provide feed for cattle and food for human beings;
5. Can be used as medicine in some cases;
6. Innovate polluted soil; prevent chemicals from spreading;
7. Be the shelter for natural enemies and helpful microorganism to grow;
8. Can be used to cover the roots, soil, nursery, animal shelters...;
9. Some types of weed can release substances to repel nematodes;
10. Some types of weed can be used as indicators for assessing the soil environment.



III. NEGATIVE IMPACTS

Ineffective management of weed can lead to:

1. Hindering the farming and harvesting progress;
2. Limiting the plant growth due to water, sunlight and nutrient competition...;
3. Increasing production cost because weed grows fast with many forms of reproduction (seeds, stem & root, spout, shoot tip...);
4. Becoming the hosts of some pests and diseases and the shelter for mice, harmful insects such as mosquitoes...;
5. Causing fire in the dry season.



IV. WEED MANAGEMENT

1. What is weed management?

- a. Reducing weed density to decrease crop yield loss and;
- b. Shifting the composition of weed communities from undesirable to desirable species.

2. Objectives

- a. To control weed invasion and growth in a scientific and efficient management manner to take more advantages of weed;
- b. To protect soil resources towards a safe and sustainable development of agriculture;
- c. To enhance growth of coffee trees to increase yields and reduce production cost;
- d. To facilitate coffee farming and harvesting;
- e. To increase labour productivity.

3. Weed management principles

- a. To prevent/eliminate nutrient competition between weeds and crops;
- b. To apply weed treatment at the right time (before blooming is the best);
- c. To apply Integrated Pest Management (IPM) to limit its harm.

4. Integrated Weed Management in coffee farms

a. Cultivation

Cover crops



Drying soil to kill disease germs and weed sprouts



Inter-cropping of bean family crops before planting coffee trees (n-fixing)



Inter-crop beans in the immature stage



Planting coffee seedlings of good & qualified varieties in the right density; Applying balanced fertilization principles and techniques to ensure the good growth of coffee plants.





b. Manual methods and weed trimmers - mechanized weed control

- Clearing all weeds under the coffee tree canopy.
- Beyond the canopy area, only weeding when the weed is 40 - 70cm high or going to bloom, and always keep the weed stem of 5 - 10 cm.



c. Biological methods

Keep small livestock in the field to control weeds e.g. chickens, ducks, goats, sheep,....

d. Chemical measures: Spraying herbicide.

➤ Apply the "4-right" principle:

Right type - Right dose - Right time - Right method.

RISKS AND PREVENTION MEASURES WEED MANAGEMENT IN COFFEE FARMS - OCCUPATIONAL SAFETY AND HEALTH

➤ Risks

- Injuries when using gauges, lawn mowers due to broken blades, rocks, trees and dust splashes in the face;
- Hearing effects due to machine noise.

➤ Prevention measures

- Fully install the manufacturer's protective shields;
- Replace the blade with a lawn mower wire;
- Wear boots or specific shoes to protect the shins;
- Wear gloves, masks, and shields to prevent rock and dust splashes and ;
- Wear ear protectors or cover your ears with cotton buds to reduce noise.



ATTENTION !

- Do not use banned herbicides;
- In case of unavoidable herbicide use, it is highly recommended to use the herbicides with active ingredients (AI) allowed by certified schemes and ensure the strict compliance with AI specific last application date before harvest.

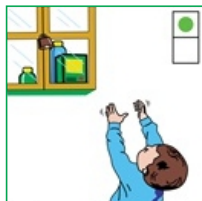


Herbicide effects on coffee trees

WORK SHARING AND COMPLIANCE WITH OSH MEASURES

- Share workloads, based on the the ability and capacity of each person and comply with good OHS practices in coffee production.

SAFE USE OF HERBICIDES



Keep herbicides in the dry place and out of the reach of children



Wear PPEs when using herbicides



Read the label carefully before use



Select the proper nozzle and spray at low wind velocities to avoid drift



Do not dispose the left-over into soil or water.



Wash and change clothes after using herbicides.

RECOMMENDATIONS

- No use of banned herbicides & avoid excessive or inappropriate use of alternative herbicides;
- Use of protective shield around spray nozzle to control the herbicide drift;
- Application of Integrated Weed Management practices e.g.:
 - ✓ Cover cropping between the coffee rows with N-fixing plants which besides weeds also manage soil erosion, soil quality and soil moisture;
 - ✓ Mechanized weed control (Mowing before the weeds are able to set seed/flower);
 - ✓ Mulching, shade management.

Limit the weed growth to 5 - 10 cm height through regular mowing and leave the clippings as mulch.

DO NOT USE BANNED HERBICIDES



Authors:

PhD. Phan Viet Ha
MSc. Dao Thi Lan Hoa
MSc. Mai Xuan Thong
BSc. Dang Thi Tham

Language and translation: MSc. Do Thanh Chung
BA. Le Phuong Tu

Compiled by: Western Highlands Agriculture &
Forestry Science Institute (WASI)
Global Coffee Platform (GCP)

Photo taken by GCP and WASI

PARTNERS

