



UNIVERSITÀ
CATTOLICA
del Sacro Cuore



PRODUCTION OF APPROPRIATE FOOD: sufficient, safe, sustainable

WEEDING

A weed is a plant considered undesirable in a particular situation, "a plant in the wrong place". Weeds compete with crops for nutrients, moisture, sunlight, and space consequently they reduce crop yields and farmers' incomes.

Controlling weeds is an essential practice to limit the losses of productivity of crop.

A weed control strategy with the greatest potential for success is the one that fully integrates: prevention, direct and indirect agronomic interventions.

Traditional means of weed control:

- *crop rotations,*
- *high planting densities,*
- *soil tillage (ploughing, harrowing),*
- *burning of crop residue,*
- *stubble grazing,*
- *hand weeding.*

In **conventional farming**, tillage (turning the soil over) is a more important way to control weeds (fig. 1).

Farmers plough repeatedly in order to suppress weeds and have a clean field when they plant crops. This gives an advantage for the crop because the time of emergence is anticipated compared to the weed. Ploughing buries many weed seeds, but it also brings other seeds back to the surface, where they can germinate.

Burning crop residues is a well-known tool to control weed infestation.

Shifting cultivation is an agricultural system in which plots of land are cultivated temporarily, then abandoned and allowed to revert to their natural vegetation while the cultivator moves on to another plot. The period of cultivation is usually terminated when the soil shows signs of exhaustion or, more commonly, when the field is overrun by weeds. Of these cultivators, many use a practice of *slash-and-burn* as one element of their farming cycle. *Slash-and-burn* is an agricultural technique that involves the cutting and burning of plants in forests or woodlands to create fields. After a fire of normal intensity rice grows well and successful burning results are a small number of weeds and a great quantity of nutrients liberated.

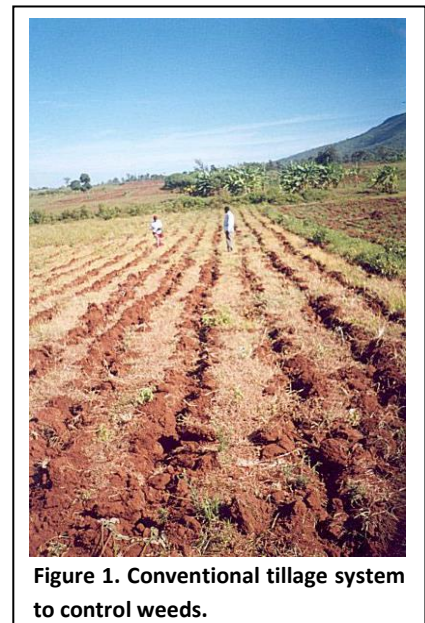


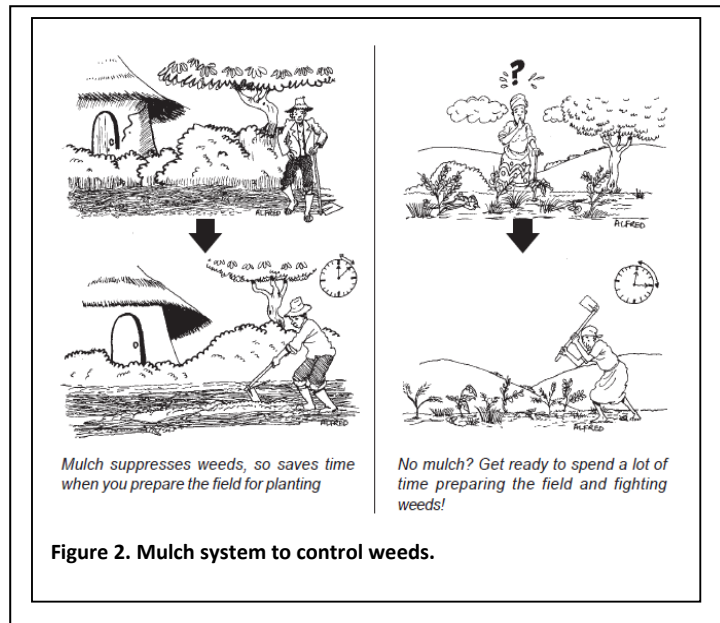
Figure 1. Conventional tillage system to control weeds.

In **conservation farming** systems (*minimum tillage, no-tillage*) the weed control by ploughing does not occur. Therefore, when adopting this system, a farmer must have a carefully planned weed control strategy, especially in the early years when weed levels will be high.

The following are some weed control options and considerations possible for conservation tillage farmers. The choice of which depends on the ecological and socio-economic circumstances of specific farm household.

- *Crop rotations*: it prevents the buildup of noxious weed populations.
- *Planting density*: it is an important component of the crop's ability to compete with weeds.
- *Intercropping*: it consists in sowing legumes, pumpkins or sweet potatoes, that contribute to a faster and denser ground cover and suppresses weed growth between two major crops.
- *Green manures/cover crops*: growing green manures or cover crops in the minor season efficiently controls weed growth.
- *Mulch*: leaving the crop residue on the surface as mulch makes it hard for weeds to grow because they do not have enough space or light (fig. 2).
- *Superficial weeding* (hoeing, ridging) by hand, draught animals or tractors.
- *Herbicide application*: in some places,

there are not enough people to do the hand weeding. In this case, it is advisable using herbicides. Not many smallholder farmers use herbicides because they are expensive and hard to find. They also need special equipment, such as sprayers or wipers. It is important to use the right amounts of chemicals, mix them with clean water, and handle them safely.



It is recommended to use a combination of these methods to control weeds. It is best to prevent weeds from growing by using various forms of soil cover. These methods are cheap and avoid disturbing the soil. Burning plant residues and ploughing the soil is mainly considered necessary for phytosanitary reasons: to control pests, diseases and weeds.