

Integrated weed management

Integrated weed management combines different methods of weed control and aims at offering farmers a range of options to improve the efficiency of weed management. Preventive and curative methods will be differentiated. This module tries to demonstrate to farmers that several options do exist to protect their rice fields from weed infestation (Reference 19).

- ❶ Make field observations and collect weed samples.
- ❷ Synthesize the observations in plenary session.



Learning objectives

At the end of this module, farmers will:

- Know the different methods for controlling weeds.
- Be convinced of the importance of integrated management of weeds.
- Know the specific herbicides to control different weeds.¹



Procedure

1. Farmers and the PLAR-IRM team meet at the PLAR-IRM Center. The facilitator briefly reviews the previous module and invites farmers' feedback. The facilitator asks if the farmers have put in place any new practice on their IRM fields.
2. One of the PLAR-IRM team members explains the learning objectives and procedures for the current module.
3. The facilitator presents the *procedure* for the field visit:
 - Division of the farmers into two sub-groups.
 - Designation of a farmer-facilitator and a farmer-rapporteur.
 - Each sub-group will visit four sites.
4. In the field, the farmers observe the weeds in the rice fields and discuss the following points:
 - Sources of weed seeds (from canal, with the wind, birds, etc).
 - Methods of weed control (preventive and curative methods).
 - The notion of integrated weed management.
5. Back at the PLAR-IRM Center, farmers report and comment on their observations. The facilitator stresses the importance of weed control using an integrated approach (Reference 19). The debate should focus on the distinction between preventive and curative methods of weed control.
 - First, the facilitator leads a discussion on preventive methods. She/he hints at the importance of: Preparing the fields; leveling; cleaning canals and bunds; using good seeds; good water management; manual weeding of flowering weeds.
 - Then, the facilitator presents the curative methods available for each of the weeds classified as harmful (Module 15 and Reference 19).

1. This objective only concerns farmers who are used to applying herbicides or who intend to use them.

Module 16

Integrated weed management

- The facilitator encourages discussion on the use of early manual weeding at the vegetative stage, and emphasizes the importance of eliminating flowering weeds to prevent their seeds from dispersing in the field.
 - If the farmers are used to using herbicides, the facilitator explains which product to use against which species, which stage of the crop to treat, and how to do it (Reference 20):
 - The facilitator explains the principle of the ‘active ingredient’ in herbicides. The examples of 2,4-D and propanil are presented with their prospective targets: 2,4-D against broad-leaf weeds and sedges (*Cyperaceae*), and propanil against grasses (*Graminaceae*);
 - The facilitator asks if farmers are aware of the difference between the commercial (trade) names and the name of the active ingredient;
 - She/he encourages discussion on the importance of knowing the active ingredient, so as to use herbicides products in an efficient and economic manner: for instance, the active ingredient 2,4-D can be found in Herbextra and Herbazol;
 - Farmers are discouraged from mixing products, as this may pose a health hazard, be harmful for the crop, or reduce herbicide efficacy. The facilitator explains that the products work best when applied at the right moment, e.g. at the 2–3 leaf stage of the weed;
 - She/he will explain the difference between contact herbicides (burning the leaves) and systemic herbicides (entering the plant by the leaves and passing down to the roots), and between pre-emergence herbicides (affecting emerging weeds) and post-emergence herbicides (only work when the weed seeds have already emerged).
6. Evaluation: the facilitator asks what the farmers appreciated (or not), what they learnt, and what they intend to do with their new knowledge. She/he specifically asks which new ideas this module has generated and how farmers intend to put these into practise on their IRM fields.
7. The facilitator asks volunteer farmers to draw conclusions from the session, and then invites all the farmers to the next session.



Time required

- Three hours



Materials required

- The weeds collected during the session on Module 15.

Box 16

The Lokakpli farmers visited two fields infested with weeds. They recognized five species of weeds in these fields, with *Echinochloa cruz-pavonis* dominating in Field 1 and *Marsilia minuta* in Field 2. The farmers debated the origin of all the weeds. *Echinochloa cruz-pavonis* was not found in the valley bottom before the installation of the irrigation scheme. Farmers thought that this weed was brought into the field with the rice seeds that they had bought. According to them, wind, birds, irrigation water, and the power-tiller machines can also bring weeds. As solutions against weeds, they mostly mentioned the use of herbicides, better field-leveling in order to improve water management, and annual clearing of the valley-bottom fields, canals and bunds.