

Directions for Management of Perennial Sedges in Lowland Rice

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Some of the most frequently encountered perennial sedges of rice in rain-fed and irrigated lowlands include: *Bolboschoenus maritimus*, *Cyperus distans*, *Cyperus esculentus*, *Cyperus exaltatus*, *Cyperus haspan*, *Cyperus rotundus*, *Eleocharis acutangula*, *Eleocharis dulcis*, *Eleocharis mutata*, *Fimbristylis dichotoma*, *Fimbristylis ferruginea*, *Fuirena stricta*, *Fuirena umbellata*, *Kyllinga erecta*, *Kyllinga pumila*, *Mariscus longibracteatus*, *Pycreus lanceolatus*, *Rhynchospora corymbosa*, *Scleria depressa*, *Scleria verrucosa* and *Scleria vogelii*.

Perennial weeds can live for more than two years and use vegetative structures such as rhizomes or bulbs for their survival and propagation. Rhizomatous weeds develop underground stems that propagate and produce new plants. Examples of rhizomatous sedges are: *Cyperus distans*, *Cyperus esculentus* and *Cyperus rotundus* (both having rhizomes ending in tubers). Besides vegetative reproduction and survival strategies, perennial weeds also propagate through the production of seeds. Any management practice, in order to provide effective control of perennial weeds, should focus on prevention of seed production (like with annual weeds) and removal or killing of the vegetative underground structures. This can be done mechanically by deep tillage in the off-season, trying to bring all stem, root and other propagation structures to the soil surface to be collected and removed (and burned) or killed by exposure to the sun (drying out) or by using herbicides. Another cultural method that proved successful to control perennial sedges is the use of a crop rotation with a dryland crop such as maize, groundnut, mungbean or combinations of these (Lacsina and Datta, 1975, Datta and Jereza, 1976). It is mainly the disruption of the favourable wet conditions that helps to reduce the perennial sedges. Herbicides (e.g. bentazon, fenoxaprop, 2,4-D and bensulfuron) can be effective when applied in an early stage (6-8 leaves or approx. 25 DAS) (Ampong-Nyarko and De Datta, 1991). Glyphosate applied in pre-emergence stages of the crop is also effective. A list of useful herbicides can be found in Table 1. The best approach against perennial sedges is an integrated management strategy that involves the application of adequate fertilizers after weed control, the optimization of planting time and crop coverage (e.g. through the use of high plant densities and vigorous weed competitive varieties such as shown by Rodenburg et al., 2009, Saito et al., 2010), hand weeding (at frequent intervals until crop canopy closure) or herbicides (see Table 1); herbicides are particularly effective in combination with tillage (Ampong-Nyarko and De Datta, 1991).

Table 1. Suitable herbicides for sedges in rain-fed and irrigated lowland rice.

Common name	Example of product	Rates (kg a.i. ha ⁻¹)	Timing
• 2,4-D	• Dacamine • Fernoxone • Herbazol	0.5- 1.5	Late post
• 2,4-D + dichlorprop	Weedone	1-1.5 (l ha ⁻¹)	Post
• bensulfuron	Londax	0.05-1.0	Post
• bentazon	Basagran	1.0-3.0	Post
• dymrone (K-223)	Dymrone	3.0-5.0	Pre
• MCPA	Herbit	0.5-1.5	Post
• molinate	Ordram	1.5-4.0	Pre/early post
• oxadiazon	• Ronstar 25EC • Ronstar 12L	0.6-1.5	Pre/early post
• pendimethalin	• Stomp 500 • Prowl	0.5-1.5	Pre
• Piperophos*	Rilof 500	0.5-2.0	Pre/early post
• propanil +			
○ bentazon	Basagran PL2	6-8 (l ha ⁻¹)	Post
○ triclopyr	Garil	5 (l ha ⁻¹)	Post
○ oxadiazon	Ronstar PL	5 (l ha ⁻¹)	Post
• thiobencarb	Saturn	1.5-3.0	Pre/early post

References

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