Biological control of Water hyacinth

SUCCESS STORY - 6

SL	PARTICULARS	DETAILS
	ADDRESS OF DEMONSTRATIONS	
	(i) **VILLAGE**	Pond of Mahanadda, Ranital, Guloua tal, Man Singh tal
	(ii) **POST**	Jabalpur
	(iii) **TEHSIL**	Jabalpur
	(iv) **DISTRICT**	Jabalpur
	(v) **STATE**	Madhya Pradesh
3	**EXTENT OF PROBLEM**	• Water hyacinth (Eichhornia crassipes (Mart Solmns) is a free floating, annual or perennial aquatic plant. It is native to Brazil and has been introduced in India as an ornamental plant in West Bengal in early 20th century but now, it is one of the worst weeds of aquatic bodies in India. It is estimated to cover over 0.4 million ha of water surface. It propagates by vegetative and sexual methods. The plant is also reproduces by seeds. A single water hyacinth plant can produce a few to 5000 thousands seeds. The seeds may sink to the bottom mud where they can remain viable upto 20 years.

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		• The losses caused by this weed are several times more than its beneficial role in purifying water. It may evaporate 3-8 per cent water. It is estimated that the 20-40 per cent of the total utilizable water in India is currently infested by this weed in the country, affecting directly irrigation, hydroelectric generation, navigation besides drastic reduction in fish production, aquatic crops (lotus, chestnut) and increase in diseases caused by mosquitoes.
3	**CONTACT DETAILS**	DWSR, Jabalpur
4	**DETAILS OF PONDS (SIZE, LOCATION, WATER AVAILABILITY ETC.)**	Five large ponds of about 3-5 acres (Approx)
5	**TECHNOLOGIES/GOOD AGRICULTURAL PRACTICES/ FACILITIES/BENEFITS OBTAINED WITH DETAILS**	Biological control is the most economical and practical way to keep the weed under check and it is environmentally safe and poses no threat to non-target organisms environment and biodiversity. Use of exotic weevils Neochetina spp, is a potential bio-agent for controlling this weed in aquatic bodies. Initially 500-1000 adults can be released in a water body infested with water hyacinth to establish and population build up of insects. Biological control of water hyacinth occurs in cycles. First cycle of control of water hyacinth may be achieved within 12 to 18 months after introduction of the bioagents. After first wave of control, subsequently regrowth or fresh growth may be controlled by the bioagents in less time. Adult feeds on leaf tissues while grubs make tunnels in petioles thus gradually killing the weed.

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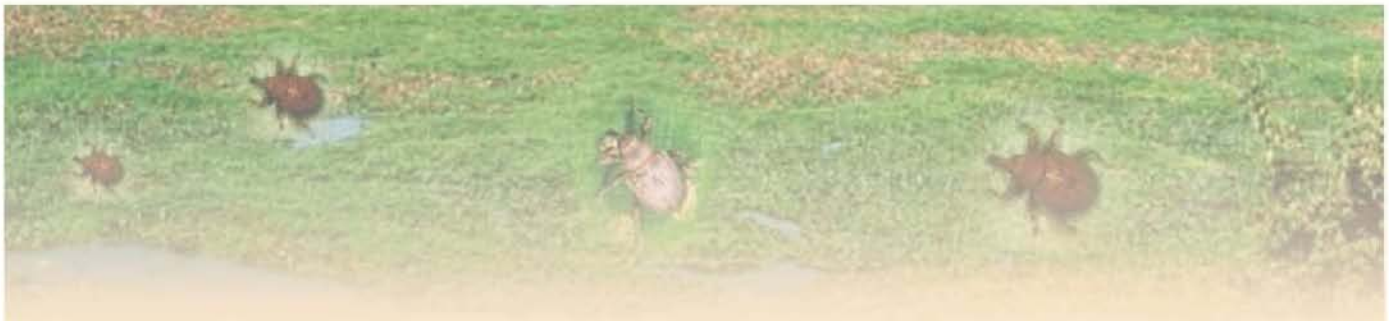
6	**DETAILS OF RESULTS OBTAINED DUE TO THE ADOPTION OF TECHNOLOGIES (TECHNIQUES ADOPTED, RESULTS ACHIEVED ETC.)**	Neochetina spp. has controlled water hyacinth from 5 large ponds namely Mahanadda, Ranital, Guloua tal, Man Singh Tal, etc in Jabalpur after its introduction in 1995-1996. In Mahanadda tal, no reoccurrence of water hyacinth has been observed till 2008. Inhabiting people in the surrounding areas of the pond appreciated the efforts of the institute in controlling of water hyacinth problem which was persisting for last many years.
7	**NATURAL RESOURCES SAVED/CONSERVED LIKE WATER ETC.**	It can be managed effectively by manual, mechanical, chemical and biological methods but manual and mechanical methods are very costly and do not provide the permanent solution. It may effectively be controlled by some herbicides like 2,4-D, glyphosate and paraquat but this method has received little preference in India due to the cost and environmental implications.
8	**ANY OTHER RELEVANT INFORMATION**	Recently, , introduction of bioagent in 2003 was made in a pond of village Junmani where 1000 weevils were introduced along with herbicide application in 15-25% area of the pond. The beetles were established throughout the pond within six month and controlled water hyacinth completely two times within a period of 22 months. This is a successful example of integrated approach of water hyacinth.



A pond full of water hyacinth before release of weevils

Grubs damage petioles Adults feed on leaves

Brown patches amidst the Water hyacinth indicating start of damage creating by weevils

The same pond cleared from water hyacinth by the weevils