

WATER HYACINTH

What is this Action Sheet about?

It's about water hyacinth, the world's worst waterweed that is now clogging up waterways throughout Africa. There is no simple answer to the problem of water hyacinth, but it is clear that everybody needs to work together to find a solution that will benefit the world. This Action Sheet talks about the water hyacinth problem, and suggests ways in which you might be able to help.



What's the problem?

Water hyacinth grows fast from seeds and from shoots that break off and grow into new plants. The number of plants doubles every 5 to 15 days, so in a single season, 25 plants can multiply up to 2 million! This means that if water hyacinth gets into a new river or lake, it grows and grows until it covers the water with a thick floating mat of tangled weed. This causes terrible problems for people using the waterway:

- The plants use up precious water. Water is lost over 3 times faster than from clear water surface because of evapo-transpiration from the leaves. The quality of water is also reduced
- Rivers are clogged up. When the rains come, floods occur because water cannot drain from the area
- People can't travel by boat, because the water hyacinth blocks their way. It takes 30 minutes to travel 100m on a really clogged up section of Lake Victoria in Uganda
- Fish and other river creatures die because of lack of oxygen. People can no longer go fishing, and may suffer malnutrition as a result
- Mosquitoes and other disease-carrying organisms breed in the water hyacinth, making diseases like malaria, schistosomiasis and cholera more common
- Dangerous animals like snakes and crocodile also hide amongst the weeds
- Cows get stuck in the water and drown
- Tourists no longer visit the infested area

Where did it come from?

Water hyacinth originally comes from South America. In the last two centuries, water hyacinth has spread throughout the tropics. People like the purple bloom to decorate their gardens, so they bring it with them when they move around the world.

Water hyacinth is one of the worst examples of the trouble that can be caused by introducing species from other continents. In their natural environment plants are kept in check by natural enemies. Often when taken to new environments these natural enemies are missing and so the plants can grow wildly. They take over and become a problem to the indigenous plants of that land.

What can be done to stop this problem plant?

Efforts are underway all over Africa to remove water hyacinth from waterways, by hand, by machine, using chemical pesticides and biological control. Biological control involves introducing weevils, the natural enemy of water hyacinth, from South America. Each method of control has advantages and disadvantages, but combined they offer hope of a solution.

Method	Advantages	Disadvantages
Manual	Works straightaway Can provide jobs to people who have suffered due to water hyacinth	Not fast enough to deal with highly infested waters – 500 workers can clear one hectare per day
Harvester machine	Also needs manual labour, so can provide jobs Works straight-away	Machines are expensive and need maintaining, but governments may consider it worth the cost
Chemical pesticides	Fast-working	Fish, animals and human health may be damaged by strong chemical pesticides; Can be expensive; Must be done with extreme care to avoid damaging the river or lake
Biological control	Effective in the long term	Takes several years to begin to work; May not work if the river or lake is very

Is there anything good to say about water hyacinth?

Throughout Africa, people are determined to look on the bright side of this watery invasion, and make the most of this uninvited harvest. Animal feed, organic fertilizer for farms and gardens, biogas production, fuel briquettes, and craft-making are among the list of possible uses. Prisoners at Murchison Bay Reserve in Uganda make furniture from water hyacinth, learning new craft skills whilst they are in prison, as well as contributing to clearing Lake Victoria. Women at the WHUP (Water Hyacinth Utilization Project) in Kenya are making money from the menace, selling hand-made water hyacinth chairs, tables, baskets, shades, paper, books, and cards.

How to use water hyacinth as a fertilizer

Water hyacinth can be used on the land either as a green manure or as compost. As a green manure it can be either ploughed into the ground or used as a mulch. The plant is ideal for composting, an elegant solution to the problem of water hyacinth and poor soil quality.

1. After removing the plant from the water, leave it to dry for a few days
2. Mix the dried plant with ash, soil and some animal manure. Microbial decomposition breaks down the fats, lipids, proteins, sugars and starches
3. Leave the mixture in piles to compost, producing a rich safe compost which can be applied directly to the soil. Compost increases soil fertility and crop yield.

How to make paper from water hyacinth

1. Collect Water Hyacinth
2. Dry in the open until semi-crispy
3. Cut off stems – use the leaves and roots for other purposes
4. Cut the stems into small cubes
5. Take one large handful of the cubes
6. Put these cubes into a blender with 3 ? cups of water a mix for 30 seconds (given no electric power, you could use a pestle and mortar)
7. Pour in to bowl half full of water
8. Repeat this sequence with 4 handfuls
9. Make a wooden frame with a fine gauze. Slide it under the hyacinth and put on the bottom of the bowl. When the water has settled, gently raise the frame
10. Using a small, dry cloth, pat the water hyacinth to make it as dry as possible
11. Spread a larger cloth out on the floor. Turn the frame over, lay it on the cloth and pat more with the small cloth
12. Lift the frame so that the water hyacinth paper falls on the cloth. Place another cloth on top of the water hyacinth, and several newspapers on top of that. On top again, place a wooden board, and a rock or something heavy
13. After 30 minutes, take everything off the water hyacinth paper, peel it carefully off the cloth and lay it out to dry for 24 hours
14. Experiment with different proportions of Water Hyacinth pulp and wastepaper pulp, until you have the paper you like best

How do you make furniture from water hyacinth?

Furniture is made by winding water-hyacinth rope around bamboo frames, as follows:

1. Collect water hyacinth from the lake. An entire truckload of wet water hyacinth will reduce to a sack of stems weighing only 10kg, that is, enough to make rope for one armchair or two dining chairs. Chopping at the harvesting site can reduce the volume and water content.
2. Transport the weed from the lake to the working area.
3. Remove the roots and leaves (can be used in a biogas plant)
4. Split the stems lengthways and allow to dry in the sun for a day
5. Scrape out the inner pith of the stems with a knife
6. Allow the stems to dry for another three days
7. Soak in a solution of sodium metasilphite or caustic soda and water for one hour. This preserves the fibre and stops the rope from rotting – the chemicals are entirely used up during the processing, leaving a chemical-free residue at the end of the process
8. Dry in the sun for 5 to 6 hours
9. Cut the stems lengthways into strips (The width depends on the diameter of rope required)
10. Optional – the rope can be boiled in dye at this stage
11. Cut off loose strands from the rope
12. Weave furniture or handicrafts with bamboo frames.

What can I do about water hyacinth?

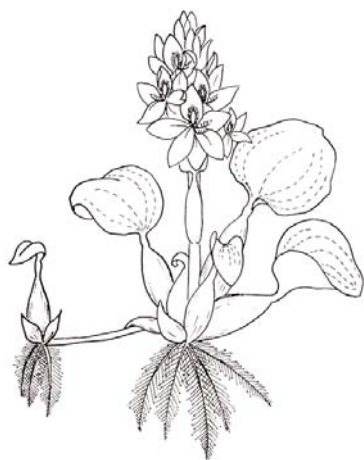


Image: FAO

If water hyacinth has already arrived where you live, make the most of the situation by experimenting with ways to use this free source of biomass. Help to clear it if you can. If you are clearing water hyacinth by hand, make sure it's safe and wear gloves - water hyacinth can cause itching (as if it couldn't be any more troublesome). Remove whole plants from the water and take them away to dry out. Cut weeds left in the water will decompose and cause more problems.

If you haven't yet seen water hyacinth in your area, set up an early warning system. Know what to look out for, and check out which organisations could help if you find any.

Find out about other introduced species that have gone wild where you live. Join or set up a hacking group to remove alien vegetation that has got out of control. Plant indigenous plants and trees in your garden.

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FOR MORE INFORMATION

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A list of organisations involved in Water Hyacinth Control in Africa by country can be found at:
http://web.idrc.ca/es/ev-41701-201-1-DO_TOPIC.html

Books:

ITDG Technical Brief on Water Hyacinth Control and Possible Uses

www.itdg.org/docs/technical_information_service/water_hyacinth_control.pdf

USE WATER HYACINTH! A Practical Handbook of Uses for the Water Hyacinth from Across the World, by K. Lindsey and H.-M. Hirt. 1999. 115 pp. Order from Anamed, Schafweide 77, 71364 Winnenden, Germany. E-mail: keith_lindsey@hotmail.com. \$15 plus S/H.

Wittenber R. & Cock M.J.W. 2001 (eds) *Invasive Alien Species: A Toolkit for Best Prevention and Management Practices*. Published by GISP Download at <http://www.gisp.org/downloadpubs/Toolkiteng.pdf>