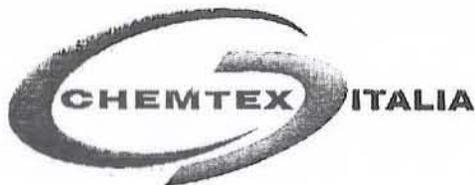




GRUPPO MOSSI & GHISOLFI

FIELD TRIALS

Border maintenance
End of cycle – final removal



Tortona, 30/08/2010

Summary



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- ✓ Border maintenance
- ✓ End of cycle – final removal

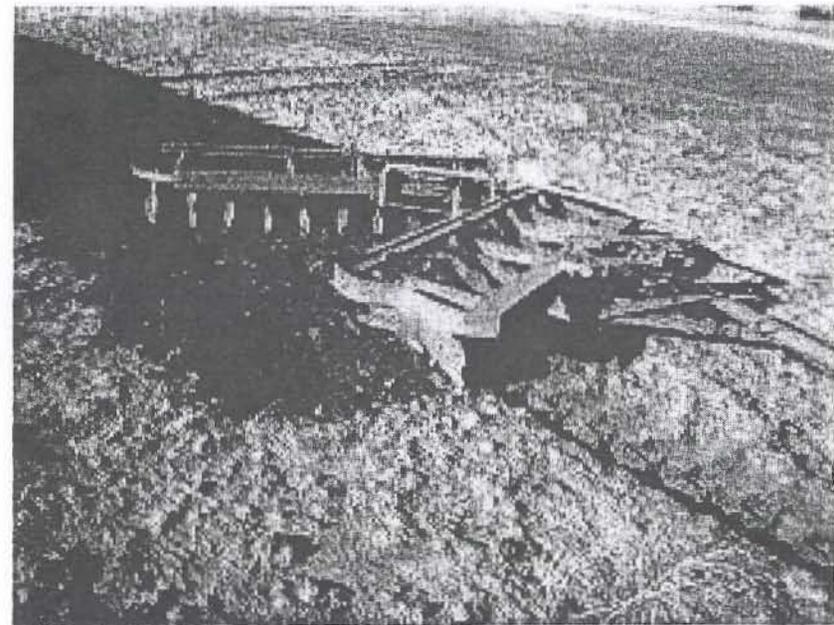
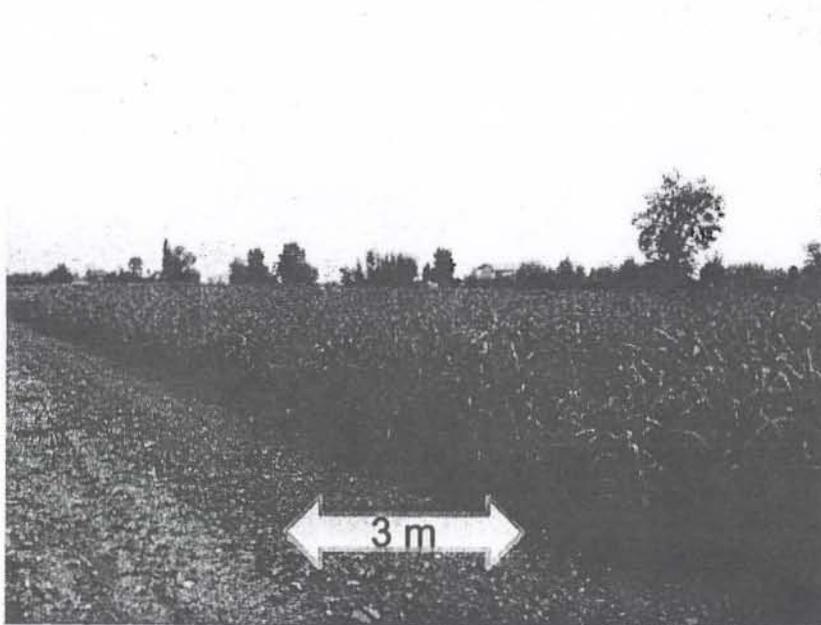
Lignocellulosic Ethanol

Border maintenance



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In order to control the spread of *Arundo donax* in the field borders one time every 3-4 months a passage with a disc harrow (about 2-3 m are enough) is required.

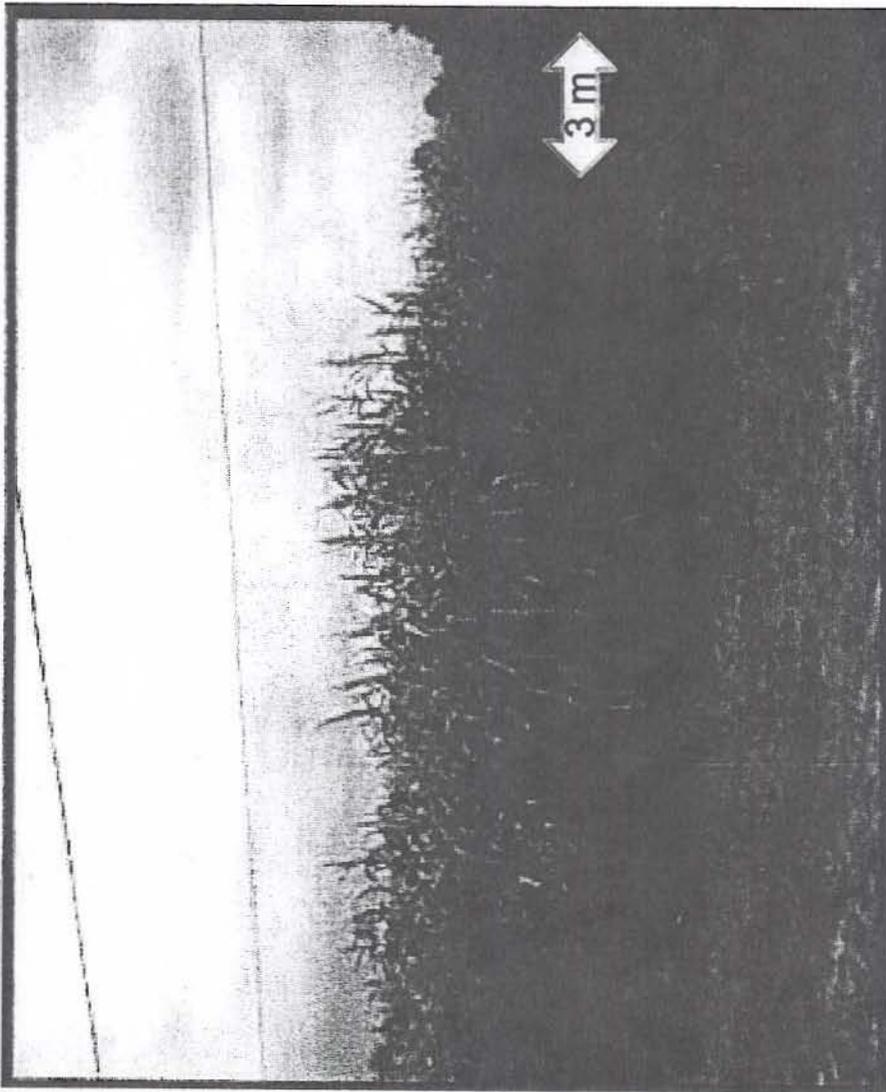


Lignocellulosic Ethanol

Border maintenance



GRUPPO MOSSI & GHISOLFI



In this way any possibility of spread are under control.

Lignocellulosic Ethanol

Summary



GRUPPO MOSSI & GHISOLFI

- ✓ Border maintenance
- ✓ End of cycle – final removal

Lignocellulosic Ethanol

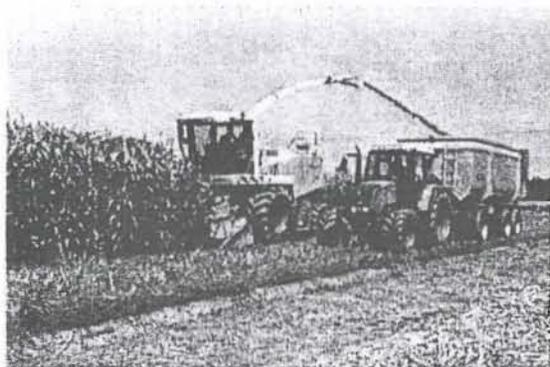
End of cycle – final removal



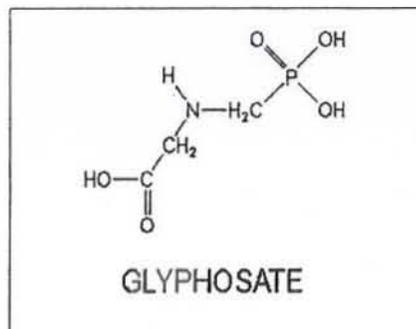
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After the last cut (with a chopper machine) you can remove *Arundo donax* through two steps:

- Chemical treatment with glyphosate (we used clinic 360SL by Nufarm)
- Mechanical removal of residues after the plant's death



last cut



Chemical treatment



Mechanical removal

Lignocellulosic Ethanol



Chemical treatments variables investigation:

- Amount of glyphosate applied
- Period of cut
- Time between the last cut and the spray of glyphosate

End of cycle – final removal – Chemical treatments



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	Glyphosate	Cut	Spray
Plot 1	4.5 l/ha	7/04/2010	7/04/2010
Plot 2	9 l/ha	7/04/2010	7/04/2010
Plot 3	18 l/ha	7/04/2010	7/04/2010
Plot 4	4.5 l/ha	7/04/2010	3/05/2010
Plot 5	9 l/ha	7/04/2010	3/05/2010
Plot 6	18 l/ha	7/04/2010	3/05/2010
Plot 7	4.5 l/ha	26/05/2010	26/05/2010
Plot 8	9 l/ha	26/05/2010	26/05/2010
Plot 9	18 l/ha	26/05/2010	26/05/2010

Lignocellulosic Ethanol

Field trials – Savigliano (Italy)



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In plots 1, 2 and 3 (40 m² for plot) Arundo was cutted on april 7 and treated with glyphosate (4.5, 9 and 18 liters per ha) on the same day. In this trial we had bad efficiency because the plants were still dormant. Dormant period did not allow the plant to move the active ingredient in the rhizomes.

In plots 4, 5 and 6 (40 m² for plot) Arundo was cutted on april 7 and treated with glyphosate (4.5, 9 and 18 liters per ha after one month (on may 3). We had good efficiency but the plants seem to being to recover.

In plots 7, 8 and 9 (40 m² for plot) Arundo was cutted on may 26 and treated with glyphosate (4.5, 9 and 18 liters per ha) on the same day. We had excellent efficiency, mortality > 95% even in fields with low concentration. (see next photo).

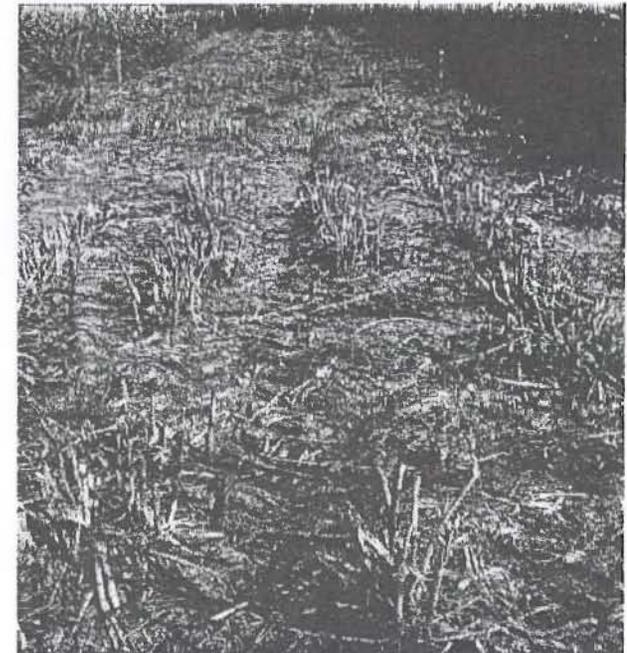
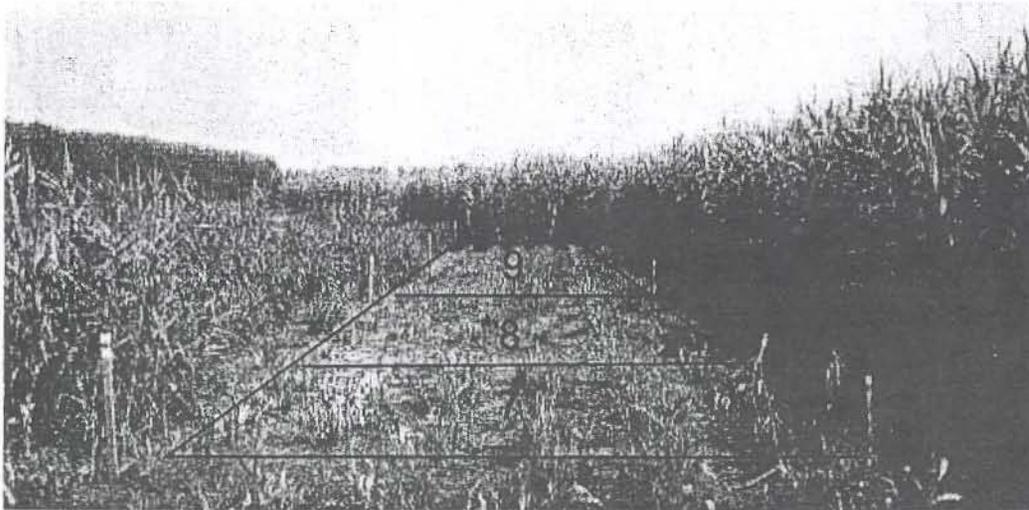
The system is CIS (Cut and Immediately Spray)



Also with glyphosate at low concentrations had a great effect on deciduous plants in full growing season so as noted in the tests.

The plant is cut off near the base and herbicide quickly painted on the stem in hopes of poisoning the rhizome below.

In growing season the active ingredient is translocated into rhizomes causing death.



Other periods of intervention such as cut in winter season followed by treatment seem not to have good results. In all likelihood dormant period did not allow the plant to move the active ingredient in the rhizomes, causing only temporary damage to leaf contact, immediately reduced by the advent of spring season.

Lignocellulosic Ethanol