A 'natural herbicide' against calotrope?

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A 'natural herbicide' against calotrope. This compound is yet to be isolated and identified, but results so far have revealed that:

- The 'natural herbicide' is released from living buffel grass roots.
- Buffel grass residues (shoots and roots) do not have any toxic effect on calotrope seedlings.
- The 'natural herbicide' is mainly confined to the top 20 centimetres of the soil profile and is very potent against calotrope seedlings.

When calotrope seedlings were grown in soil containing well-established buffel grass plants whose top growth had been removed, leaving only the root system and whatever root exudate produced by the buffel grass, the root, stem and leaf growth of calotrope were drastically suppressed, despite the addition of adequate nutrients.

However the growth of calotrope was not suppressed when grown in soil containing either buffel grass shoots applied to the surface of the soil or incorporated into the soil. The production of the 'natural herbicide' by the living buffel grass roots was mainly confined to the top-most layer, (0-20 centimetres) of the soil profile (see Figure 1). This has important ecological significance since calotrope seeds are found mainly in the topsoil in the field.

The practical significance of the findings mean that proper management of the pastoral areas, ensuring they are not over-grazed and the planting of buffel grass, will prevent calotrope growing in areas that are now free of this weed. Planting buffel grass on land already infested with calotrope should lead to a steady decline in the vigour and density of the plants.

This approach may be considered as a form of biological control with a relatively low labour input which is cheap and environmentally acceptable. While not eradicating the weed, its presence becomes unimportant.

**Future work**

A future research programme would include looking further into the behaviour of the 'natural herbicide' produced by buffel grass. Its effects on other plants would be examined and attempts would be made to isolate and identify the substance. Hopefully, this may provide new chemistry for use in other areas of weed control.

**Further reading**

Calotrope?

The big calotrope seedlings were grown in soil containing no buffel grass roots. The others were grown in soil containing (from left) 5, 3 and 1 roots of 6-week-old buffel grass whose aerial parts had been removed.

The calotrope seedlings in these pots were grown in soil with a surface mulch of (from left) 0, 5, 3 and 1 shoots from 6-week-old buffel grass. The buffel gross shoots did not suppress calotrope growth.