Yellow bristle grass seed killed in maize silage

Background

Yellow bristle grass (Setaria pumila) is a serious weed that reduces dairy farm profitability and could potentially infest productive land throughout New Zealand.

Supplementary feed is used extensively in the dairy industry and farmers are concerned that yellow bristle grass seed may be spread with maize silage.

Previous studies showed that its seeds did not survive burial in covered silage stacks after 1 week.

Aim

To further investigate the decline in seed viability of yellow bristle grass in covered maize silage stacks.

Method

Mesh bags containing 50 seeds were buried in two covered silage stacks in Waikato.

Prior to burial the initial seed germination was 69% and viability using tetrazolium staining was 88%.

Temperature recorded at 15 min intervals with dataloggers buried beside the seed.

pH of silage measured, at burial and at each sampling time (slage:water ratio = 1:3).

Stack 1

A ground surface covered stack

Seed were buried on 14.03.2015 at approx. 400 mm depth.

Five bags were retrieved after 1, 2, 3, 5 and 7 days. Germination and tetrazolium viability tests were performed immediately after retrieval times.

Stack 2

A concrete wall covered bunker

Seed were buried on 25.03.2015, at the surface and at approx. 400 mm depth. Five bags were retrieved after 1, 2, 3, 5 and 7 days. Germination tests were performed immediately after retrieval times.

Results

Temperature

Germination

Viability

Temperature

Yellow bristle grass seed dead within 5 days when buried in covered silage stacks.

Further investigation into the chemicals and mechanisms behind this rapid decay and their potential for effective weed seed control is warranted.