

Investigation on the control of rook damage to germinating wheat

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Introduction

Until 2001, cereal seed in Ireland was treated with the insecticide Kotol (*a.i.* lindane). While the ostensible purpose for applying Kotol was the control of wireworms, the main purpose for its use was to deter rooks/crows (*Corvus frugilegus*) from feeding on seed and uprooting seedlings to feed on the 'mother' seed. Since 2001 there have been several reports of serious damage to cereal crops by crows. Damage would appear to be most severe where crops are sown late in the autumn and early in spring.

Rook damage to cereal crops can range from slight to severe, it may be confined to patches within fields or extend over the entire field. Severe damage necessitating a resowing of the crop is rather rare, however, the absence of an effective crow repellent seed treatment is of concern to cereal growers. Investigations at Oak Park have shown crows can reduce spring barley plant density from 300 plants per square metre to as few as 20 plants/m² with plant density in winter wheat being reduced from 380/m² to 166/m² (Kennedy, 2002).

The objective of this investigation on winter and spring sown wheat was to identify a seed treatment that would deter crows from feeding on seed and damaging seedlings.

Materials and Methods

Fungicides and various repellents were applied to winter and spring seed wheat and evaluated for the control of rook damage to germinating and establishing seedlings. Products were applied to seed by means of specialised equipment and seed sown by a 'Wintersteiger' seeder. Twenty six treatments and an untreated control were sown, in plots 20 x 2 m, at Oak Park on 3 Dec. 2004 and 15 Feb. 2005. Replication was fivefold. Plant counts per four quadrats, each 0.25 M², were recorded per plot at the tillering stage of growth. Grain yield, at 85% DM, was obtained by harvesting entire plots using a modified Combine-harvester. The results were analysed using analysis of variance procedures. Means were compared using least significant difference procedure (LSD).

Results and discussion

Winter Wheat

The number of crows recorded in the morning and at mid-day on the winter wheat trial in the three weeks post sowing never exceeded 20. However, at dusk the number of crows on winter wheat ranged from 200 to 600. Feeding on winter wheat seed by crows was extensive and severe. In the days post sowing crow damage was evident by lines of holes corresponding to where seeds were located and excavated. Plant populations were recorded on 5 April 2005. The highest plant density was 27/m², recorded for seed treated with

thiram. Because the damage was so severe, the trial was ploughed up in mid-April and the site sown with spring barley.

Spring wheat

Crows were recorded on spring wheat on all but one visit to the site in the month post sowing. Numbers ranged from 2 to 20 and only exceeded this on one occasion when 30 crows were recorded at mid-day on 17 February 2005. Feeding on seed by crows was noted prior to crop emergence. Plant populations were recorded on 1 April 2005 and the results for the better treatments are given in Table 1.

Highest plant populations and yields were obtained for seed treatments with the fungicide thiram. Anchor, which contains thiram and is second most widely used seed treatment on cereals, had significantly greater plant density and yield relative to untreated seed. Panocrine, the most widely used seed treatment, also gave significant control of crow damage but in this trial was significantly less effective than Anchor. The bird repellent methyl anthranilate (50% solution) failed to provide significant control of crow damage. Sowing untreated seed at 9 cm relative to the normal depth of 4 cm (untreated control) prevented a significant reduction in both plant density and grain yield.

Table 1. The number of plants per square metre and grain yield (t/ha) for some of the more effective seed treatments applied to spring wheat for the control of crow damage, Oak Park, 2005

	Treatments	Plants/m ²	Yield t/ha
1	Thiram 4 l/t	273*	9.7*
2	Thiram 1 l/t	228*	9.7*
3	Anchor (carboxim+thiram)	236*	9.7*
4	Beret (Fludioxinil)	204*	9.2*
5	Deep sowing (9 cm)	218*	8.9*
6	Panocrine (Guazatine)	185*	8.9*
7	Anthraquinone	172*	9.3*
8	Methyl anthranilate	134	8.4
9	Untreated	116	8.1

* = Significantly different from untreated (P < 0.05)

Conclusions

Where crows are numerous and hungry and where a crop is sown either late in autumn or early in spring relative to most crops in the area, as was the case with the winter wheat trial, considerable damage by crows can ensue. In these circumstances none of the seed treatments investigated offer an effective control of crow damage. The commercially available seed treatments, Anchor and Panocrine, were effective in controlling crow damage in spring wheat. It is concluded that sowing seed treated with either product and at depths greater than normal (> 4 cm) should significantly reduce damage by crows.

Reference

Kennedy, T. F. (2002). Minimising crow damage without kotol. *Irish Farmers Journal*, **54** (9) 20.