

DOLLARS & SENSE OF AERIAL SPRAYING



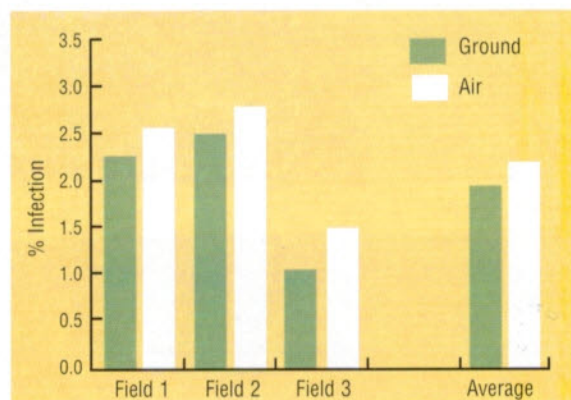
Aerial Application versus Ground Application

**Trials conducted on Canola,
Wheat, Beans and Potatoes
prove that when fungicides are
applied by air, yields are
equivalent to or exceed the
yields achieved on the same
crops when applied by ground.**

Trial Description

- Conducted in 13 separate locations in Manitoba
- Plots were 20 acres in size
- Seeding, swathing and harvest were conducted by Grower
- Yields were verified by weigh wagon
- Ground application, 100 ft. boom 12" tire
- Track loss was factored into ground application average yield

Canola Comparative Yield 1994



In all three fields, the trials sprayed by aircraft yielded higher than those sprayed with ground equipment.

The average canola yield on this trial, as determined by weigh wagon, was:

Ground application trials	40.4 bu./ac.
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Aerial application trials	41.1 bu./ac.
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The .8 bu./ac. advantage for aerial application, at current canola prices, represents \$5.00 to \$7.00 savings for the grower.

2004 Lance on Canola

Location	Treatment	Yield
#1	Air	38.70
	Ground	38.00
	Check	28.90
#2	Air	47.50
	Ground	43.22
	Check	43.76
#3	Air	46.60
	Ground	47.00
	Check	41.70

In two of three trials, yield under aerial application surpassed yield under ground application.

The average canola yield on this trial, as determined by weigh wagon, was:

Ground application trials 42.74 bu./ac.

Aerial application trials 44.27 bu./ac.

That's 1.53 bu./ac. advantage by aerial application.

Wheat

Location	Treatment	% of Check	Bushel Weight	Yield bu./ac.
#1	Air	115	63.2	59
	Ground	100	62.4	52
	Check	100	62.4	52
#2	Air	125	63.9	72
	Ground	116	62.6	68
	Check	100	58.1	63

Our trials confirm previous research.

Hofman et al (2004) assessed a replicated ground and aerial application of a fungicide for Fusarium Head Blight in durum wheat in North Dakota, U.S.A. during the summer of 2003.

Their work found no significant differences in yield or test weight when comparing aerial to ground application.

They also found that both treatments increased yield when compared to untreated checks.

This work also showed that there was decreased leaf disease on the flag leaf when compared to the untreated check and that there was no difference between treatment methods.

Edible Beans 2004

Treatment	Yield (lb./acre)	Yield (bu./acre)	% Check
Air	2205	37	122
Ground	2204	37	122
Check	1806	30	100

The application of the Lance Fungicide on Edible Beans showed a yield improvement over the untreated check from 1806 lb./ac. to 2205 lb./ac. for both ground and aerial applications.

Summary

• In Canola

Two trials conducted 10 years apart verify the advantages of aerial application. Research data from Edible Bean trials show aerial application equivalent to ground application.

• In Wheat

Agronomists indicate that wheat yields under aerial application of Headline were as good as or better than ground application of Headline.

• In Potatoes

Disease assessments carried out by independent agronomists showed similar or greater performance of fungicides when applied by aerial application.

* as concluded by AXYS Agronomics

Potatoes

The effect of sprayer traffic on potato yield and grade.

Table 1: Potato Yield and Percent Dirt

Treatment	Undersize Yield (cwt/ac.)	Maingrade Yield (cwt/ac.)	Total Yield (cwt/ac.)	Dirt (%)	Bonus Tubers (%)
Untreated – no sprayer tracks	9.08	212.76	221.85	3.17	42.12
Treated – sprayer tracks	4.88	200.97	205.84	15.12	31.00
Probability	0.0612	0.3225	0.2524	0.0066	0.0323
CV%	19.15	5.36	5.76	6.72	1.82
LSD (0.05)	NSD	NSD	NSD	8.42	10.43

NSD = No Significant Difference

Trials conducted on (Russet Burbank) summer 2001 at Portage la Prairie by Gaia Consulting Ltd.

Table 2: Effect of sprayer traffic on yield and grade

Treatment	Specific Gravity	Undersize Yield <2" (cwt/ac.)	Marketable Yield >2" (cwt/ac.)	Total Yield (cwt/ac.)	Greening (%)	Average Tuber Size (oz.)
2 – No Traffic	1.083	27.06	328.87 a	355.93 a	8.6	3.94
1 – Sprayer Traffic	1.079	29.48	281.76 b	311.21 b	1.35	4.78
Probability	0.1282	0.4182	0.0097	0.0212	0.2129	0.0684
CV%	0.24	12.9	3.7	4.27	130.55	9.75
LSD (0.05)	0.01	8.21	25.42	32.04	14.62	0.96

Trials conducted on (Russet Burbank) summer 2002 at Portage la Prairie by Gaia Consulting Ltd.

Treatment #	Treatment	Undersize (cwt/ac.)	Maingrade (cwt/ac.)	Total (cwt/ac.)
1	Affected by tracks	63	238.6 b	301.6
2	Non-affected	52.8	340.5 a	393.2
Probability		0.3351	0.0443	0.0662
CV%		21.9	14.9	13.2
LSD (0.05)		NSD	97	NSD

NSD = No Significant Difference

Trials conducted on (Russet Burbank) summer 2003 at Winkler by Gaia Consulting Ltd.

THE FACTS

Aerial Application versus Ground Application

Two independent research trials conducted
10 years apart come to the same conclusions:

**Trials conducted on Canola,
Wheat, Beans and Potatoes
prove that when fungicides are
applied by air, yields are
equivalent to or exceed the
yields achieved on the same
crops when applied by ground.**

This research has been independently conducted by:

**AXYS Agronomics
ICMS Consulting
Gaia Consulting**

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