



Agronomic Evaluation:

Five Side Banding Openers Compared

In 1995 and 1996, PAMI, in cooperation with Agriculture and Agri-food Canada and Saskatchewan Wheat Pool, completed an agronomic performance comparison of five bolt-on side banding openers tested in five different soil conditions, two crops, and four different fertilizer rates. Here's what we found.

The successful expansion of direct seeded acreage on the Prairies has resulted in a proliferation of one-pass seeding systems that allow operators to separately place seed and fertilizer in a single field operation.

Since the introduction of these openers, extensive research and development has improved their performance and a new generation of openers has emerged. The objective was to assess the performance of each opener in crop establishment, seed yield, and quality.

At a glance...

Summary: When properly adjusted for soil conditions, there was little difference in either establishment or yield of spring wheat for all openers.

The Flexi-coil and the Gen openers gave the best emergence results in canola. The other three openers showed reduced performance in seed/fertilizer separation. However, this did not translate into reduced yield. Check the full text for details.



Morris Edge On Mount: Good emergence and yield in spring wheat, but canola emergence results need improvement at higher N rates. Canola yield was good.



Dutch-Vern Eaglebuster: Good emergence and yield in spring wheat, but canola emergence results need improvement at higher N rates. Canola yield was good.



Swede SW470: Good emergence and yield in spring wheat, but canola emergence results need improvement at higher N rates. Canola yield was good.



Flexi-coil Stealth: Good emergence and yield in spring wheat and canola.



Gen 200: Good emergence and yield in spring wheat and canola.

PAMI selected five widely available bolt-on side-banding openers and assessed their performance in spring wheat and canola on test plots with different fertilizer rates. Test plots were located in: heavy clay, clay loam, and loam (black soil zone); clay (gray soil zone); clay loam (dark brown soil zone). Growing conditions ranged from poor to good. All results are compared against check plots sowed with a standard knife opener.

Detailed Results

The graphs resulting from this study effectively tell the whole story. A few points worth noting follow:

Wheat Emergence: Combined emergence data from all ten wheat sites showed that only three out of twenty treatments resulted in a wheat seedling stand of less than 85 per cent of the no N knife check. These results suggest there would be little effect on crop maturity or seed yield. All openers provided excellent emergence at all fertilizer rates.

Wheat Yield: There was an excellent yield response as nitrogen rates increased, and all openers provided excellent yields.

Canola Emergence: Canola seedling establishment was reduced at higher N rates with some of the openers. The sensitivity of canola to fertilizer may have caused slightly reduced check emergence values. The PKS (phosphorous-potassium-sulphur) blend for the check was applied with the seed and the side banding openers all produced emergence at a zero N rate which exceeded the check. As N rate increased, it had little effect on emergence with the Flexicoil and Gen openers but emergence declined with the Dutch, Morris, and Swede openers, indicating some seed/fertilizer mixing. At all N rates, all openers still produced establishment rates above 60 plants

Are more farmers direct seeding?

Direct seeding is a growing trend. The growth of direct seeded acreage is mainly the result of two factors:

- **The drop in price of glyphosate herbicide, which allows control of weeds without tillage.**

- **The development of the air seeder and air drill, which provide excellent crop establishment in high residue conditions.**

According to the Saskatchewan Soil Conservation Association, about 20% of seeded acreage in Saskatchewan is direct seeded. In Manitoba, it's around 7%.

Opener Tips:

- **Pay close attention to opener wear. Opener wear can lead to a reduction in seed/fertilizer separation, compared to new openers.**

- **The opener-to-shank angle relationship is important. Not all implements have the same shank angle. Some openers may require a wedge to achieve the optimum opener-to-shank angle. Check your manual for detailed instructions.**

per m² which have been found to be sufficient to produce maximum yields.

Canola Yield: Combined yield data from all ten sites showed that canola grain yield did not reflect the variability in seedling stand establishment—yields were virtually identical among openers for each N rate. In only one instance did the poor seedling establishment of the Dutch, Morris, and Swede openers reflect significantly lower grain yields when compared to the Flexi-coil and the Gen.

Overall, the openers tested provided good to excellent yield results and fertilizer response. The ability of the canola crop to branch offsets any reduction in emergence due to mixing of seed and fertilizer. In wheat, the degree of mixing had almost no effect on establishment.

The Parameters

Openers Tested:

• Flexi-coil Stealth	1995 model
• Dutch Vern Eaglebuster	1995 model
• Swede SW470	1995 model
• GEN 200	1995 model
• Morris Edge On Mount	1995 model

Crop Types and Rates:

- Maverick Polish Canola seeded at 6 pounds per acre, treated with VitavaxRS and blended with Furadan 5G.

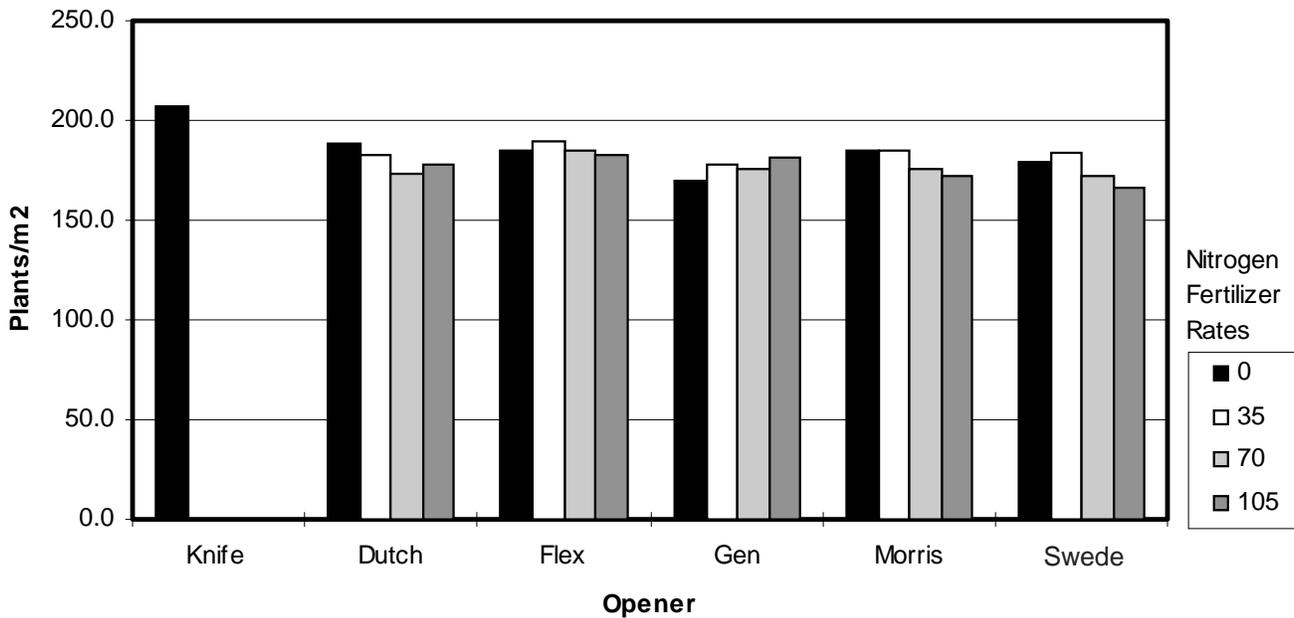
- Pasqua Hard Red Spring Wheat seeded at 120 pounds per acre.

Fertilizer:

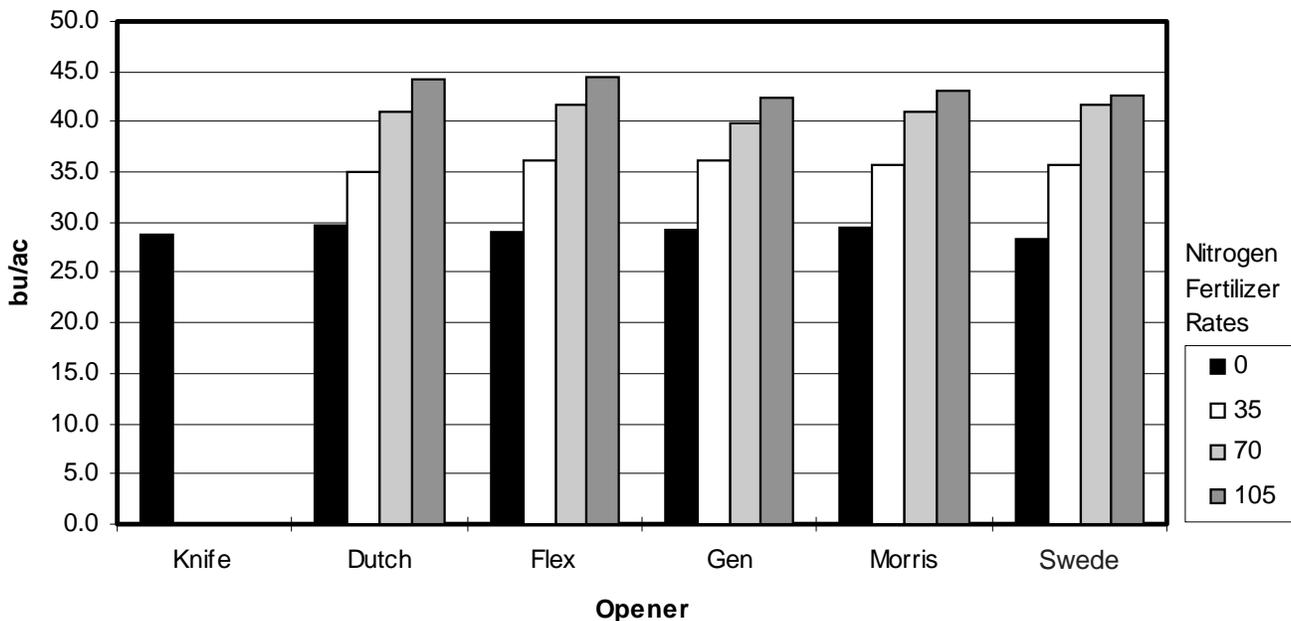
- All opener comparisons were conducted using 0, 35, 70, and 105 pounds per acre N using urea (46-0-0) as the nitrogen source.

- All sites also received 25 pounds per acre of P2O5, 10 pounds per acre K2O and 10 pounds per acre S.

**Side Banding Wheat Emergence
Mean of 10 Sites 1995 and 1996**



**Side Banding Wheat Yield
Mean of 10 Sites 1995 and 1996**



Locations and Conditions:

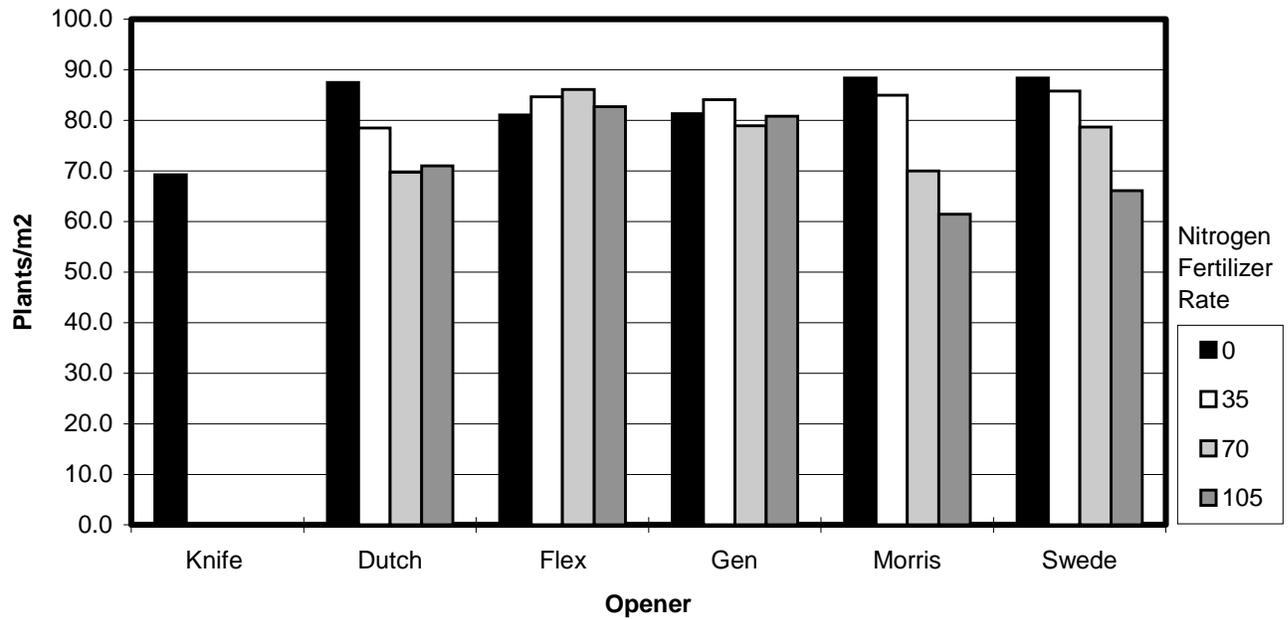
- Tisdale, Tisdale Clay, very dry
- Watrous, Elstow Clay Loam, moderate moisture
- Melfort, Melfort Clay Loam, moderate moisture
- Yorkton, Loam, moderate moisture
- Indian Head, Indian Head Heavy Clay, wet

Equipment:

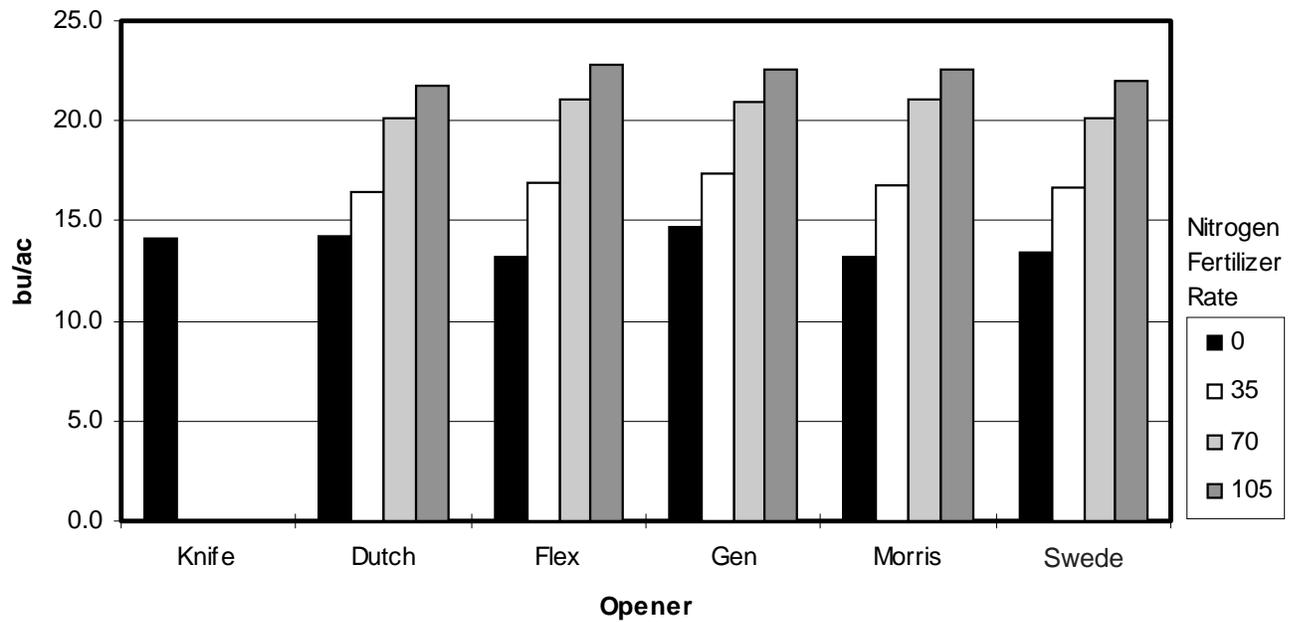
The PAMI plot air seeder was used for the project. It's a 10 foot wide 4 rank air seeder. The air seeder was configured to use 12 inch row spaces and on row packing.

The PAMI plot air seeder uses Flexi-coil cultivator components including 550 pound spring trips and shanks. Fertilizer and seed is contained in four custom made boxes and metered through Amazone seed/fertilizer cups, with

Side Banding Canola Emergence
Mean of 10 Sites 1995 and 1996



Side Banding Canola Yield
Mean of 10 Sites 1995 and 1996



one cup on each box for each opener. After metering, the seed and fertilizer is gravity fed into a Valmar venturi type pneumatic system for delivery to the openers.

Valmar 60 speed gearboxes were used for seed and fertilizer rate settings. Rear mount K-Hart packers were adjusted to pack directly over the centre of the seed row.

Miscellaneous:

A non-side banding knife was used as the check in this project. All sites were direct seeded into standing stubble using all five openers and four fertilizer rates. A pre-seed burn off with Roundup and post-emergent herbicides applied as required maintained weed and volunteer crop control.

All the openers except the knife place fertilizer below and to the side of the seed row. Only the Swede opener placed the seed in the centre of the shank, and the fertilizer to the side. All the other side banding openers placed seed to the side and fertilizer in the centre of the shank.

A Dutch seed brake was used to slow down the seed on all openers except the GEN. This opener plugged with wheat when using the seed brake.

Acknowledgements:

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A full version of this 12 page report (RH0296) showing results from individual sites is available from PAMI for a small charge.

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