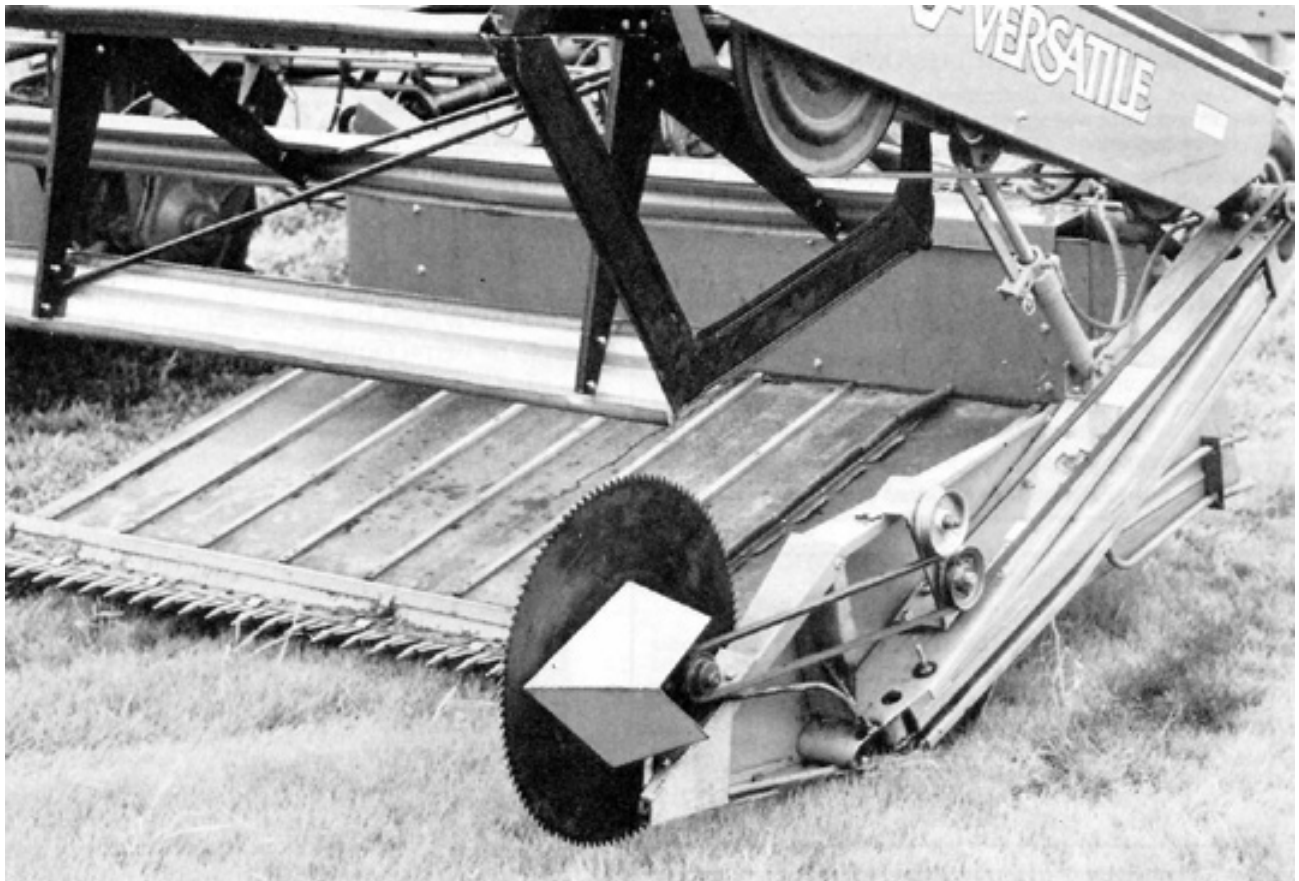


Evaluation Report 208



Glendale Power Swath Separator

A Co-operative Program Between



GLENDALE POWER SWATH SEPARATOR

MANUFACTURER:

Hamilton and Allen Co., Ltd.
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Brandon, Manitoba
R7A 5Z8

DISTRIBUTORS:

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RETAIL PRICE: \$250.00 to \$440.00 depending on windrower model (March 1981, f.o.b., Portage la Prairie, Manitoba).

SUMMARY AND CONCLUSIONS

Overall functional performance of the Glendale power swath separator was *excellent* in rapeseed and lodged wheat. Ease of operation was *excellent*.

Power requirements ranged from 0.25 to 0.50 kw (0.3 to 0.7 hp), depending on crop conditions and ground speed. Suitable ground speeds depended on crop conditions, however speeds up to 12 km/h (8 mph) were possible in some lodged crops.

Suitable rotational speeds for the Glendale separator varied from 200 to 600 rpm, with an optimum speed of 400 rpm.

A welder and power tools were needed to attach the Glendale and its drive components to a windrower. A direct drive from the reel was the most practical method of powering the Glendale. The cutting blade was easily removed for storage.

No shielding was provided for the drive components.

No mechanical problems occurred during the test.

RECOMMENDATIONS

It is recommended that the manufacturer consider:

1. Affixing a decal to the blade shield to warn of potential hazard.
2. Providing more detailed instructions to aid in installation and operation.

Chief Engineer -- E.O. Nyborg

Senior Engineer -- J.C. Thauberger

Project Engineer -- R.R. Hochstein

THE MANUFACTURER STATES THAT

With regard to recommendation number:

1. A decal, warning operator to stop the machine while adjusting or working on the swath separator, will be affixed to all 1981 models.
2. A parts list, and detailed mounting instructions, will be included with each swath separator in 1981.

MANUFACTURER'S ADDITIONAL COMMENTS

Modifications have been made to the nose piece to provide more strength and to eliminate flexing of the divider. All models powered by orbital motors or gasoline engines are being evaluated for direct drive.

Note: This report has been prepared using SI units of measurement. A conversion table is given in APPENDIX III.

GENERAL DESCRIPTION

The Glendale power swath separator is a crop divider attachment designed to mount on the divider of combine or windrower headers. It consists of a 600 mm (24 in) circular serrated blade and mandrel. The blade may be driven directly from the reel drive jack shaft, with a hydraulic motor or with a small gasoline engine. The blade can be made to rotate either upward or downward, depending on crop type and conditions.

Detailed specifications are given in APPENDIX I, while the cover photo shows the Glendale mounted on the left divider of a windrower. Attachments are available to suit a range of combine and windrower headers.

SCOPE OF TEST

The Glendale was mounted on the draper header of a Versatile 4400 self-propelled windrower and operated in the conditions shown in TABLE 1 for 65 hours while windrowing about 150 ha (375 ac). Two types of drives were used. The Glendale was driven with a small gasoline engine for the first 10 hours of use and driven directly from the reel drive for the remainder of the test period. It was evaluated for ease of installation, quality of work, power requirements, ease of operation and adjustments, and operator safety.

TABLE 1. Operating Conditions

CROP	AVERAGE YIELD (t/ha)	HOURS	FIELD AREA (ha)
Rapeseed	1.0 - 2.0	40	100
Peas	1.2	20	40
Lodged Wheat	1.5	5	10
TOTAL		65	150

RESULTS AND DISCUSSION

EASE OF INSTALLATION

Installation time: The Glendale was mounted on the left divider to provide compatibility with the windrower reel drive. It took about one man hour to attach the Glendale to the windrower. For the first 10 hours a 3.7 KW (5 hp) gasoline engine, mounted on the header, (FIGURE 1) was used to power the divider. Mounting the engine took about three man hours. Since speed reduction was needed, a jack shaft was added.



FIGURE 1. Gasoline Engine Drive.

Although the engine drive worked well, it was bothersome and noisy. Therefore, a direct drive from the reel drive assembly (FIGURE 2) was arranged. Necessary modifications included pillow blocks and a jack shaft. Two idler pulleys were needed for proper tensioning of the drive belt due to its length (see cover photo). It took about three man hours to incorporate the direct drive. A welder, power drill and additional hardware were needed for both methods of installation. The reel drive was the more practical of the two methods.

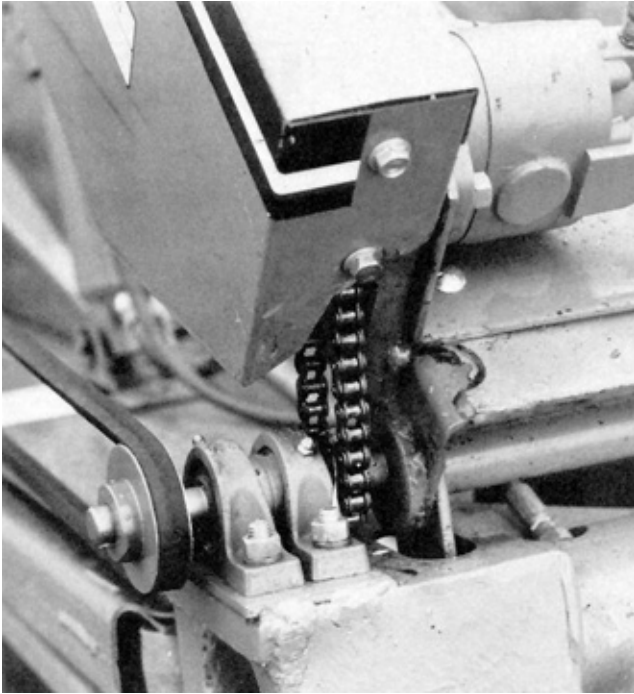


FIGURE 2. Direct Drive from Reel.

QUALITY OF WORK

Crop Loss: The Glendale effectively divided lodged and tangled crops. There was no appreciable crop loss in rapeseed at the divider due to the action of the power divider. When using a standard divider in rapeseed, the crop was separated by pushing it beneath the divider. This left a path of trampled crop, about 100 mm (4 in) wide which could be retrieved only by cutting in the opposite direction on the next pass. The Glendale, however, left a clean standing edge, without any significant loss of rapeseed pods (FIGURE 3).



FIGURE 3. Separation Edge with the Glendale Attachment.

Windrow Uniformity: When using standard dividers and a standard bat reel, rapeseed often hairpinned on the divider, causing bunching and non-uniformity in the windrow. With the Glendale, although a bat reel was used, windrow bunching never occurred (FIGURE 4). Bunching problems may also be reduced by using a pickup reel with the standard dividers.



FIGURE 4. Windrowing Rapeseed with the Glendale Attachment.

Lodged Wheat: The Glendale eliminated hairpinning in lodged wheat and reduced windrow bunching when using a standard bat reel.

Peas: Field tests conducted in peas were inconclusive due to the closeness of the crop to the ground.

Direction of Rotation: The direction of the blade rotation could be changed by twisting the drive belt. The desired direction of the blade rotation depended on the crop condition. In lodged or down crops the upward cutting direction was more effective.

POWER REQUIREMENTS

The power needed to drive the Glendale varied from 0.25 to 0.50 kW (0.3 to 0.7 hp) in tangled or lodged crops at normal ground speeds. The power depended on operating speed, which ranged from 200 to 600 rpm. The power requirement was highest at 600 rpm. The optimum operating speed was around 400 rpm, however when driving the attachment with the reel, the speed would vary with the reel speed on windrowers equipped with variable reel speed.

EASE OF OPERATION AND ADJUSTMENT

The blade could be easily removed from the windrower when its use was not required. During the initial period of operation, using the gasoline engine drive, a high degree of maintenance was necessary. This led to incorporation of a direct drive from the reel. Only minimal maintenance such as the checking of belt tension and chain lubrication was needed with the direct drive. The blade maintained its sharpness for the duration of the test.

OPERATOR SAFETY

A drive shield was not supplied and the manufacturer did not recommend use of a drive shield. Due to the potential hazard of both the unshielded drive and the rotating blade, it is recommended that the manufacturer consider affixing a decal to the blade shield to warn of potential danger.

OPERATOR MANUAL

Installation instructions were limited. No operating instructions, parts diagram or safety recommendations were supplied. It is recommended that the manufacturer consider providing more detailed instructions to aid in installation and operation.

DURABILITY RESULTS

The Glendale was operated in the field for 65 hours. The intent of the test was functional performance. An extended durability evaluation was not conducted. No durability problems occurred during field use, however the drive belt came off twice due to whipping and flexing of the windrower divider. The divider was reinforced to eliminate this problem.

APPENDIX I

SPECIFICATIONS

Make: Glendale

Dimensions:

- blade
 - diameter 600 mm
 - thickness 5.2 mm
 - mass 9.2 kg
- blade mount assembly
- width 200 m
- mass 18 kg

Operating Speed: 200 to 600 rpm

APPENDIX II

MACHINE RATINGS

The following rating scale is used in PAMI Evaluation Reports:

- (a) excellent
- (b) very good
- (c) good
- (d) fair
- (e) poor
- (f) unsatisfactory

APPENDIX III

CONVERSION TABLE

1 hectare (ha)	= 2.5 acres (ac)
1 kilometre/hour (km/h)	= 0.6 miles/hour (mph)
1 millimetre (mm)	= 0.04 inches (in)
1 kilowatt (kW)	= 1.3 horsepower (hp)
1 kilogram (kg)	= 2.2 pounds mass (lb)



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