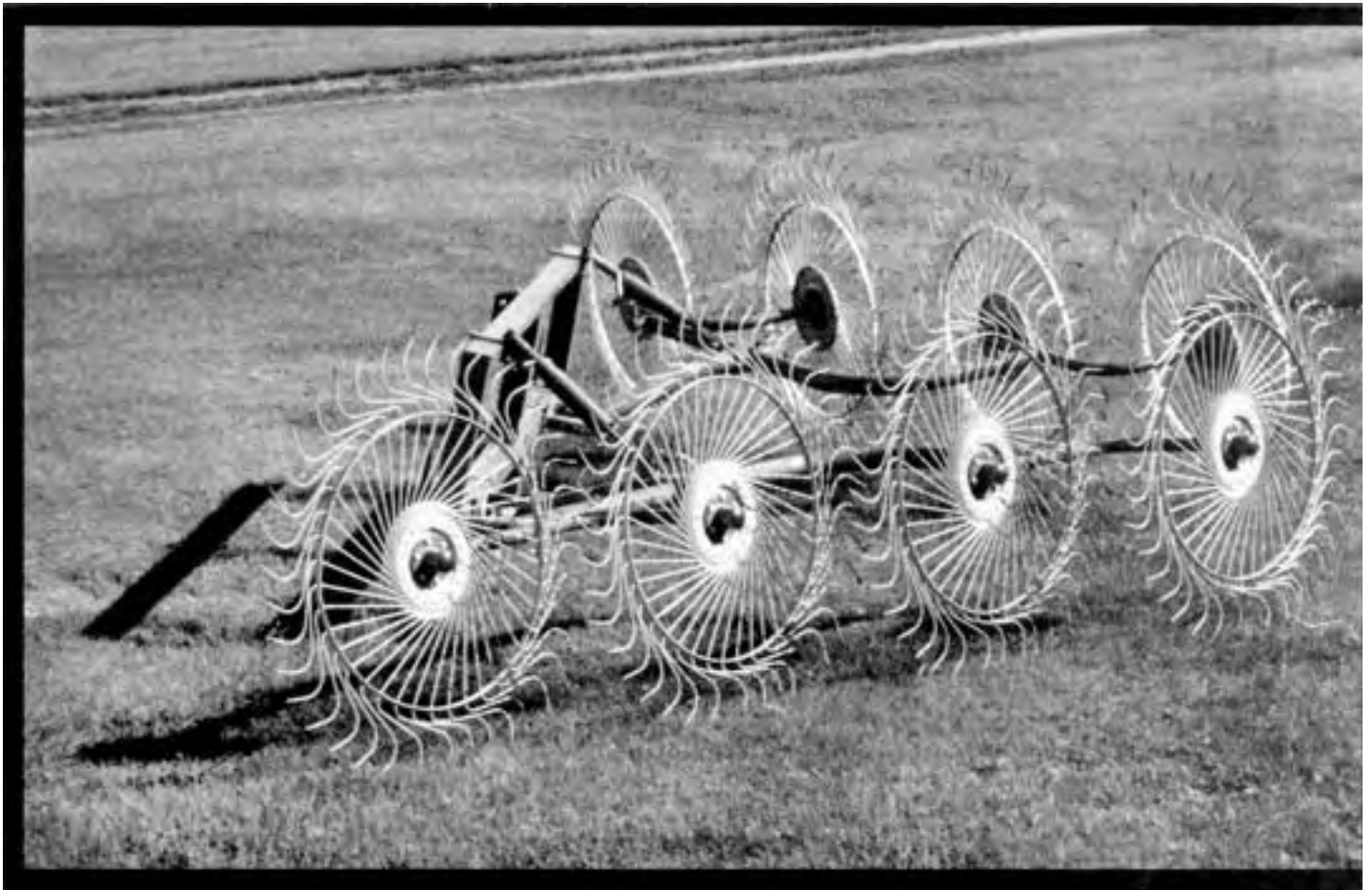


Evaluation Report

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Viccon H1240 Trapeze V-Rake

A Co-operative Program Between



VICON H1240 TRAPEZE V-RAKE

MANUFACTURER & DISTRIBUTOR:

Vicon-Wheatbelt
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Calgary, Alberta
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Telephone: (403) 279-2855

RETAIL PRICE:

\$2,460.00 (October 1985, f.o.b. Portage la Prairie, Manitoba)



FIGURE 1. Vicon H1240 Trapeze V-Rake: (1) Finger Wheels, (2) Main Frame, (3) Width Adjustment Brackets, (4) Adjustable Tension Springs, (5) Fingerwheel Frames.

SUMMARY

Quality of Work: The Vicon Trapeze V-Rake's performance in most hay crops was very good. The Vicon was effective in bringing two light windrows together to form a larger, heavier windrow. In dry field conditions, losses were slight (less than .01%). However, in damp field conditions losses were slightly greater. Losses were also noticed in rough fields, or fields that had more than the usual amounts of gopher and mole hills.

Rate of Work: The Vicon V-Rake will rake windrows together as fast as the field conditions allow. Speeds of 1.0 mph (1.6 km/h) or less, were not sufficient to maintain flow of hay from one finger wheel to the other. Speeds of 6 to 8.0 mph (9.7 to 12.9 km/h) seemed to deliver the best results.

Ease of Operation: The Vicon V-Rake was easy to operate. Placing the rake in field position was easily accomplished by one person. On a square or rectangular field, the corners were raked first from the corners to the centre of the field.

This procedure allowed the operator to raise the rake from the ground at the end of the row and make a 90° turn without missing any hay. Placing the rake in transport position was easy and took one person about 5 minutes.

Ease of Adjustment: The Vicon V-Rake requires lubrication at 12 locations. All had easy access for either the grease gun or oil can. Initial adjustment consisted of placing the lower link hitch pins at 19 in (482 mm) from the ground and setting tractor position control at this point, and adjusting the top link on the three-point hitch so that the frame of the rake, when viewed from the side, is perpendicular to the ground. The rake frame must also be level when viewed from the rear.

Adjustment for width was quick and simple, while adjustment for finger wheel pressure was a little more time consuming.

Power Requirements: A 40 hp (30 kW) tractor with three-point hitch should have sufficient power and weight to safely operate the Vicon H1240 V-Rake.

Operator Safety: The Vicon H 1240 Trapeze V-Rake was safe to operate if normal safety precautions were followed.

Operator's Manual: The operator's manual was very well written and clearly illustrated. It contained detailed information on assembly, maintenance, operation and adjustment.

Mechanical History: No mechanical problems occurred during the course of the tests.

RECOMMENDATIONS

It is recommended that the manufacturer consider:

1. Modifications that would prevent the toss of hay resulting from the tractor wheel going over a bump.
2. Modifications to the tips of the fingers to prevent the build-up of soil.
3. Modifications to reduce side skewing.

Senior Engineer: G.M. Omichinski

Project Technologist: R.K. Harris

THE MANUFACTURER STATES THAT

With regard to recommendation number:

1. To minimize the loss of hay when the tractor wheel goes over a bump, we will investigate redesigning the rake suspension springs to maintain a more constant spring force in the working position.
2. In tests that we have done where the rake finger has been modified to minimize soil buildup, the overall raking performance has decreased substantially and much greater hay losses occur. The buildup problem only occurs in certain types of soil when they are quite damp.
3. Sideways skewing is a result of excessive clearance between the lower tractor hitch arms and the blocks or chains that limit their travel. Adjustment of the lower hitch arms to eliminate this clearance will solve the problem.

GENERAL DESCRIPTION

The Vicon H1240 Trapeze V-Rake is a three-point hitch mounted, ground driven hay rake, designed to rake two windrows into one. It consists of a square-tube rectangular frame with attachment pins for Category I and II, three-point hitches. Attached to the frame, are two tubular hinge bars, which are pinned to the main frame and cantilevered in position by large adjustable springs. These adjustable springs determine the amount of pressure placed on the raking fingerwheels. Attached to the hingebars are the frames that support the eight fingerwheels. The fingerwheels are arranged in a "V" with four wheels per side. The wide end of the "V" is towards the tractor and the small end is trailing. As the tractor draws the rake forward, the fingerwheels draw in the windrows on each side placing them together behind the rake.

SCOPE OF TEST

The Vicon H1240 Trapeze V-Rake was operated under field conditions as shown in TABLE 1, for 72 hours while raking 845 ac (338 ha). It was evaluated for quality of work, rate of work, ease of operation and adjustment, power requirements, operator safety and suitability of the operator's manual.

TABLE 1. Operating Conditions

Crop	Hours	Equivalent Field Area	
		ac	ha
Fall Rye (green feed)	7	60	24
Alfalfa	22	390	156
Brome & Timothy	16	215	86
Native Grasses	5	30	12
Flax Straw	7	50	20
Barley	15	100	40
Total	72	845	338

RESULTS AND DISCUSSIONS

Quality of Work: The Vicon H1240 V-Rake was effective in raking two windrows together. The rake was also used to turn single windrows of barley to expedite drying. Curing time was significantly reduced, as a result of raking, both in hay crops and cereals. Leaf loss in alfalfa was negligible, however, some crop was lost when the Vicon was operated with too much pressure on the finger wheels in damp soil conditions (FIGURE 2). Soil sticking to the tips of the fingers caused hay to be carried around the rear finger wheel and dropped over the backside where it could not be retrieved (FIGURE 3). It is recommended that modifications be made to prevent soil sticking to the fingers.



FIGURE 2. Soil Sticking to Tips of Fingerwheel Tynes.



FIGURE 3. Crop Carried Over Top of Fingerwheel.

Making a 90° turn caused the fingerwheel gang on the inside of the turn to stop rotating, leaving clumps of hay at the corners. This problem could be eliminated by raking the corners first. Starting at outside corners and moving on a diagonal towards the centre of the field, also allows easier baler access. Some sideways skewing was experienced, resulting in crooked windrows. It is recommended that the manufacturer make modifications to reduce side skewing.

In large, light and fluffy swaths such as fall rye, the Vicon performed well when raking into the wind, but travelling crosswind and downwind caused crop to blow back against the finger-wheels and leave large clumps (FIGURE 4).



FIGURE 4. Windblown Crop Falling Behind Finger Wheels.

Ease of Adjustment: The Vicon H1240 Trapeze V-Rake required adjustment to suit the mass of the windrows. For example, the discharge end of the “V” had to be opened up to allow large heavy swaths to be raked without creating large bunches of hay to ball and roll in front of the rear finger wheels (FIGURE 5). In light swaths, the opening had to be reduced so that the windrows would be combined into one, rather than laying two light swaths side by side.



FIGURE 5. Crop Bailing Up and Rolling in Front of the Finger Wheels.

The Vicon V-Rake was adjustable for fingerwheel pressure. In light swath conditions, adjustments that gave maximum spring tension and minimum fingerwheel pressure were used. If too much pressure was exerted on the fingerwheels, soil was thrown into the windrows. In heavy alfalfa swaths, additional pressure was required on the finger wheels. Additionally, the Vicon V-Rake was adjustable in width, to a maximum of 18 ft (5.4 m), to accommodate varying widths of swathers and mower conditioners.

Transportability and Hitching: The Vicon V-Rake was easy to hitch/unhitch and took one person about 5 minutes. The Vicon came equipped with parking stands that allowed the main frame to remain supported above the ground when unhitched.

The Vicon was easy to place in transport position and took one person about five minutes. The rake was stable and provided adequate ground clearance when being transported. Due to the wide overall transport width of 12 ft (3660 mm), appropriate care should be taken when manoeuvring near obstacles.

Lubrication: The Vicon V-Rake required periodic lubrication at 12 points throughout the machine. All had easy access for either the grease gun or oil can.

Power Requirements: Tractors of 40 hp (30 kW) or greater, equipped with either a Category I or II three-point hitch had sufficient power and weight to operate the Vicon H1240 V-Rake in most haying conditions.

Safety: The Vicon H1240 V-Rake was safe to operate if normal safety precautions were followed.

Operator's Manual: The operator's manual was well written and illustrated. It contained useful information on assembly, adjustment, transporting, safety and maintenance.

Mechanical History: The intent of the test was evaluation of functional performance. An extended durability test was not conducted. No mechanical problems occurred during the 72 hours of testing.

**APPENDIX I
SPECIFICATIONS:**

MAKE: Vicon
MODEL: H1240 Trapeze V-Rake
SERIAL NUMBER: 4400401082

OVERALL DIMENSIONS:
 -- working width 18 ft (5.5 m)
 -- transport width 12 ft (3.7 m)
 -- transport height 11 ft (3.4 m)
 -- finger wheel diameter 4.6 ft (1.4 m)

WEIGHT:
 -- total weight 1028 lb (467 kg)

FINGERWHEELS: 8

TINES:
 -- total tines per wheel 40
 -- tine material diameter 0.250 in (6.5 mm)

HITCH:
 -- hitch pin connection Catagory I & II - 3-point hitch

LUBRICATION:
 -- greasing points 12

OPERATING SPEED: 6 - 8 mph (9.7 - 12.9 km/h)

POWER REQUIREMENTS:
 -- minimum 40 hp (30 kW)

**APPENDIX II
MACHINE RATINGS**

The following rating scale is used in Machinery Institute Evaluation Reports:

Excellent	Fair
Very Good	Poor
Good	Unsatisfactory

**SUMMARY CHART
VICON H1240 TRAPEZE V-RAKE**

RETAIL PRICE \$2,460.00 (October 1985, f.o.b. Portage la Prairie, MB)

EASE OF OPERATION **Very Good**

RATE OF WORK **Very Good;** at 6 to 8 mph (9.7 to 12.9 km/h)

POWER REQUIREMENTS 40 hp (30 kW) with Catagory I or II, three point hitch.

QUALITY OF WORK **Good;** Some losses under certain conditions.

OPERATOR SAFETY Safe to operate if normal safety precautions are followed.

OPERATOR'S MANUAL **Very Good;** Clear, well illustrated and written.

MECHANICAL HISTORY No mechanical problems occurred during the test.



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