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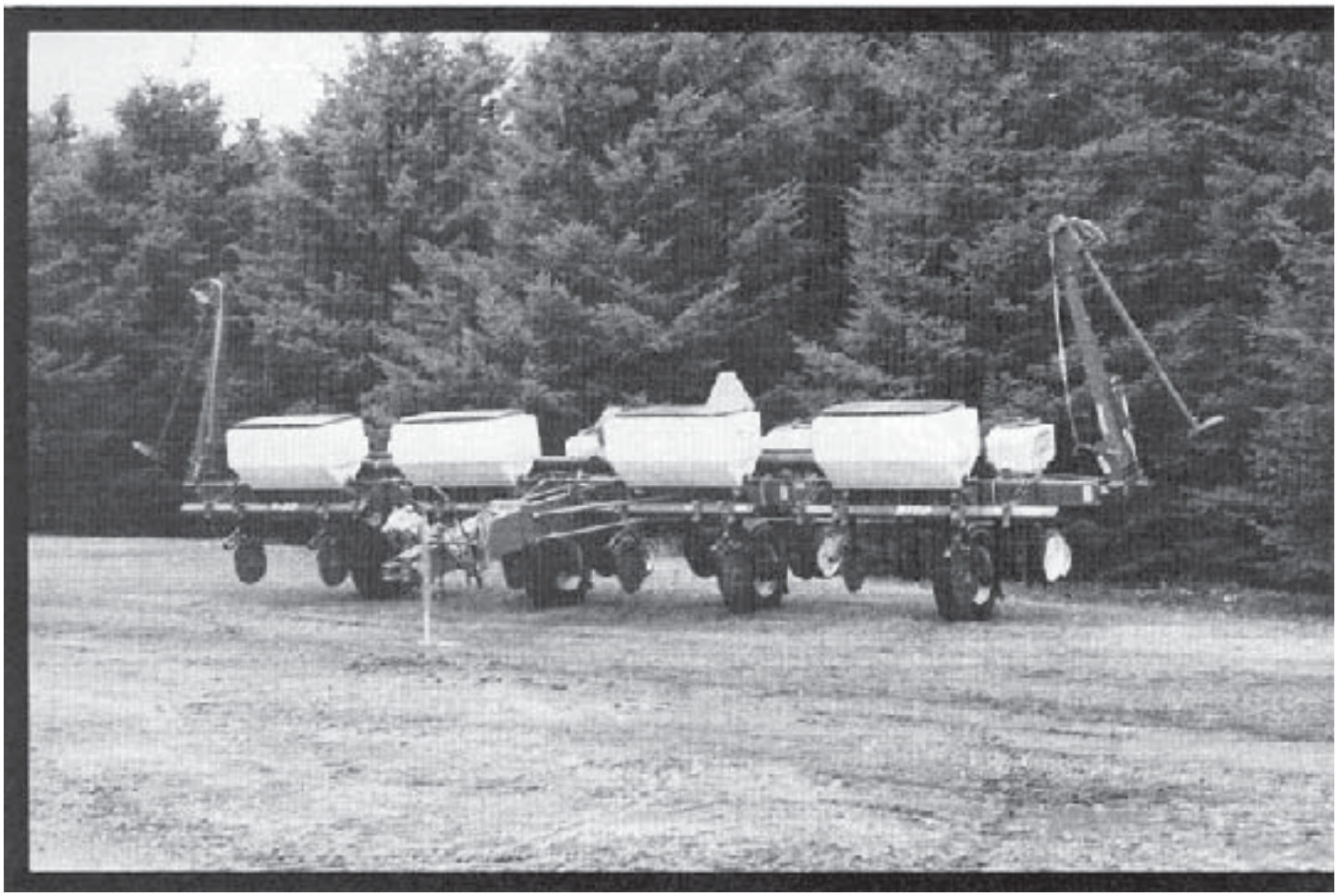

## White Farm Equipment 5100 Seed Boss Row Crop Planter

A Co-operative Program Between

ALBERTA FARM MACHINERY RESEARCH CENTRE

PAMI
PRAIRIE AGRICULTURAL MACHINERY INSTITUTE

## WHITE FARM EQUIPMENT 5100 SEED BOSS ROW CROP PLANTER

**MANUFACTURER:**

White Farm Equipment
701 South Chapin
South Bend, Indiana
46621 U.S.A.

**DISTRIBUTOR:**

White Farm Equipment Manufacturing Ltd.
2201 First Avenue
Regina, Saskatchewan
S4P 3A3

**RETAIL PRICE:**

$23,554 Canadian Funds (July 1984, f.o.b. Portage la Prairie, Manitoba) 8-rows wide, with folding toolbar transport attachment, granular fertilizer hoppers, and SM-III Monitor.

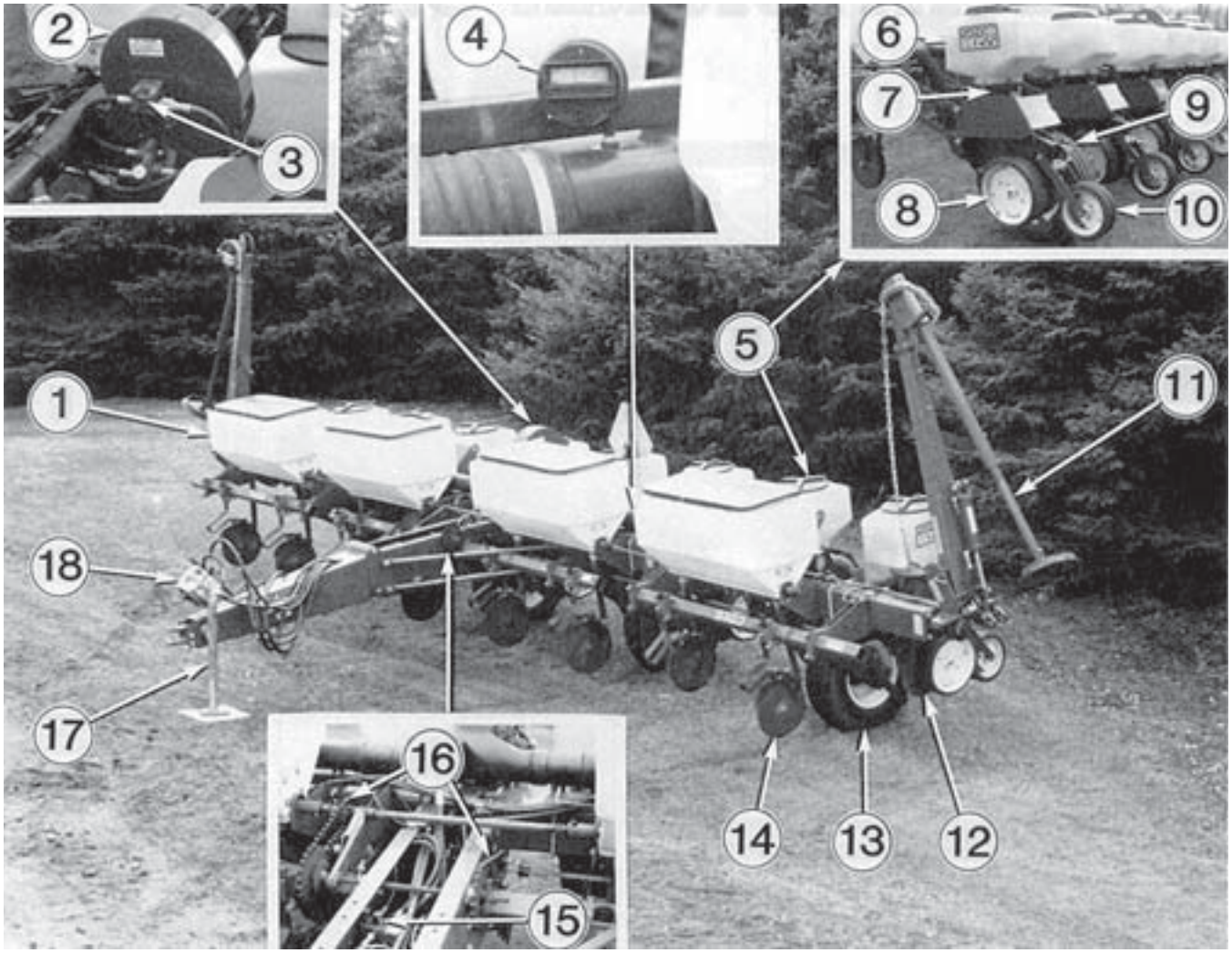


**FIGURE 1.** White 5100 Seed Boss: (1) Granular Fertilizer Hoppers, (2) Hydraulic Blower, (3) Hydraulic Flow Control Valve, (4) Pressure Gauge, (5) Seeding Unit. (6) Seed Hopper, (7) Seed Disk, (8) Depth Gauge Wheels, (9) Depth Adjustment, (10) Press Wheel, (11) Hydraulic Row Marker, (12) Seed Disk Openers,(13) Ground Wheels, (14) Fertilizer Disk Openers (15) Transport Selector Valve, (16) Fertilizer Drive Transmission, (17) Safety Stand, (18) PTO Hydraulic Pump.

## SUMMARY AND CONCLUSIONS

Functional performance of the White 5100 Seed Boss row crop planter was evaluated in a wide variety of field conditions.

**Seed Metering:** The spacing of corn seed at 5 mph (8 km/h) using the seed disk metering and air pressure system was very good[1], particularly when planting round seed. When using flat corn seed or increasing ground speed, the seed spacing accuracy of this system was slightly reduced. However, results did not vary significantly from one row to the next. Spacing of large sunflower seed was not as accurate as the spacing of corn seed.

Actual overall population rates were excellent for white beans and soybeans when compared to rates stated in the operator manual.

Operating on 11° uphill slopes had a small affect on the accuracy of the system.

**Fertilizer Application:** Actual fertilizer rates were within 10% of the rates stated in the fertilizer chart.

**Penetration:** Penetration of the seed and fertilizer disk openers was very good in all field conditions tested. Seeding depth was affected in damp clay soil conditions because of soil "build-up" between the depth gauge wheels.

**Soil Finishing:** Covering of seed was good in most field conditions tested, particularly at 5 mph (8 km/h). Soil was pushed on top of the seed then compacted by the press wheels. In sandy soils the seed was placed in the range of one inch on either side of the centre line. In damp clay soils the seed was not always completely covered.

**Monitor:** The SM-III monitor supplied with the test machine provided an accurate readout. A chart was used to convert the readout into seeds/acre.

**Ease of Operation and Adjustment:** Seeding rates were

[1]*See Rating Table APPENDIX II.*

easy to adjust on the seed drive sprocket transmission. The fertilizer drive transmission was not as convenient. The fertilizer index augers had to be free of rust and fertilizer buildup to slide easily.

The seed hoppers were convenient to fill if the planter was in a lowered position. The large fertilizer hoppers were filled using a long spout on a drill fill. The fertilizer hopper lids did not remain in place during field operation.

Caution was necessary when travelling under low wires or bridge structures because of the high transport height of 14.1 ft (4.3 m). The manufacturer recommended a maximum transport speed of 10 mph (16 km/h).

**Power Requirements:** A 90 hp (67 kW) tractor with a 540 or 1000 rpm PTO shaft is the minimum tractor size recommended.

**Operator Safety:** The White 5100 Seed Boss row crop planter was safe to operate provided normal safety precautions were observed. In addition, the seed hopper lids should not be removed when the system is pressurized to prevent dust and chemicals from being dispersed into the air around the operator.

**Operator Manual:** The operator manual was very good. Clear illustrations and well written text provided instruction on safety, operation and maintenance of the machine. SI units of measurement were not included.

**Mechanical Problems:** Scrapers for the fertilizer disk openers had a wear life of only 350 acres (140 ha).

## RECOMMENDATIONS

It is recommended that the manufacturer consider:

1. Modifying the scrapers between the depth gauge wheels to reduce soil buildup when working in damp clay soils.
2. Designing a system to improve final placement and coverage of seed in sandy and clay soils.
3. Providing a monitor seed population chart in the operator manual.
4. Relocating the safety stand to eliminate interference with the tractor drawbar.
5. Modifying or relocating the idler sprocket in the fertilizer drive transmission in order that the 45 link chain can be used for all sprocket combinations.
6. Modifying the fertilizer hopper lids or providing latches to prevent loss or damage of these lids.
7. Including SI (metric) units of measurement in the text and charts of the operator manual.
8. Improving the quality of the fertilizer disk opener scrapers for longer wear *life.*

*Senior Engineer: G.M. Omichinski*

*Project Engineer: C.W. Bolton*

## THE MANUFACTURER STATES THAT

With regard to recommendation number:

1. A rotary scraper was made available as regular equipment on 1984 planters. This rotary scraper replaces the blade type used on the model you tested and has proved to be much more effective scraping dirt off opener blades.
2. An optional firming/closing wheel is available to use in place of regular press wheel. This attachment consists of three 1x7 wheels. The forward wheel runs directly in seed trench and presses seed in soil. The rear two wheels are canted to run closer together at the bottom than at the top. These two wheels close the trench and firm soil around the seed.
3. The company is working on new monitors that will give direct population read out.
4. The safety stand is generally located at the rear of the hitch when the planter is in operating position. We noted that the planter tested had two drawbar braces instead of the one normally used. When one brace is used, the safety stand can be stored at rear position.
5. The company will look at the possibility of relocating the idler sprocket in order to use 45 link chain for all sprocket combinations. However, general use shows that once a sprocket arrangement is chosen, it is seldom changed.
6. Fertilizer lids were improved and put into production for the 1984 planters. Lids are basically the same as before except tolerances are better maintained and the snap on remains tight.
7. The request for more metric information will be referred to those making up the text and charts.
8. The company is working on ways to improve the life of fertilizer disk opener scrapers.

## GENERAL DESCRIPTION

The eight row wide White Farm Equipment 5100 Seed Boss row crop air planter tested, is designed to plant crops such as corn, sunflowers, beans, sugar beets and sorghum.

The eight seeding units, spaced 36 in (91 cm) apart are mounted on the back of the tool bar. Each unit consists of a 1.5 bu (55 L) seed hopper, seed disk metering system, an air duct from the hydraulic blower, two seed disk openers, two depth gauge wheels and a press wheel.

Seed from the seed hopper falls by gravity into a small chamber located at the base of the seed disk (FIGURE 2). This is a rotating, vertical plastic disk with seed pockets around the outer circumference. Individual seeds are picked up and held in the seed pockets by air pressure. Air pressure is controlled by adjusting the flow control valve on the hydraulic blower. The speed at which the seed disk rotates is determined by the ground speed and the sprocket combination selected on the central seed drive transmission. A tickler brush removes excess seeds from the seed pockets. The seeds are then carried past the cut-off brush which “cuts-off” the air pressure and allows the seed to fall into the curved seed delivery tube down to the ground.

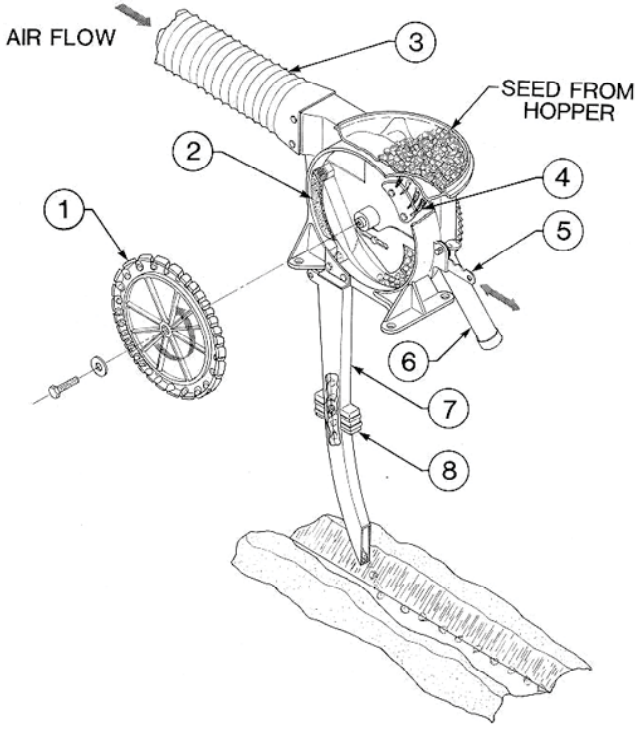


**FIGURE 2.** Seed Metering System: (1) Seed Disk, (2) Cut-off Brush, (3) Air Duct, (4) Tickler Brush, (5) Seed Gate, (6) Clean-out Chute, (7) Seed Delivery Tube, (8) Seed Sensor.

The two 13 in (34 cm) seed disk openers cut a narrow furrow in the soil. The depth of this furrow is controlled by the two independent depth gauge wheels. Once the seed is placed in the furrow, it is covered with soil by the hill forming press wheel.

The eight-row planter is equipped with four 9.6 ft³ (270 L) polyethylene, granular fertilizer hoppers. Fertilizer is placed in the ground by double disk openers. The rate of application is determined by selecting an index number on the augers and a sprocket combination on the fertilizer drive transmission.

The planter can be equipped with the SM-III monitor (FIGURE 3). In addition to the visual display lights, the monitor signals planting malfunctions with an alarm. Parameters that can be measured by the monitor include sequentially scanning each row and displaying the

population rate for 15 second intervals. Also, a particular row can be selected and monitored for the 15 second interval or a continuous count.


**FIGURE 3.** SM-III Monitor.

The test machine is equipped with the folding toolbar transport attachment.

Detailed specifications are given in APPENDIX I.

## SCOPE OF TEST[2]

The White 5100 Seed Boss row crop planter was operated in various field conditions (TABLE 1) for about 100 hours while seeding 885 ac (360 ha) of corn and 100 ac (40 ha) of sunflowers. It was evaluated for quality of work, ease of operation and adjustment, rate of work, power requirements, operator safety and suitability of the operator manual.

In addition to field testing, the seed and fertilizer metering systems were tested in the laboratory for accuracy on level and sloped operating conditions.

**TABLE 1.** Operating Conditions

| FIELD CONDITIONS | HOURS | FIELD AREA | |
|---|---|---|---|
| | | ac | ha |
| Soil type: | | | |
| -- clay | 36 | 325 | 132 |
| -- clay loam | 30 | 280 | 113 |
| -- sandy loam | 14 | 150 | 61 |
| -- sand | 20 | 230 | 94 |
| Total: | 100 | 985 | 400 |
| Trash cover: | | | |
| -- heavy | 29 | 260 | 105 |
| -- light | 51 | 515 | 209 |
| -- none | 20 | 210 | 86 |
| Total: | 100 | 985 | 400 |

## RESULTS AND DISCUSSION

### QUALITY OF WORK

**Seed Metering:** Accuracy of the seed disk metering system was tested in the laboratory using eight different samples of corn and a sample of large sunflowers. The ground speeds selected were 5 mph (8 km/h), considered an average planting speed, and 8 mph (13 km/h), the maximum speed recommended by the manufacturer for the crop and seeding rate being tested.

The results were recorded in terms of a Quality of Feed Index[3]. This index represents the percentage of seeds from the samples that were planted within the range of 0.5 to 1.5 times the desired seed spacing. TABLE 2 shows the Quality of Feed Index of eight different corn samples at a seeding rate of 21,500 seeds/ac (53,750 seeds/ha) on a level surface. The results did not vary significantly on different rows. An index of 95% or better was considered to be excellent.

The Quality of Feed Index was above 90% for all seed samples tested at 5 mph (8 km/h) and 8 mph (13 km/h) except for small flat seed at the higher speed. The increase in speed caused the Quality of Feed Index to drop 0 to 3% depending upon the seed sample. Round seed, particularly small round seed had high Index results (95% or greater) and was least affected by the increase in speed. Test results showed that the seed spacing did not vary from one seeding unit to the next. Doubles (spaces less than 0.5 times the desired seed spacing) occurred more often than misses (spaces greater than 1.5 times the desired seed spacing) thus indicating that the planter had a slight tendency to over populate.

**TABLE 2.** Quality of Feed Index Results for corn

| Corn Size | Quality of Feed Index | |
|---|---|---|
| | 5 mph (8 km/h) | 8 mph (13 km/h) |
| Small, round | 97 | 97 |
| Medium, round | — | 97 |
| Small plateless | — | 96 |
| Large, round | 98 | 96 |
| Large, plateless | — | 92 |
| Large, flat | — | 92 |
| Medium, flat | — | 91 |
| Small, flat | 91 | 88 |

The Quality of Feed Index for large sunflower seed at a population rate of 20,000 seeds/ac (50,000 seeds/ha) was 89% at 5 mph (8 km/h) and 86% at 8 mph (13 km/h). This was still considered to be good although results were much higher in corn.

At 8 mph (13 km/h) actual population rates for white beans and soybeans were within 1% to 2% of the theoretical rates stated in the operator manual. This was considered to be excellent. These results were based on seeding rates of 79,500 seeds/ac (198,750 seeds/ha) for white beans and 83,100 seeds/ac (207,750 seeds/ha) for soybeans.

While operating on 11° uphill slopes, the frequency of doubles increased causing a decrease in the Quality of Feed Index of 2% to 4%. Operating on downhill slopes or sidehill slopes of 11° had no adverse affects on the Quality of Feed Index.

**Fertilizer Application:** The fertilizer augers with index settings were tested for metering accuracy in the laboratory. The fertilizer augers could be slid in or out to the desired index number and locked in place by a setscrew.

The application rates in the operator manual (based on 61 lb/ft³) were adjusted slightly to compensate for the difference in density of the test sample (55 lb/ft³). TABLE 3 shows that the actual application rates for index settings 3, 6 and 8, were within 10% of the rates stated in the operator manual. Positioning of the auger on the index setting mark partially accounted for the variance in rates.

**TABLE 3.** Fertilizer rates at mph (13 km/h)

| Index Number | Sprocket Setting | Machinery Institute | | Manufacturer | | % Difference |
|---|---|---|---|---|---|---|
| | | lb/ac | kg/ha | lb/ac | kg/ha | |
| 3 | 22-44-25 | 39 | 44 | 41 | 46 | -4.9 |
| 6 | 22-25-44 | 244 | 276 | 233 | 263 | +4.5 |
| 8 | 44-25-44 | 498 | 563 | 556 | 628 | -10.4 |

Operating up and down 11° slopes increased fertilizer rates 5% to 10% when compared to operating on level ground. Operating on 11° side slopes caused 10% to 20% more fertilizer to be delivered to downspouts at the lower end of the hoppers and 5% to 10% less fertilizer delivered to downspouts at the higher end of the hoppers.

**Penetration:** Penetration of the seed and fertilizer disk openers was very good in all field conditions tested. The vertical force of the fertilizer disk openers was 400 lbs (1780 N).

**Seed Depth:** Seeding depth was very good in dry field conditions. At 5 mph (8 km/h) nearly all the seed was placed within 0.5 in (13 mm) of the average seeding depth. At higher speeds and deeper seeding depths a slight increase in variation occurred.

However in slightly damp clay field conditions, clay would build up between the depth gauge wheels. The scrapers positioned between these wheels could not remove the clay effectively. The depth gauge wheels would stop turning preventing proper seed depth control. It is recommended that the manufacturer consider modifying these scrapers to reduce the amount of clay that collects between the depth gauge wheels.

**Soil Finishing:** Placement and coverage of seed with this system was considered to be good. The outer edges of the press wheel pushed the soil back into the furrow. The centre of the press wheel gently compacted the soil over the seed forming a very small hill of soil. The amount of force exerted by the press wheel was adjustable. Final placement of the seed was in the range of one

[2] *Prairie Agricultural Machinery Institute Detailed Test Procedure for Row Crop Planters.*

[3] *International Organization for Standardization ISO/DIS 7256/1 Sowing Equipment-Method of Test-Part 1: Single Seed Drills (Precision Drills).*

inch on either side of the centre line. This observation was most predominant in sandy soils. Also, in some heavy clay soils and damp conditions, the furrow was not always completely closed. It is recommended that the manufacturer consider designing a system to improve final placement and coverage of the seed in these soil conditions.

**Row Markers:** The hydraulic row markers worked well in most field conditions tested. The marker disk on the end of the row marker allowed the operator to choose the width of mark left to follow.

**Monitor:** An SM-III monitor (FIGURE 3) was supplied with the test machine. The ability of the monitor to scan the rows and measure population rates for 15 second intervals was very good (for corn only, as stated in the manual). A table was printed on top of the monitor to convert the 15 second count into seeds/acre for a range of ground speeds. This table was not included in the operator manual. In the event that the table on the monitor deteriorates with time, it is recommended that the manufacturer consider including the monitor seed population chart in the operator manual.

## EASE OF OPERATION AND ADJUSTMENT

**Hitching:** When hitching the planter to the tractor drawbar, a suitable drawpin was used and the safety chain was secured. The hydraulic pump was mounted on the PT0 shaft and anchored to the drawbar. Hitching was completed by connecting two sets of hydraulic hoses and one electrical pin connector for the monitor.

When in field position, the safety stand interfered with the tractor drawbar when turning left. It is recommended that the manufacturer consider relocating the safety stand.

**Application Rates:** Planting rates were easy to change on the seed drive transmission (FIGURE 4), conveniently located on the back of the tool bar. The operator first moved the spring clips along the shaft and loosened the chain. The desired sprockets on the clusters were then aligned with the idler sprockets. The spring clips were then placed next to the sprocket clusters and the chains were retightened. All sprocket clusters are kept in the seed drive transmission at all times.

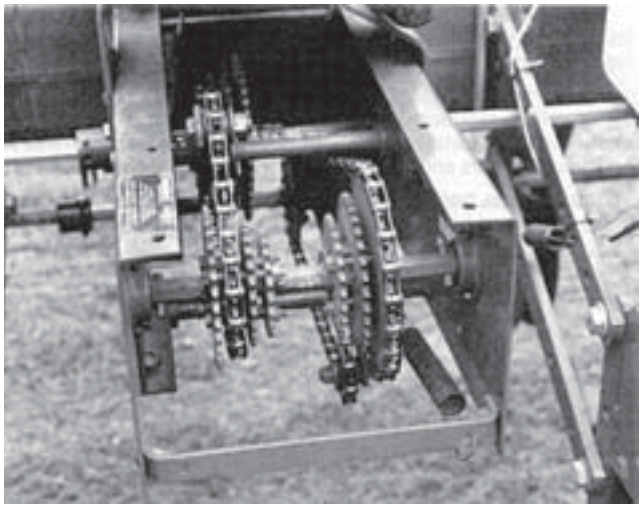

**FIGURE 4.** Seed Drive Transmission.

Thirty-eight different sprocket combinations were possible, allowing the seed population to vary from 12,000 to 49,900 seeds/ac (30,000 to 124,750 seeds/ha) when using a 30-cell seed disk.

Air pressure was easily adjusted by using the flow control valve located beside the hydraulic blower.

The fertilizer application rate could be varied by either moving the index augers in the hoppers or changing the sprocket combinations. The augers could be moved to a new index number by loosening the setscrews and sliding the augers along the centre shafts. It is important to keep these shafts free of fertilizer build up and rust in order that the augers slide easily.

The fertilizer drive transmission consisted of three sets of sprocket clusters giving a total of twelve different sprocket combinations. This arrangement of index augers and sprockets permitted the operator to select a large number of settings within the range stated in the operator manual of 45 to 645 lb/ac (50 to 730 kg/ha) based on a fertilizer with a density of 61 lb/ft$^3$ (977 kg/m$^3$).

The 45 link chain on the fertilizer drive transmission between the jackshaft and the fertilizer drive shaft could not be tightened if the two smallest sprockets were used without shortening the chain. It is recommended that the manufacturer consider modifying or relocating the idler sprocket used to tighten this chain.

**Depth Adjustment:** Planting depth was controlled by the depth gauge wheels. With the planter raised, the depth adjustment screws could be turned easily.

Each turn of the screws changed the depth approximately 0.25 in (6.4 mm). Each mark of the screw represented about 1 in (25 mm). Due to minor variations in the seed planting units, the depth adjustment screws were not always in exactly the same position on every row.

**Lubrication:** Access to most lubrication points was very good with the planter in field position. There were 33 pressure grease fittings that required either daily or weekly servicing.

At the beginning of each season the hydraulic fluid and filter element in the PTO hydraulic pump should be replaced.

A complete service schedule was provided in the operator manual.

**Filling:** The eight seed hoppers were easy to fill with seed especially if the planter was in a lowered position. The air system was not pressurized when filling the hoppers. The seed hopper lids were held by a cord connected to the seed hopper to prevent loss or damage when filling.

The four granular fertilizer hoppers were easily filled with a drill fill especially if the planter was in the lowered position.

There were no straps or latches to hold the fertilizer hopper lids near the hopper when filling. Also, during planting the lids on the fertilizer hoppers would not remain in place. It is recommended that the manufacturer consider modifying the lids for the fertilizer hoppers to prevent loss or damage.

**Cleaning:** The sensors in the seed tubes were cleaned daily using a small round brush and mild detergent and water. The seed hoppers were easy to clean out. By removing the caps on the seed chutes, the seed would flow out of the hopper. A small amount of seed was left in the seed metering unit and could be cleaned out by removing the seed disks.

To clean the fertilizer hoppers, the operator had to disconnect the fertilizer downspout hoses and remove two hopper mounting bolts on each hopper. The hoppers were then tipped forward and the fertilizer removed.

**Transporting:** The 5100 Seed Boss had very good stability on roads at the manufacturer's recommended maximum speed of 10 mph (16 km/h).

One person could put the planter in transport position (FIGURE 5) from field position in 5 minutes or less. It was important to ensure that the fertilizer and seed hoppers were less than half full on the wing units and that all locks and braces were in position.

Caution was needed when driving under low hanging power lines. Transport height was 14.1 ft (4.3 m) and transport width was 19.4 ft (5.9 m).

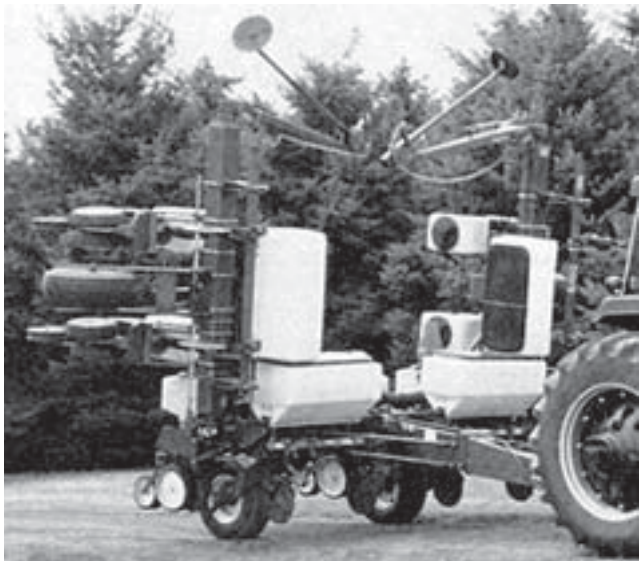

**FIGURE 5.** Transport Position.

**Power Requirements:** Power requirements depended upon soil conditions, seeding depth and ground speed. Draft tests showed that a tractor with at least 90 HP (67 kW) maximum power take-off rating, based on the Nebraska tractor test data, should be used to operate this machine.

## OPERATOR SAFETY

The White 5100 Seed Boss row crop planter was safe to operate and service if normal safety precautions were observed.

Care was taken when transporting to ensure all safety locks were engaged and ground speed was selected to maintain machine stability. Also, the seed hopper lids should not be opened if the system is pressurized because dust and chemical dispersed into the air may be hazardous to the operator.

## OPERATOR MANUAL

The operator manual supplied with the test machine was very good. Many photographs and illustrations were included with the text, providing useful, easy to understand information on maintenance, adjustment, service and safe operation of the machine. Seeding rate and fertilizer rate charts were also provided.

However only Imperial units of measurement were used in the manual. It is recommended that the manufacturer consider using SI (metric) units of measurement in the text and charts in addition to the Imperial units.

## DURABILITY

TABLE 4 outlines the mechanical history of the White 5100 Seed Boss row crop planter during 100 hours of operation while seeding 985 ac (400 ha).

**TABLE 4.** Mechanical History

| ITEM | OPERATING HOURS | FIELD AREA ac | ha |
|---|---|---|---|
| -Faulty flow divider replaced at: | 0 | 0 | (0) |
| -Fertilizer disk opener scrapers replaced at: | 29 | 345 | (140} |
| -Rewelded eye bolt on marker wing at | 29 | 345 | (140) |
| -Fertilizer disk opener scrapers replaced at | 63 | 750 | (305) |

As shown in TABLE 4 the scrapers used to keep the fertilizer disk openers free of mud were replaced after 345 ac (140 ha) and again after 750 ac (305 ha) of use. At the end of the test these scrapers were nearly worn out again. It is recommended that the manufacturer consider improving the quality of these scrapers for longer wear-life.

The metering brushes were still in good condition at the end of the test.

The intent of the test was evaluation of functional performance. An extended durability evaluation was not conducted.

### APPENDIX I
### SPECIFICATIONS

| | | |
|---|---|---|
| **MAKE:** | | White Farm Equipment |
| **MODEL:** | | 5100 Seed Boss |
| **SERIAL NUMBER:** | | 82001244 |
| **DIMENSIONS:** | | |
| -- Transport | -width | 19.4 ft (5.9 m) |
| | -length | 13.1 ft (4.0 m) |
| | -height | 14.1 ft (4.3 m) |
| -- Effective plant width | | 24.0 ft (7.3 m) |
| **SEEDING SYSTEM:** | | |
| -- type | | Air |
| -- number of rows | | 8 |
| -- number of seed hoppers | | 8 |
| -- row spacing | | 36 in (91.4 cm) |
| -- seed hopper capacity (individual) | | 1.5 bu (55 L) |
| -- type of drive | | chain driven from ground wheel |
| -- type of adjustment | | sprocket combinations |
| -- air pressure range | | 0-5 in $H^20$ (0-1.2 kPa) |
| -- seed disk opener diameter | | 13 in (34 cm) |
| -- depth gauge wheel size | | 4.0 x 16 in (100 x 406 mm) |
| -- press wheel size | | 4.0 x 12 in 100 x 305 mm) |
| -- seed disk opener range of vertical force | | 140 - 190 lb (625 - 845 N) |
| -- press wheel range of vertical force | | 50 - 100 lb (220 - 445 N) |
| **FERTILIZER SYSTEM:** | | |
| -- type | | Auger |
| -- number of rows | | 8 |
| -- number of fertilizer hoppers | | 4 |
| -- fertilizer hopper capacity (individual) | | 8.5 $ft^3$ (240 L) |
| -- type of drive | | chain driven from ground wheel |
| -- type of adjustment | | auger and sprocket combinations |
| -- fertilizer disk opener diameter | | 13 in (34 cm) |
| -- fertilizer disk opener maximum applied vertical force | | 400 lb (1780 N) |
| **TIRES:** | | 4, 9.5 x 15, 6-ply |
| **NUMBER OF LUBRICATION POINTS:** | | |
| -- pressure grease fittings | | 33 |
| -- oil points | | 64 |
| -- hydraulic oil pump filters | | 1 |
| -- sealed wheel bearings | | 4 |
| **NUMBER OF CNAIN DRIVES:** | | 17 |
| **NUMBER OF HYDRAULIC CYLINDERS:** | | 8 |

**OPTIONAL EQUIPMENT:**
- -- liquid fertilizer tanks
- -- granular insecticide and herbicide hoppers
- -- minimum till and no-till fluted colters
- -- tine tooth incorporators
- -- disk furrowers
- -- rock guards
- -- one other monitor

### APPENDIX II
### MACHINE RATINGS

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

| | |
|---|---|
| Excellent | Fair |
| Very Good | Poor |
| Good | Unsatisfactory |

### APPENDIX III
### CONVERSION TABLE

| | |
|---|---|
| Acre (ac) x 0.405 | = Hectare (ha) |
| Foot (ft) x 0.305 | = Metre (m) |
| Inches (in) x 25.4 | = Millimetres (mm) |
| Horsepower (hp) x 0.74 | = Kilowatt (kW) |
| Miles/Hour (mph) x 1.61 | = Kilometre/Hour (km/h) |
| Pounds Mass (lb) x 0.454 | = Kilogram (kg) |
| Pounds Mass/Cubic Foot ($lb/ft^3$) x 16.02 | = Kilograms/cubic metre ($kg/m^3$) |
| Pounds Force (lb) x 4.45 | = Newton (N) |
| Pounds Force/Foot (lb/ft) x 14.6 | = Newton Metre (N/m) |
| Pounds Force-Feet (lb-ft) x 1.36 | = Newton-Metre (N-m) |
| Inches of Water (in $H^20$) x 0.249 | = Kilopascal (kPa) |
| Cubic Feet ($ft^3$) x 28.6 | = Litres (L) |
| Bushel (bu) x 36.4 | = Litres (L) |
| Pounds/Acre (lb/ac) x 1.13 | = Kilograms/Hectare (kg/ha) |
| Seeds/Acre (seeds/ac) x 2.5 | = Seeds/Hectare (seeds/ha) |

## SUMMARY CHART

# WHITE 5100 SEED BOSS ROW CROP PLANTER

**RETAIL PRICE:** $23,554 Canadian Funds, (July 1984, f.o.b. Portage la Prairie, Man.) 8-row wide, with folding toolbar transport attachment, granular fertilizer hoppers, and SM-III Monitor.

| | | |
|---|---|---|
| **QUALITY OF WORK** | | |
| Seed Metering | **Very Good** | -round seed gave very accurate results at planting speeds of 5 mph (8 km/h) and 8 mph (13 km/h). |
| Fertilizer Application | **Very Good** | -rates within 10% of rates stated in the operator manual. |
| Penetration | **Very Good** | -damp clay conditions affected seeding depth. |
| Soil Finishing | **Good** | -did not always provide good coverage. |
| Monitor | **Very Good** | -a chart is used to convert readout to seeds/acre. |
| **EASE OF OPERATION AND ADJUSTMENT** | | |
| Application Rates | **Very Good** | -central drive transmission. |
| Filling | **Good** | -lid latches and holding straps on fertilizer lids are needed. |
| Transporting | **Good** | -high transport height.<br>-slow transport speed 10 mph (16 km/h). |
| **POWER REQUIREMENTS** | | -90 hp (67 kW) minimum. |
| **OPERATOR SAFETY** | **Good** | -avoid opening pressurized seed hoppers. |
| **OPERATOR MANUAL** | **Very Good** | -well written and clearly illustrated.<br>-does not include SI units of measurement. |
| **MECHANICAL PROBLEMS** | | -short wear-life of fertilizer disk opener scrapers. |

**CAUTION**

This summary chart is not intended to represent all of the final conclusions of the evaluation report. The relevance of the ratings is secondary to the information provided in the full text of the report. It is not recommended that a purchase decision be based only on the summary chart.


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