From: Soil & Water Conservation Program
To: DNR.Soil and Water Conservation Districts staff
Cc: bwhite@confedmo.org; DNR.MGS SWC Staff; Soil & Water Conservation Program
Subject: Great Plains Drill Depth Setting for Native Grasses
Date: Friday, December 12, 2025 7:59:21 AM
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Great Plains No-till Drill Seed Rate Charts and Calibration for NWSG.pdf

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Please see the information below from Bill White.

If your SWCD **does not** own a Great Plains Drill or Haybuster Drill, you can delete this message now. If your SWCD **does** own one of these drills, please pass this information on to your drill manager or other party that manages your drill.

We are quickly approaching the dormant seeding period for native grasses and as such I would like to pass along some important information when utilizing Great Plains and Haybuster drills to plant native grasses.

Since the NRCS implementation of the Native Forages Initiative (NFI) in 2022, various partner staff have reviewed some establishment failures. Most of the failures being experienced by producers are due to lack of weed control during that first growing season. **Another leading cause of establishment failure is seeding too deep for the native forage species (>1/4 inch).** While this is not an issue with the Truax with the depth bands on the disc openers, it has been an issue for some producers using Great Plains Drills. It may also be an issue with Haybuster and other drills capable of seeding natives.

Some of the failures noted during NFI reviews include a planting of nearly 100 acres and another with a high-cost diverse native mix. These have been very costly for the producers not only in wasted seed, but also the loss of pasture acreage for an additional year.

If your district owns a Great Plains drill for the planting of native grasses and does not preset the seeding depth for the producer, we encourage you to share these videos with producers who will be using those drills:

How to calibrate a Great Plains Drill for Native Grasses How to Calibrate a Grain Drill

In softer seed beds the press wheels can be set so firm as to bury the seed - How to Adjust the Seed Depth on Great Plains Press Wheels Bing Videos

In some cases, the Great Plains depth adjustment for the disc openers is no longer functional. We ask you to consider supplying hydraulic cylinder stop collars such as

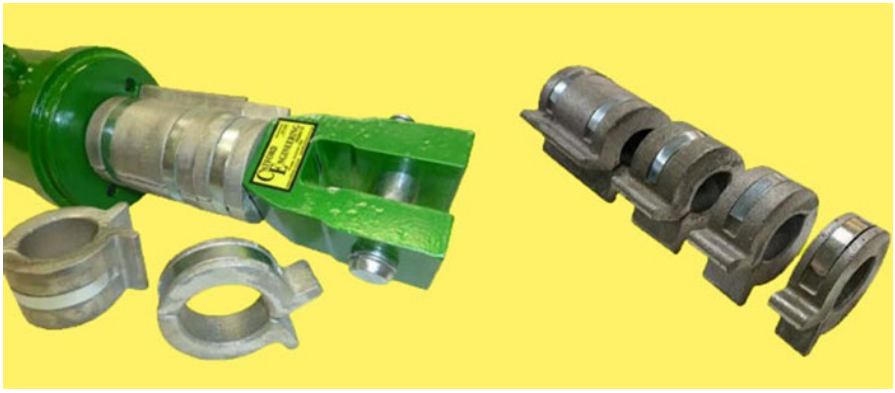
illustrated below to resolve the issue. The producer will then need to test how many or what size collars are needed to get the correct ¼ inch depth for seeding natives, which can be different on the various soil types across the state. The coulters need to cut through the plant litter on the surface of the soil and go no further than ¼ inch into the soil.

I have also attached a Great Plains calibration manual specifically for native grasses that can be printed off and given to the producer to assist with calculations.

Similar to the Great Plains Drill, the Haybuster has a disc opener depth adjustment and a press wheel depth adjustment Use of the Haybuster 77 No-Till Seed Drill

This Haybuster 77C-107C_New_Cover drill operators manual covers seed calibration.

Please feel free to contact me with questions.



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Seed, Small Seeds, Native Grass and Fertilizer Rate Charts for the 2007+ 706NT and 1006NT No-Till Drills

The following pages are to assist in the proper setting of seeding and fertilizer rates for the 706NT and 1006NT No-Till Drills. To assure the most accurate seeding rates, Great Plains recommends checking singulated seed rates, and calibrating for fertilizer application rate at the time of planting.

ORIGINAL INSTRUCTIONS

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Table of Contents

Native Grass Attachment Series II

The Native Grass box is for seeding fluffy, native grass blends like Big Blue Stem, Indian Grass, and Oats Grama.

Setting Native Grass Rate

Refer to Figure 6 and Figure 7

Seeding rate of the native Grass box is controlled by the gearbox Drive Type ① and a Driven sprocket ② on the gearbox output chain. Rate levers on other boxes do not affect Native Grass rate.

Setting rate for Native Grass mixes (other than Brome) rate requires calibration, which is done using any current Drive Type and Driven sprocket combination. The results of the calibration determine the actual Drive Type and Driven sprocket to use. The process is:

- Meter a sample using the calibration crank.
- Weigh the sample and use that value in the calibration formulas.
- Find the final drive setup in the chart.

A step-by-step table and example follow the detailed Native Grass Mix instructions on page 21.

Instructions and chart for Brome are on page 25.

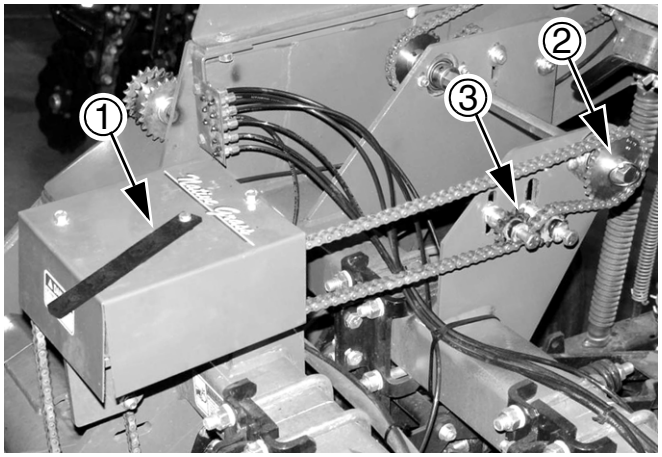


Figure 6 20484
Native Grass Drive Type

Figure 7 20483
Driven Sprocket Storage

Great Plains Calibration for Series II Native Grass Drills

Our method for calibration will work on any type of native grass no matter what seed type, weight, or density. See page 25 for steps specific to Brome.

We give you the drill's revolutions per acre at the native grass cup and allow you to calibrate the output in pounds by cup sprocket revolution per acre.

This is the most consistent calibration procedure that will work on all types of native grasses.

Note: It is necessary to calibrate for the seed mix before setting seed rate.

To calibrate seed mix:

1. Record the weight of an empty container large enough to hold seed metered from the native grass box.
2. Fill three or more compartments at least $^1/_2$ full of seed in the native grass box. Pull seed hoses off openers under the compartments.

Refer to Figure 8

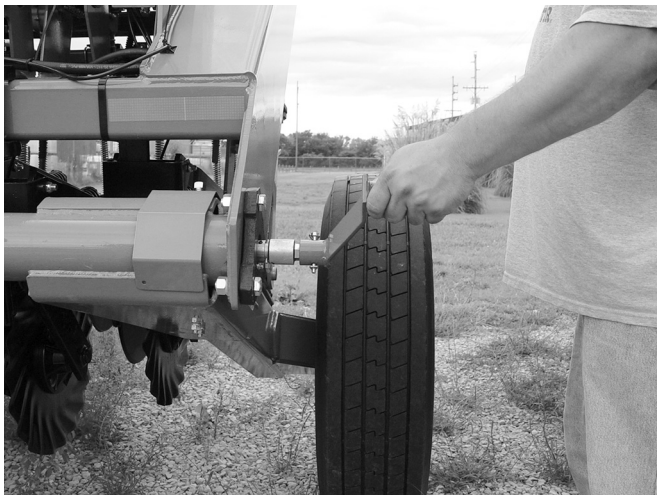


Figure 8 23386
Calibration Crank

3. To calibrate, use right-hand gauge wheel or supplied calibration crank.
4. To calibrate using right-hand gauge wheel, lower the drill hydraulically to planting position in order to activate clutch. Raise right drive wheel tire off the ground using a jack. Engage gauge wheel lockout on the right-hand side.
5. To calibrate using calibration crank, disengage gauge wheel lockout, and attach calibration crank to coupler on right-hand side of gauge wheel jackshaft using retaining pin.
6. Turn gauge wheel or crank several times to fill seed cups with seed. Continue to turn gauge wheel or crank until seed falls to the ground from each cup.
7. Place the empty container under three seed hoses to gather the seed as it is metered.

Refer to Figure 6

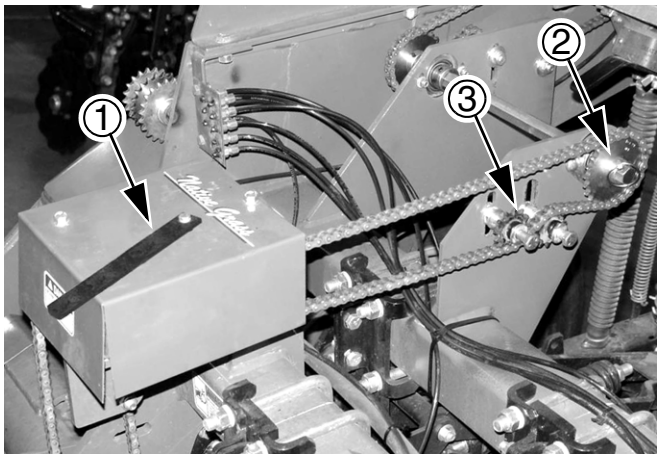


Figure 9 20484
Native Grass Drive Type

8. Note the Drive Type ① on the gearbox (1, 2, 3, 4) and the range sprocket ② (15 through 24 tooth sprockets). **This information will be used later in the calibration process.**
9. Rotate gauge wheel or calibration crank for one acre. See table at right for rotations per acre.
10. Check that the three seed cups have plenty of seed coming into them.

Drill Model	Revolutions for One	
	Acre	Hectare
706NT	595	1470
1006NT	411	1016

11. Weigh metered seed, and subtract the initial weight of the container. Divide this number by 3 (number of cups metered). Finally, multiply by the number of openers on the drill. This equals the pounds per acre at this drive setting. Refer to the formulas on the right.

$$\frac{MeasuredSeed - EmptyContainer}{3} = PoundsPerSeedCup$$

$$PoundsPerSeedCup \times NumberOfOpeners = PoundsPerAcre$$

Note: Refer to the drive setting chart on page 24, the numbers listed are the number of revolutions of the native grass meter shaft at a particular drive type and sprocket range.

12. To adjust this number, take the pounds per acre divided by the shaft revolutions. This is the pounds per shaft revolution.
13. Divide desired rate of pounds per acre by the pounds per shaft revolution (this is the number obtained from step 12). Find this number (or the closest number to this) in the drive setting chart. This will give the gearbox drive type and the range sprocket size.

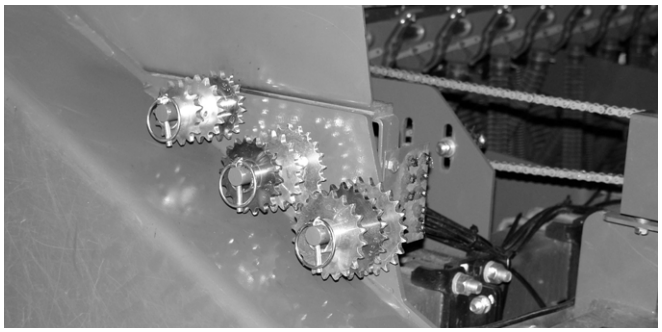


Figure 10 20483
Select NG Driven Sprocket

Refer to Figure 7

14. Set the Drive Type lever to the chart value.
15. Determine which sprocket is required for the native grass box. The sprockets are stored on the right-hand side of the drill frame.

    To change sprockets, loosen the chain idlers.

    Replace with desired sprocket.

Note: All native grass mixes will vary in weight, seed type, and density, so this is why you must calibrate each mix.

16. When drilling, check the amount of seed you are using by noting the acres drilled, amount of seed added to drill, and the level of seed in the box. If you suspect you are drilling more or less seed than desired, and you have accurately calibrated the drill to you seed, you may need to change your sprocket arrangement to compensate for your field conditions.

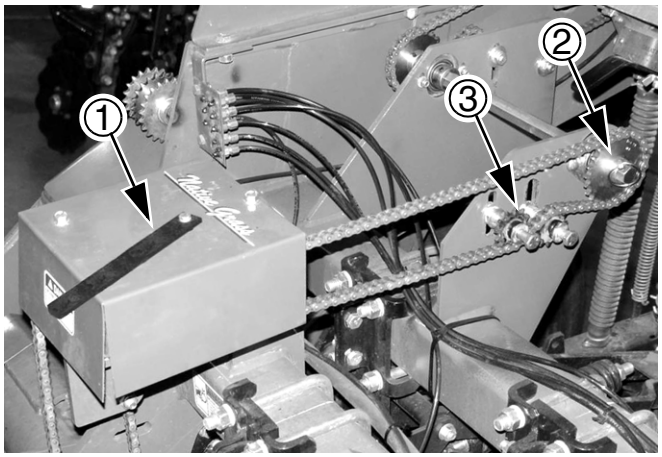


Figure 11 20484
Set Native Grass Drive Type

Calibration Formulas and Sample Calibration

Formulas	Example
Know your Desired seed rate in pounds per acre	For this example, a target value of: *32 PoundsPerAcre*
Weigh the empty sample container(s)	For this example, three 1.5# buckets: *4.5* pounds
Operate crank/gauge wheel for one acre	For this example, a model 1006NT: 411 revolutions
Weigh the collected seed plus container(s)	In this example: *9.5* pounds
Calculate the sampled rate at each seed cup. $\frac{MeasuredSeed - WeightOfEmptyContainer}{3} = SampledPoundsPerSeedCup$	Assuming 3 cups sampled. $\frac{9.5 - 4.5}{3} = 1.66(PoundsPerSeedCup)$
Calculate the sampled rate for all rows working: $PoundsPerSeedCup \times NumberOfOpeners = SampledPoundsPerAcre$	For this example, a 15-row 1006NT: $1.66 \times 15 = 24.9(PoundsPerAcre))$
Note the current Drive Type and sprocket setting.	For this example: Drive Type 1 Sprocket: 24T
In the chart on page 24, find the Cup Revolutions Per Acre for the tested configuration.	The table cell at Drive Type 1 / 24T is: *50.02 (CupRevolutionsPerAcre)*
Calculate the Sampled pounds per cup revolution $\frac{SampledPoundsPerAcre}{CupRevolutionsPerAcre} = SampledPoundsPerCupRevolution$	This is essentially a correction factor: $\frac{24.9}{50.02} = 0.498(PoundsPerCupRev)$
Calculate the Target cup revolutions per acre $\frac{DesiredSeedRate}{SampledPoundsPerCupRevolution} = TargetCupRevolutionsPerAcre$	Our Target Cup Rate: $\frac{32}{0.498} = 64.28(CupRevsPerAcre)$
In the chart on page 24, find the table cell with the value closest to the Target. Use the Drive Type and Sprocket shown for that cell.	The drive configuration for that target: Cell: 63.19 Drive Type: 1 Sprocket: 19

Factors which will affect seeding rates are: weight of seed, size of seed, relative humidity and moisture content of the seed, ratio of inert material to seed, different proportions of seed types affecting density, tire configuration, tire pressure, and tire slippage.

All seed mixes will vary.

The rates are based on 9.00 x 24 8-Ply tires.

Calibration Formulas and Sample Calibration

Formulas	Example
Know your Desired seed rate in pounds per acre	For this example, a target value of: _____ *PoundsPerAcre*
Weigh the empty sample container(s) (i.e.number of cups being sampled)	Total weight of the buckets collecting seed: _____ pounds
Operate crank/gauge wheel for one acre	For this calibration, a model 706NT: 595 revolutions or 60 revolutions for 1/10ac
Weigh the collected seed plus container(s) Measured Seed	Total Weight of Seed collected: _____ pounds (Multiply by 10 if only 60 revolutions)
Calculate the sampled rate at each seed cup. $\frac{MeasuredSeed - WeightOfEmptyContainer}{3} = SampledPoundsPerSeedCup$	Assuming 3 cups sampled. _____ – _____ / _____ = _____ Pounds/seed Cup
Calculate the sampled rate for all rows working: $PoundsPerSeedCup \times NumberOfOpeners = SampledPoundsPerAcre$	For this scenerio, a 10-row 706NT: _____ X _____ = _____ lbs/acre
Note the current Drive Type and sprocket setting.	Drive Type: _____ Sprocket (# of teeth): _____
In the chart on page 24, find the Cup Revolutions Per Acre for the tested configuration.	The table cell for current Drive Type is: _____ *(CupRevolutionsPerAcre)*
Calculate the Sampled pounds per cup revolution $\frac{SampledPoundsPerAcre}{CupRevolutionsPerAcre} = SampledPoundsPerCupRevolution$	This is essentially a correction factor: _____ / _____ = _____ lbs per cup Revolution
Calculate the Target cup revolutions per acre $\frac{DesiredSeedRate}{SampledPoundsPerCupRevolution} = TargetCupRevolutionsPerAcre$	Our Target Cup Rate: _____ / _____ = _____ Target Cup Revolutions per Acre
In the chart on page 24, find the table cell with the value closest to the Target. Use the Drive Type and Sprocket shown for that cell.	The drive configuration for that target: Cell: _____ Drive Type: _____ Sprocket: _____

Factors which will affect seeding rates are: weight of seed, size of seed, relative humidity and moisture content of the seed, ratio of inert material to seed, different proportions of seed types affecting density, tire configuration, tire pressure, and tire slippage.

All seed mixes will vary.

The rates are based on 9.00 x 24 8-Ply tires.

Refer to Figure 12

The Series II Native Grass attachment includes this standard agitator.

To prevent damage to the Native Grass box agitator and its drive components, do not transport drill with Native Grass box loaded with seed.

For Native Grass Mix Only
Powdered graphite may be mixed with the native grass seed mix to improve seed flow and metering.

Recommended Usage:

Sprinkle 1/3 cup of graphite per 6 ft of seed box on top of the native grass seed mix.

For humid planting environments, double or triple rate as needed.

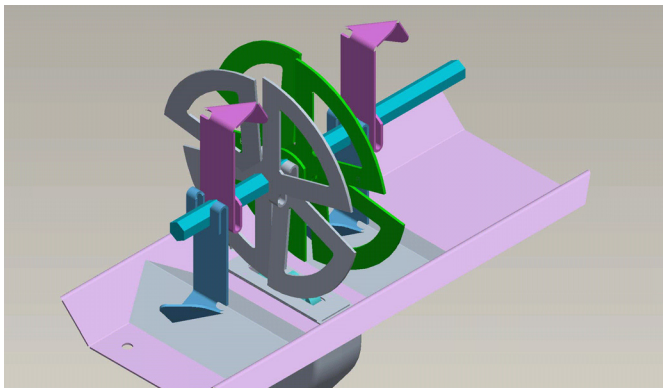


Figure 12 25041
Series II Agitator

Native Grass Cup Rates

Metric charts are on page 45.

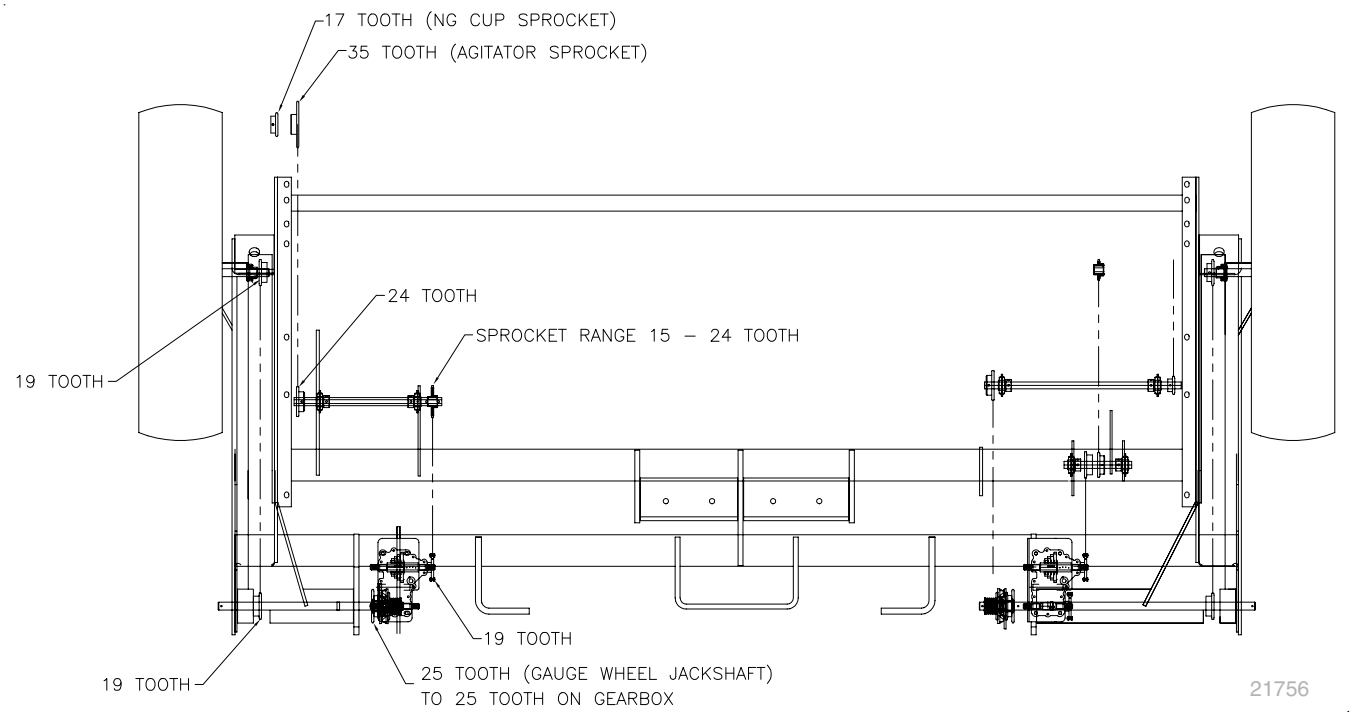
Model 706NT (7.5 inch Row Spacing)

Driven Sprocket	15	16	17	18	19	20	21	22	23	24
Drive Type	Seed Cup Revolutions per Acre									
1	115.03	107.84	101.49	95.86	90.81	86.27	82.16	78.43	75.02	71.89
2	236.44	221.67	208.63	197.04	186.67	177.33	168.89	161.21	154.20	147.78
3	354.67	332.50	312.94	295.56	280.00	266.00	253.33	241.82	231.30	221.67
4	578.58	542.41	510.51	482.15	456.77	433.93	413.27	394.48	377.33	361.61

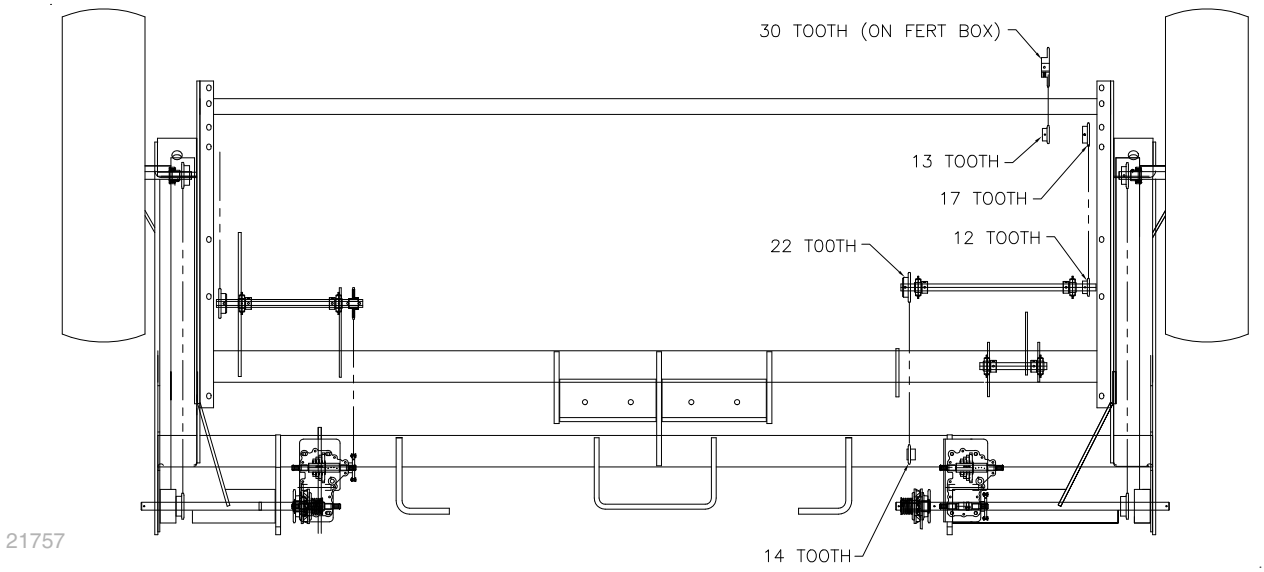
Model 1006NT (7.5 inch Row Spacing)

Driven Sprocket	15	16	17	18	19	20	21	22	23	24
Drive Type	Seed Cup Revolutions per Acre									
1	80.04	75.03	70.62	66.70	63.19	60.03	57.17	54.57	52.20	50.02
2	164.52	154.24	145.16	137.10	129.88	123.39	117.51	112.17	107.29	102.82
3	246.78	231.35	217.74	205.65	194.82	185.08	176.27	168.26	160.94	154.24
4	402.57	377.41	355.21	335.48	317.82	301.93	287.55	274.48	262.55	251.61

Native Grass



Fertilizer



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