



Stripper Harvesting



**J.D. Wanjura**

USDA-ARS
Lubbock, Texas

S.W. Searcy

Texas A&M University
College Station, Texas

W.B. Faulkner

Texas A&M University
College Station, Texas

M.H. Willcutt

Mississippi State University
Mississippi State, Mississippi

R.K. Boman

Texas AgriLife Extension
Lubbock, Texas

M.J. Buschermohle

University of Tennessee
Knoxville, Tennessee

M.S. Kelley

Texas AgriLife Extension
Lubbock, Texas

A.D. Brashears

USDA-ARS (Retired)
Lubbock, Texas

E.M. Barnes

Cotton Incorporated
Cary, North Carolina

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Introduction

Background of Stripper Harvesting

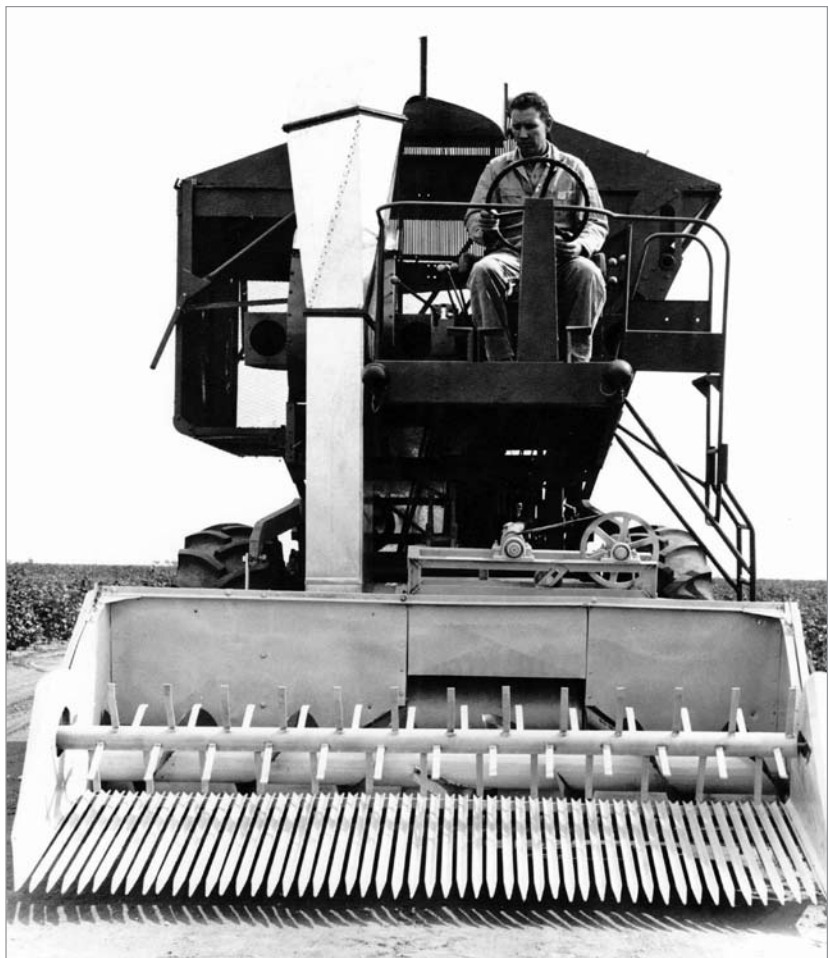
Stripper-type harvesters were developed as a cost-effective alternative to hand pulling for harvesting cotton with short plant heights, relatively low yield, and closed or “storm-proof” bolls. Limited growing-season rainfall and irrigation capacity, along with harsh weather conditions on the Southern High Plains, tend to produce crops with these problems. That’s why cotton producers in this region have widely adopted the stripper harvester.



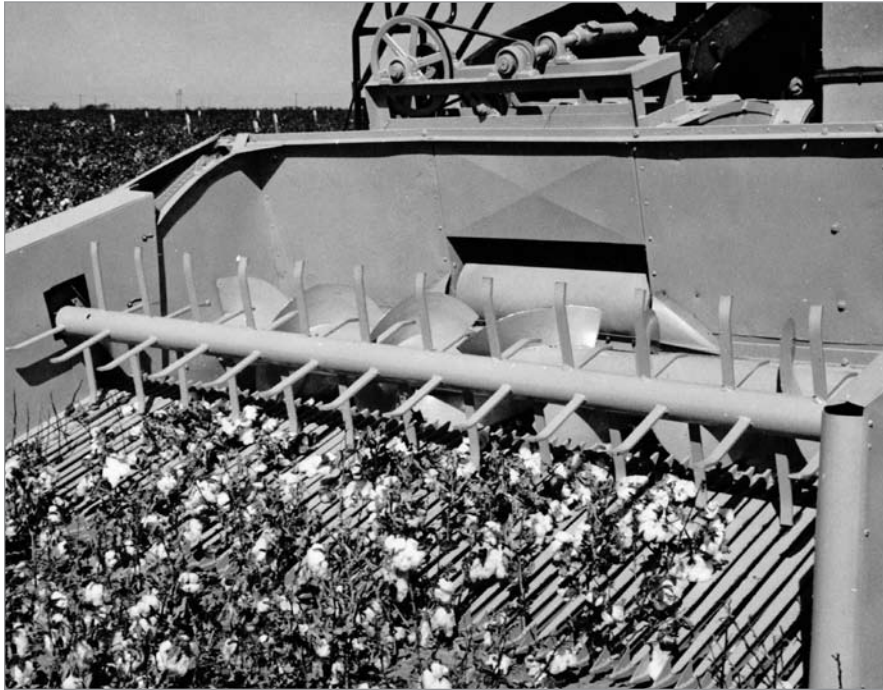
Single-row, horse-drawn cotton stripping sled (about 1920).

Sledding

The stripping action harvests seed cotton from the plant by removing the entire boll along with leaves, branches, and other undesirable material. Early implements used a wooden sled drawn by a horse or mule to pull cotton off the stalk. The sled was designed to harvest cotton by pulling the plants through a tapered opening wide enough for the stalks to pass through but narrow enough to catch and remove open and unopened bolls. Most sleds harvested one row per pass, but multi-row sleds were available. After “sledding,” farmers often piled cotton on the turn-row to allow unopened green bolls to open before ginning.



Cotton harvesting machine configured with a finger stripper header (about 1963).



Cotton harvesting machine configured with a finger stripper header (about 1963).

During the mid-1900s, American agriculture developed a great variety of farm machinery. Two prevalent harvester designs used the stripping action: the finger stripper harvester and the brush-roll stripper harvester. Finger stripper headers harvested cotton from crops planted in broadcast or very narrowly spaced row patterns. The brush-roll stripper harvester harvested cotton planted on evenly spaced rows. It was widely used after cotton production

practices began favoring rows spaced 30-40 inches apart. With harvesting efficiencies frequently over 99%, brush-roll-stripper harvesters allowed farmers to generate the most revenue from the cotton produced.

The brush-roll cotton stripper harvester continues to be the main harvester used in southern Kansas, western Oklahoma, and the High and Southern Rolling Plains of Texas.¹ Depending on crop conditions, stripping is sometimes used to harvest cotton in the Texas Blackland and Coastal Bend regions.

Over the years, the agriculture industry has developed specific production and preharvest practices to help producers get the most out of stripper-harvested crops. Although stripper harvesters are generally much less complex than spindle pickers, you still need to properly condition the crop for harvest, maintain/configure row units, adjust onboard field cleaners, and operate the machine to preserve fiber quality and optimize harvesting efficiency and productivity.

¹ John Deere is currently the only manufacturer producing cotton-stripper harvesters in the U.S., and many comments in this document refer to their machines. Disclaimer: Mention of trade names or commercial products in this document is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the U.S. Department of Agriculture.

Preharvest Preparation

Crop Harvest-Aid Application

Factors that Influence Harvest-Aid Performance

In order for cotton to be ready for stripper harvesting, the crop must be dry enough so that bolls can be easily snapped off of the plant. This drying effect occurs after plants have died due to exposure to freezing conditions or it can be expedited prior to cold weather through the use of desiccant type harvest aid chemicals. Harvest aid chemicals help to drop leaves, open bolls, and desiccate plants, facilitating earlier stripper harvesting, higher yields and improved lint quality (Boman et al. (2009).



John Deere model 7460 brush-roll cotton stripper harvester (about 2010).

Proper harvest-aid product selection, tank-mix partners, and rates vary with environmental and crop conditions. What works best in one year is not necessarily the best for the next season. Effectiveness of harvest-aid chemicals is always a concern. Several factors affect the performance or lack of performance of harvest-aid chemicals.

These factors improve the performance of harvest-aid chemicals:

- Warm, calm, sunny weather
- Soil moisture relatively low but sufficient to maintain cotton plant in active growth condition without moisture stress
- Soil nitrogen levels relatively low
- Leaves active and uniformly expanded on plants
- Little or no secondary growth evident on plants
- Plants with a high percentage of open bolls that have shed some mature leaves



On the other hand, here are some factors that negatively affect harvest-aid chemical performance:

- Applications made under cool (below 60° Fahrenheit), cloudy conditions
- Long periods of wet weather after treatment
- Plants in vegetative growth state with low fruit set
- Plants severely moisture stressed with tough, leathery leaves at time of treatment
- High soil moisture and nitrogen levels, which contribute to rank, dense foliage and delayed maturity
- Plants exhibiting secondary growth (regrowth) after a “cut-out” period
- Improper calibration of application rates and poor spray coverage

In general, the yield and condition of the cotton crop should determine the choice of harvest-aid product. If the leaves are beginning to shed and are reddish to purple, they will more easily drop off without too much “sticking” (when leaves do not drop and are frozen on the plant). The natural process that causes leaves to drop can be stopped by stress such as a freeze or desiccant application. Also, some cotton varieties do not defoliate properly. Increased leaf content in the harvested cotton can reduce lint quality. Drought-stressed leaves generally have a much thicker waxy coating, which can reduce harvest-aid performance.

Regrowth

Secondary growth (regrowth) sometimes occurs after the plants have “cut out” or stopped blooming due to drought stress or physiological maturity. If the weather is warm and rainy after an extended period of drought stress and cut out, the growth cycle can start again. You might see regrowth in the terminal and on many of the other nodes on the plant. Plants with unopened bolls or young, developing bolls are less likely to produce secondary growth. Regrowth is difficult to control because young foliage does not shed as older leaves do.

Spray Volume

Proper spray volume and coverage are also critical to the success of a harvest-aid program. Be sure to calibrate the sprayer to deliver the correct volume at the proper nozzle pressure to ensure adequate distribution and foliage penetration. Read and follow the label directions for use of the product. The harvest-aid label contains information based on many years of testing and results. Avoid applying on windy days to reduce the hazard of spray drift to nontarget vegetation. Some harvest-aid chemicals are very toxic and should be properly handled and stored, especially around small children and pets. Harvest-aid products are basically classed in three categories: desiccants, defoliants, and boll openers.

Desiccants

Desiccants (paraquat formulations such as Gramoxone Inteon®, Firestorm®, Parazone® and various tank-mixes with other products) dry down the plant by causing the cells to rupture. The old rule of thumb is that desiccants are normally applied when approximately 80% of the productive bolls are open, or at two to three nodes above cracked boll. However, if enough bolls are mature (based on the knife test), then desiccants may be applied to fields with a lower percentage of open bolls.



Do not use paraquat-based desiccants when seedling-stage small grains or other crops are near targeted cotton fields. Paraquat drift can severely damage developing small grains grown for cover or harvest. Gramoxone Inteon, Firestorm, and Parazone are similar products that have paraquat as the active ingredient. The Texas Department of Agriculture (TDA) has granted a 24c special local needs (SLN) label for several paraquat-based products. See labels for specifics. The SLN approves higher use rates for desiccation of stripper-harvested cotton for many Texas counties.

Weather Factors

Paraquat applications made in the late afternoon before a bright, sunny day seem to boost the effectiveness of desiccation and tend to increase regrowth control. We suggest the use of nonionic surfactant (NIS) with paraquat. Use the NIS at a minimum rate of 0.125% or 0.25% volume/volume (v/v), depending on the percent concentration of surface-active agent (see individual product labels). You may need to increase the NIS rate to 1% v/v and spray late in the day to effectively desiccate some fields.

PPO Inhibitor Products

In some years, protoporphyrinogen oxidase (PPO) inhibitor defoliant/desiccant products applied at higher rates work well to desiccate juvenile growth and regrowth, which is often difficult to do with paraquat. PPO inhibitor products include Aim®, Blizzard®, ET®, and Resource®. Unlike the problem with paraquat, drift from desiccant rates of PPO inhibitors should not injure small grains.

Defoliants

Defoliants cause plants to begin developing an “abscission layer,” or zone of cells that eventually break down and cause leaves to separate from the stem and drop. Abscission is a natural process, but it is enhanced by the defoliant. Some defoliants are classified as hormonal, some are herbicidal, and some are mixtures of both.

Hormonal Defoliants

Hormonal defoliants work two ways: (1) they enhance production of “ethylene,” a hormone that stimulates leaf abscission; or (2) they inhibit a plant’s ability to transport “auxin,” a plant growth hormone. Lower temperatures are more likely to reduce the effectiveness of hormonal defoliants than herbicidal defoliants. Hormonal defoliants include Dropp® (thidiazuron) and related products. Because of fall temperatures, Dropp is not generally used in the Texas High Plains and Rolling Plains regions.



Herbicidal Defoliants

Herbicidal defoliants include Def® (tribufos) and related products, the PPO inhibitors (Aim®, Blizzard®, ET®, and Resource®), and low rates of paraquat or other desiccants (which injure but do not kill the leaves). Some products may have mixtures of both hormonal and herbicidal defoliants. These products include Ginstar® (thidiazuron plus diuron) and related products.

Maximizing Leaf Drop

To maximize leaf drop, defoliants require fairly healthy and active leaves that still function properly and are not severely drought stressed (tough and leathery). Warm air temperatures generally enhance a defoliant’s effectiveness. According to the commonly used rule of thumb, defoliants can be safely applied when 50-60% of the bolls are open and the remaining bolls are mature enough to obtain a good yield. Defoliation generally causes mature bolls to open, but green, unopened bolls can still remain a challenge. Frequently, a killing freeze or a follow-up application of paraquat or other desiccant product is needed to allow stripper harvest of the crop.

Defoliant rates of PPO inhibitors disrupt a plant’s cell membrane, which triggers increased ethylene production in leaves and causes abscission. Texas High Plains research trials indicate that the PPO-inhibitor products can be effective defoliants, as well as effective desiccants in some instances when used at higher rates. These products tend to work equally well, but some may work better under certain crop conditions.

PPO inhibitors can be tank-mixed with other products such as paraquat, Def®, Ginstar®, Prep®, Finish 6 Pro®, and FirstPick®. We suggest the use of crop oil concentrate (COC) or other adjuvant for the Aim EC®, Blizzard, ET, and Resource spray mixtures. See specific product labels for details. Failure to include proper adjuvants with these products will likely result in significantly reduced activity.



Boll Openers

Ethephon-based boll-opener products increase the rate of boll opening and defoliation to allow for more rapid harvesting of the crop. Primary ethephon materials include Prep® and other related products such as Boll'd®, Boll Buster®, Setup®, and SuperBoll®. A few years ago, some enhanced boll-opener/defoliant products were marketed: Finish 6 Pro®, which contains ethephon and cyclanilide; and FirstPick®, which contains ethephon and urea sulfate.

These chemicals affect the natural boll-opening process, but they do not cause bolls or fiber to mature faster. Plants convert ethephon to ethylene, an aging-related hormone that speeds up abscission layer formation. Ethephon-based products usually reach a level of maximum effect within 14 days.

Tank mixes of ethephon and defoliants (for example, Def® or Ginstar®) are effective at opening bolls and dropping leaves in higher yielding cotton. Higher rates of ethephon products are often very effective for defoliation, but lower rates are generally effective for boll opening. The maximum labeled rate for ethephon products is 2 pounds of active ingredient per acre. Defoliant chemicals can be tank-mixed with ethephon products to enhance defoliation.

Boll Maturity

Ethephon must be applied to an active plant to be effective, and temperatures generally drive its effectiveness. Ethephon product labels generally state that plants need “sufficient mature unopened bolls present to produce desired crop.” Mature bolls are defined as “too hard to be dented when squeezed between the thumb and fingers, too hard to be sliced with a sharp knife, and when the seedcoat becomes light brown in color.” If you apply boll-opening products when bolls are not mature enough, you will likely see reduced lint yield and micronaire.

Results from several High Plains studies indicate that lint yield and micronaire reductions occurred when applications were made at 25% open bolls but not at 50% open bolls. Lint yields were reduced at least 10%, and micronaire was decreased by about 5%. When you first use tank mixes of boll opener and defoliant products, you often need a follow-up application of paraquat (or other product with desiccant activity) to sufficiently condition the cotton for stripper harvest in the High Plains region. Although this step adds more expense to the overall harvest-aid program, it is sometimes necessary to complete the season-long earliness investment you have made.



Stripper Harvester Preparation

Row Unit Maintenance and Adjustment

Proper row unit maintenance and adjustment are critical to maximizing harvest efficiency and preserving fiber quality. Several crop conditions play a large role in determining correct machine settings, such as the level of defoliation, stalk diameter, plant height and width, and stalk and branch moisture content (brittleness). “Stripping aggressiveness” describes the duration and intensity of the harvesting action applied to the plants by the row units.

Aggressive Harvesting

Aggressiveness directly influences the amount of seed cotton and foreign material harvested. The more aggressive the harvesting action, the higher the probability is to harvest more foreign material and generate bark. You need to adjust stripper row units to the correct level of stripping aggressiveness with goal of harvesting the least foreign material and causing the least seed cotton field losses. Four main factors influence stripping aggressiveness:

- Configuration and sequence of brushes and bats on stripper rolls
- Stripper roll spacing
- Combing pan spacing
- Machine travel speed

Stripper Roll Configuration

Manufacturers configure stripper rolls with three brushes (2 inches wide by 40 inches long, crimped nylon bristle brush) and three bats (2 inches wide by 40 inches long,



Close-up image of a new bat (top) and brush (bottom) used on stripper rolls.



Image of brush-bat (uncrimped nylon bristle brush, top) and conventional brush (bottom).

reinforced rubber strips). Brush-bats are un-crimped nylon bristle strip brushes and reduce stripping aggressiveness compared to conventional brushes. Brush bats are available commercially as replacement components. Bats with two-ply thickness are most commonly used on stripping rolls, but one-ply bats are available on new machines and as replacement components. One-ply bats help reduce stripping aggressiveness due to their reduced stiffness.

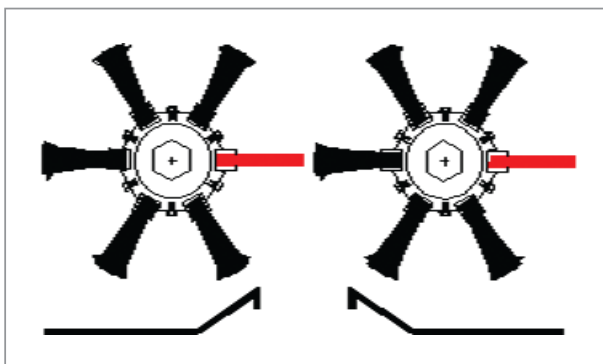
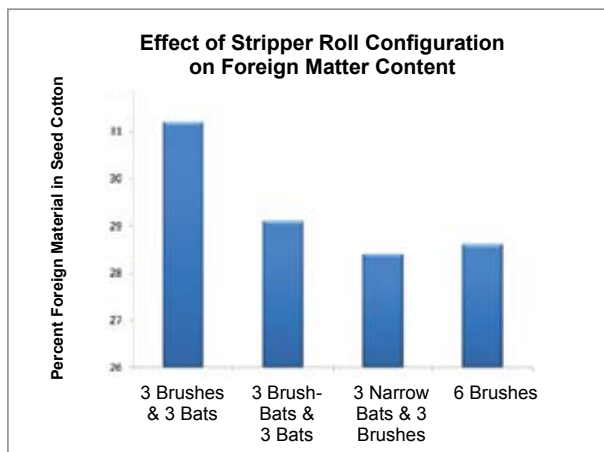
Using fewer bats per stripper roll reduces the amount of foreign material harvested. Research showed that using a stripper roll configuration with one bat and five brushes reduced the total foreign matter content of stripped cotton (Brashears, 1992). Additionally, as stalks and branches become brittle late in the season after freezing weather, reducing the width of bats by 0.75 to 1 inch can reduce stick content by as much as 40% with minimal effect on harvest efficiency (Brashears, 1992; Supak et al., 1992).

Stripper Roll Timing

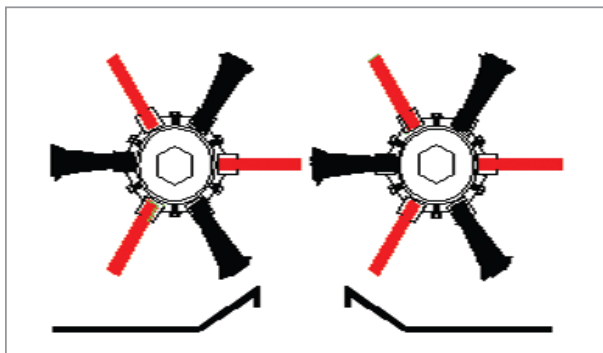
Timing of stripper rolls using the conventional three-brush/three-bat or one-bat/five-brush configurations should be brush-to-bat to help reduce stripping aggressiveness. Late-season stripper roll configurations using three narrow bats with three brushes should be timed brush-to-brush.

Stripper Roll Spacing

Stripper roll spacing – measured as the distance between adjacent bats or brushes turned to their inward-most position – should be as wide as possible without increasing



Modified stripper roll configuration with one bat and five brushes per stripper roll timed brush to bat (Brashears, 1992).



Conventional configuration of three bats (red) and three brushes on stripper rolls (rolls timed brush-to-bat).

field losses. Wider spacing between stripper rolls reduces the amount of foreign material collected and the potential for bark (Wanjura and Brashears, 1983; Brashears, 1986).

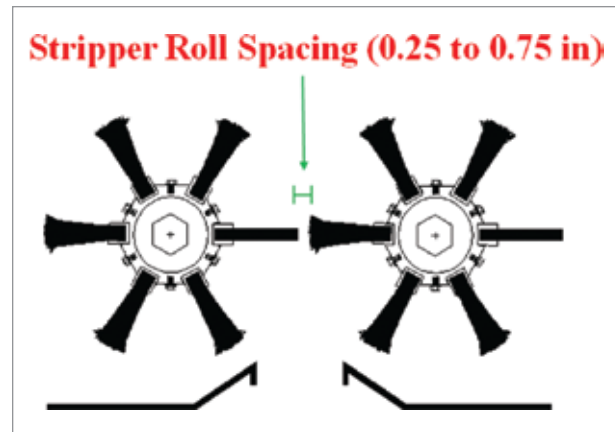
Adjust initial spacing between stripper rolls based on typical stalk diameter (generally 0.25-0.75 inch), and readjust the spacing as crop conditions change. The spacing of combing pans located below stripper rolls should also be checked to make sure seed cotton is not able to fall out of the row unit and plants are allowed to pass through freely. It is generally recommended to increase the spacing of combs at the front of the unit by approximately 1/4 inch compared to comb spacing at the rear of the unit.

Monitor the condition of bats and brushes frequently and replace worn components to maintain acceptable harvest efficiency. Excessively worn bats or brushes may break off stripper rolls and become a contaminant in baled lint if allowed to pass through the gin.

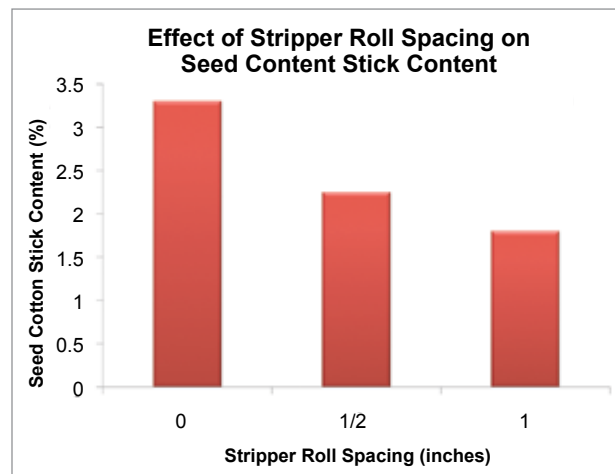
Air System Configuration and Adjustment

The pneumatic conveyance system used on stripper harvesters serves three critical functions:

- Conveying harvested seed cotton from the header to the storage basket
- Separating green bolls and heavy foreign material from harvested seed cotton
- Distributing seed cotton uniformly across the width of the conveying duct before the onboard field cleaner



Recommended initial stripper roll spacing.

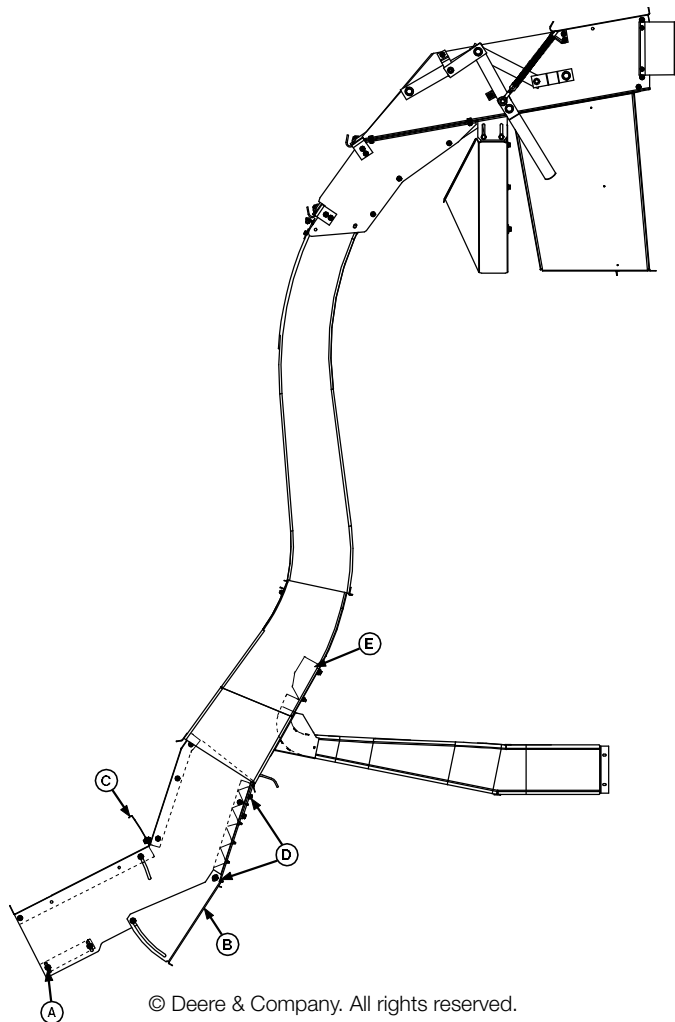


New bat (top) and worn bat (bottom).

A harvester uses the force of gravity to separate green bolls and heavy trash at the lower and upper ends of the conveying duct. After seed cotton exits the header cross auger, high-velocity air from the main fan pulls it through the conveying duct. The position of a door on the rear side of the duct regulates the force of the air. When the door is open, the air stream is less forceful, which provides better separation of green bolls and heavy trash. When the door is closed, all of the seed cotton, green bolls, and foreign material is pulled into the conveying duct and carried to the upper section.

A separation system at the top of the conveying duct provides a second opportunity for removing green bolls and other foreign material. A plate at the top of the air duct can be adjusted to allow more green bolls and other foreign material to settle out of the air stream and onto a chute that discharges the removed material to the side of the machine. The seed cotton remaining in the air stream is directed into the onboard field cleaner or into the basket.

Uniform distribution of the seed cotton across the upper section of the conveying duct requires proper adjustment of the front and side tabs on the high-velocity air nozzle and factory-installed vanes that direct airflow across the inside of the duct.



Schematic of main cotton conveying duct used on John Deere 7460 stripper harvesters (Courtesy of John Deere): A – Lower Front Separation Duct Panel; B – Lower Separation Duct Door; C – Door; D – Separator Angles; and E – Vanes.

Field Cleaner Maintenance and Adjustment

Cotton strippers produced since the late 1980s have included onboard field cleaners to help remove foreign material from stripped seed cotton. Field cleaners used on modern stripper harvesters are similar to two-saw stick machines used in cotton gin seed cotton



cleaning systems. Field cleaners can remove approximately 50-60% of the initial foreign matter content in stripped seed cotton. Seed cotton containing approximately 30-35% foreign material is fed to the machine through the pneumatic conveying duct where wads of seed cotton are dispersed by the feeder cylinder and fed onto the primary cleaning cylinder.

Channel-type saws affixed to the surface of the cleaning cylinder grab the seed cotton and pull it over grid bars located around the outside of the saw cylinder. Large foreign material (such as sticks and burrs) and some seed cotton are removed through centrifugal force as the cotton is pulled across the grid bars. The material rejected by the primary cleaning cylinder is fed onto the reclaiming cylinder and pulled over a second set of grid bars where mostly large foreign material and small amounts of seed cotton are removed through centrifugal force. Seed cotton on the primary and reclaiming saw is removed by the doffing brush at the back of the machine and discharged into an air stream leading to the harvester basket.

Factors that Influence Field Cleaner Performance

Several factors affect the seed cotton rejection and cleaning performance of field cleaners: loading rate, seed cotton moisture content, initial foreign matter content, saw-to-grid bar clearance, saw condition, doffer brush condition, and belt tension. You can influence all of these factors to some degree while operating a stripper.

Feed Rates

Research on field cleaners and similar stick machines used in ginning has shown that excessive processing rates decrease cleaning efficiency and increase loss of good seed cotton (Baker et al., 1982; Kirk et al., 1970). Previous research indicates that the optimum feed rate of these machines is in the range of 2-2.5 bales per hour per foot of width (Baker et al., 1994; Wanjura et al., 2009). When operating a cotton stripper, be careful not to overload field cleaners by excessive harvest speeds, especially with six-row-wide and eight-row-wide headers.

Moisture Content

Monitor seed cotton moisture content at harvest, especially when using field cleaners to avoid damaging fiber quality. Under high-moisture-content conditions, field cleaners can cause seed cotton to have a “rope-like” appearance that reduces the gin’s ability to efficiently clean the cotton. It also tends to cause excessive fiber breakage at the gin stand.

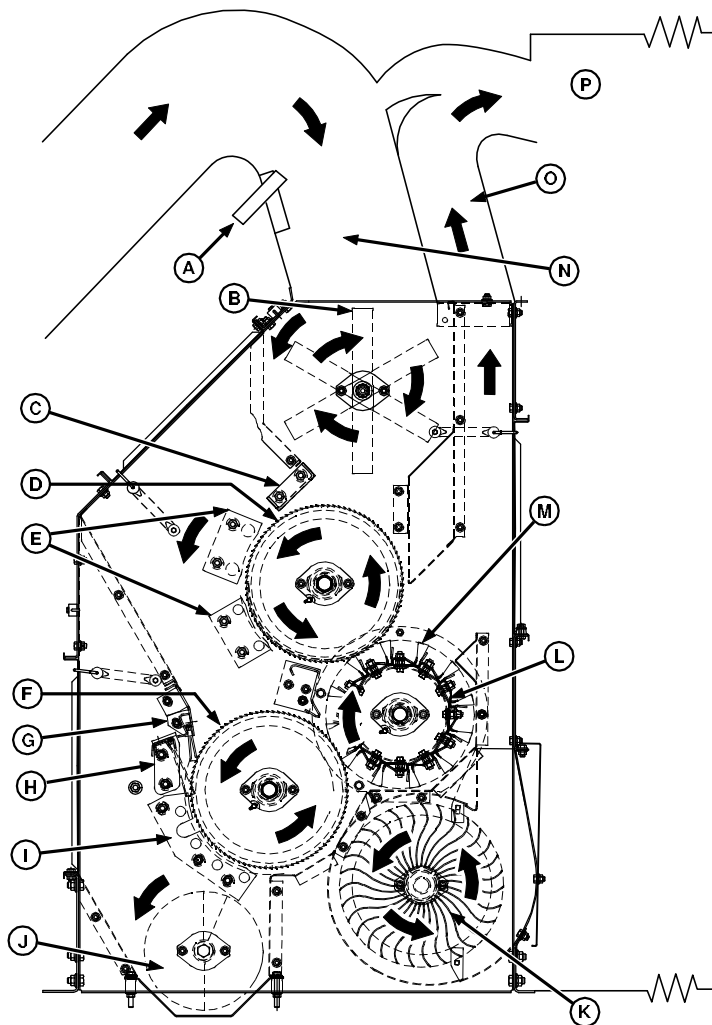
Preharvest Crop Management

Proper preharvest crop management will reduce the amount of excess plant material the harvester must handle. Specifically, timing of irrigation termination and harvest-aid application will help defoliate and desiccate the crop. Also, proper preharvest maintenance on field cleaners will help

improve the removal of foreign material from harvested seed cotton. During preharvest field cleaner maintenance, check and adjust saw-to-grid bar clearances, replace worn saws on primary and reclaiming saws, replace worn doffer brushes, and check for proper drive belt tensions.

Saw-to-Grid Bar Clearances

Generally, wider saw-to-grid bar clearances reduce the amount of foreign material removed, as well as the amount of seed cotton rejected by the machine. On the other hand, tighter clearances increase foreign matter removal and seed cotton rejection. Clearance settings for the two upper grid bars and the lay-down bar on the primary saw are 5/8 inch. All other saw-to-grid bar clearances are set at 1/2 inch. Check saw-to-grid bar clearances daily and adjust as needed.



Field cleaner machine used onboard John Deere 7460 stripper harvesters (Courtesy of John Deere):

- A – Cleaner Bypass Lever;
- B – Feeder;
- C – Feeder Control Bar;
- D – Upper Saw Drum;
- E – Upper Grid Bars;
- F – Lower Saw Drum;
- G – Saw Brush;
- H – Secondary Reclamation Brush;
- I – Lower Grid Bars;
- J – Trash Auger;
- K – Fan;
- L – Doffer (12-Brush);
- M – Brushes (Doffer);
- N – Front Duct;
- O – Rear Duct;
- P – Basket.

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In-Season Procedures

Daily Preharvest Maintenance Checks

Daily maintenance of stripper harvesters is critical to ensuring worker safety, maintaining productivity, and prolonging machine life. The following are basic daily critical checkpoints to address before operation:

- Clean seed cotton from deck area, engine compartment, alternator screens, radiator coils, fan shroud, etc.
- Clean cotton buildup from finger grates, basket screens, and sensors in basket.
- Check to make sure the direction vane at the top of the conveying duct is set as desired to direct cotton either into the field cleaner or into the basket, depending on desired operation.
- Check field cleaner for damaged saws, residue buildup on saws, loose or damaged grid bars, loose belts, buildup of large debris, etc.
- Fill fuel tank and inspect tires for proper pressure and damage.
- Check engine oil, hydraulic fluid, and coolant levels.
- Check row units for plugged grate panels, plant stalks, excessively worn or damaged bats and brushes, worn bearings and gears, etc.
- Lubricate basket hydraulic cylinder pivots, basket rock shaft pivots, and basket vane pivot points.
- Lubricate steering axle pivot points and ball joints.
- Follow all recommended maintenance procedures according to manufacturer-suggested intervals in the machine operator's manual.





In-Field Operation

Warm-Up

After you complete daily pre-operation maintenance and checks, the machine is almost ready for field use. Before entering the field for harvest, properly warm up the machine and power up the field cleaner, fan, and row-unit drive systems in sequence. With the engine at low idle speed, engage the field cleaner, followed by the main fan, and then the row-unit drive. Initiating operation in this sequence allows for material remaining in the system to pass through without causing a choke downstream.

Harvesting

Before entering the crop rows, lower the row units and header into proper position for harvest. Adjust the stripper header level with the ground; row units should float approximately 1-2 inches above the surface. As the machine enters the field, closely monitor your speed to prevent overloading the header cross auger and field cleaner. Match travel speed to machine capacity, considering the number of rows harvested per pass, yield, and level of defoliation.

Field Conditions

Pay close attention to field conditions, and avoid obstacles by raising row units and maneuvering around to prevent row-unit chokes and machine damage. Stripper row units are subject to periodic plugging due to rank crop conditions, weed and disease pressure, or the presence of field debris (such as stumps and rocks). Some modern stripper headers are equipped with reversing circuits that allow stripping rolls and augers to rotate in reverse to help clear minor chokes. Make sure that the row units have come to a complete stop before engaging the reversing circuit to prevent damage to the header or row units.

Clearing a Choke

Some situations will require several cycles of engaging the row units in the forward and then the reverse direction to clear a choke. If you cannot clear a choke quickly by reversing the row-unit drive, you must manually remove the obstruction before harvest can continue. Before leaving the cab to clear the obstruction, you must disengage the row units, fan, and field cleaner, and then shut off the engine to prevent serious injury or death. Follow all recommended safety precautions listed in the machine operator's manual. Remove debris from the field after you clear it out of the row units. If any seed cotton has touched the ground, do not put it with other harvested cotton. It may be contaminated.

Unloading the Basket

Carefully unload the harvester basket into a boll buggy or module builder to prevent worker injury or machine damage. Make sure that the unloading area is clear of overhead obstructions (such as power lines) before unloading. Make sure that the stripper harvester is oriented appropriately relative to the boll buggy or module builder to allow the harvester to unload without spilling seed cotton onto the ground. It may not be possible to unload a stripper harvester with a wide header configuration (i.e., 6 or 8 rows wide) directly into a module builder.

Field Procedures

Field efficiency is maximized when the harvester unloads without leaving the rows being harvested. It is often easier to maneuver a boll buggy into position than to move a harvester off the rows and into position. Be careful when maneuvering boll buggies in the field (especially near harvesters with wide headers) to allow for adequate forward, side, and rear clearance to avoid damaging the harvester or support equipment.

Wind Factors

Harvesters are top-heavy and should be maneuvered slowly when full and unloaded on flat ground. Windy conditions are common in stripper-harvested areas and can cause harvesting equipment to roll over when unloading. Always pay close attention to wind direction when unloading in windy conditions and orient machines for unloading so that the basket rotates into the wind.

Shut-Down Procedure

The following steps should be taken to properly shut down stripper harvesters at the end of each day:

- Bring the machine to a complete stop, and place the hydrostatic lever in the park position.
- Apply the parking brake.
- Disengage stripping units.
- Lower stripping units and header onto the ground.
- Disengage the fan.
- Disengage the field cleaner.
- Idle the engine for several minutes to cool the turbo-charger before turning ignition switch off.



Cotton stripper unloading into a boll buggy shown with basket rotating into the wind.



Fiber Quality

Harvesting Efficiency

High harvesting efficiency (leaving as little seed cotton in the field as possible) is critical to maintaining profitability, especially for farmers growing nonirrigated crops. Harvesting efficiency for brush-roll strippers is high, usually in the range of 98-99%. However, some aspects of fiber quality (such as micronaire and length uniformity) can be reduced for stripped cotton due to the presence of immature fiber from bolls located at the top of the plant. The presence of immature fiber can also influence fiber length, strength, and color grade.



Crop Management Practices

Environmental conditions often limit the maturity of cotton crops on the Southern High Plains. However, late-season crop management practices with regard to irrigation termination and harvest-aid applications can help reduce the severity of these maturity issues. Application of boll-opening harvest-aid chemicals to immature crops can result in reduced yield and fiber quality.

Leaf Grade Reduction

Leaf grade for stripped cotton is generally higher than picked cotton due to higher initial foreign matter content. The industry has adopted ginning practices over the years to efficiently remove foreign material and bring leaf grades down. Ginners should be careful to prevent excessive fiber breakage due to poor moisture control, high processing rates, and excessively aggressive lint cleaning.



Safety Is Your Responsibility!

This information is intended to help you get to know the basic guidelines and recommendations for maintaining, configuring, and operating stripper-type cotton harvesters. You should also read and understand the operator's manual for the machine you plan to operate. Pay close attention to all safety precautions and procedures to prevent injury or death to yourself and those around you!

General Safety Practices

When you work around harvesting machinery, safety is vital to protect yourself and the workers around you. Follow these rules to help ensure a safe harvesting operation:

- Always read and understand the operator's manual for the equipment you are about to operate. Pay special attention to safety concerns and follow all safety procedures to prevent injury or death.
- Operate harvesting machinery at appropriate speeds, taking into account ground conditions and slope.
- Harvesting equipment is often "top-heavy." Do not dump harvesters on sloping ground, in high winds, near electrical lines, or while moving. Make sure the rear axle stabilizer system works before dumping.
- Always keep a fully charged fire extinguisher on harvesting equipment. If you detect a basket fire in time, dump the load on the ground and move the harvester away quickly. Never try to extinguish a fire from inside the basket.
- At least once a day, clean seed cotton, lint, and trash from the engine compartment and other heat sources on your harvester. Keep these areas clean, and you will greatly reduce the chance of machine fires.
- Always install mechanical cylinder stops or blocks before you perform maintenance on row units, under raised baskets, or under other hydraulically controlled systems. Stops and blocks will prevent the systems from lowering unexpectedly.
- Wear close-fitting clothing and pay close attention when you work around harvesting equipment. Before you get near any moving part, make sure the parking brake is set and the engine is shut off.



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