Transland SwathMaster®

Transland Spreaders

TRANSLAND

Revision C

SPREADER OR SWATHMASTER?

HOW TO CHOOSE

The choice between Spreaders and SwathMasters is based upon personal preferences and specific factors. These dispersal products are commonly referred to as ram air spreader because the air is forced into the throat at a rated based on the speed of the aircraft.

Spreaders are better suited for higher speeds, high volume, and normal poundage work. SwathMasters perform very well with jobs up to 150 pounds. Additionally, SwathMasters effectively carry out jobs with different gate sizes.

To assist customers in making an informed choice between a Spreader and a SwathMaster for their agricultural needs, Transland advises applicators to answer the following key questions:

01

Type of Aircraft

What type of aircraft will be used for the application?

02

Size of Gate Box

What are the dimensions of the gate box on the aircraft?

03

Gate Box Mechanism

Is the gate box manual, hydraulic or electric in operation?

04

Application Rate

What is the desired application rate per acre?

05

Type of Product

What type of agricultural product will be applied using the equipment?

DID YOU KNOW?

Did you know that Transland's Electric and Hydraulic Gate Boxes are capable of dry single profiles through the Satloc Falcon Pro & Satloc G4? Here are some examples of single profiles in both systems: 1) Urea, 2) Urea/Sulfate, 3) Sulfate, 4) Dry Rice, and 5) Wheat Seed. Click this link for information about Transland Electric Gates. Click this link for details on the Satloc Falcon Pro.

SWATHMASTERS

Once it's determined that a SwathMaster is the preferred option, Transland offers a helpful chart to provide customers with a starting point for selecting the most suitable SwathMaster. The large and small Swathmasters are the same standard models produced continuously by Transland since 1958. The small Swathmasters are used with the standard Transland 9-1/2″ x 25″ gate box.

Note: Measurements are inside dimensions of the hopper throats. The stainless steel Swathmasters are made from .032 thick material and connected by quick-disconnect clamps directly to the gate boxes, allowing easy installation and removal by the operator.

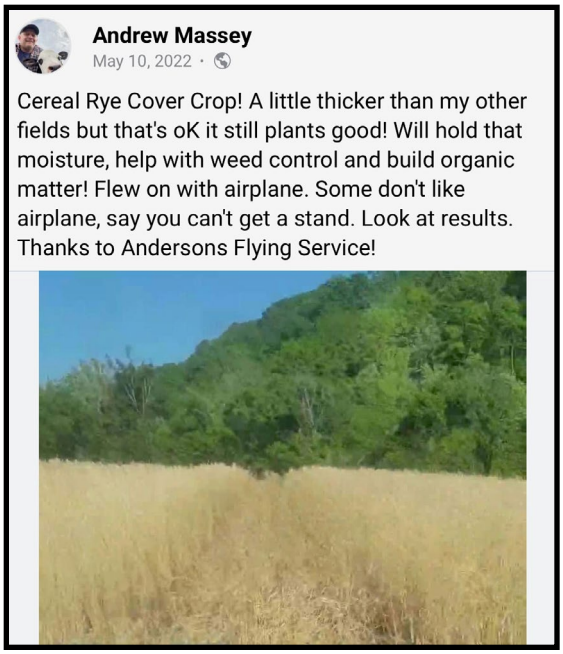
SwathMaster® Matrix for Air Tractor & Thrush Planes

SwathMaster Kit #	Gate Type			Center Section					Wing Type*		Angle Mount Tab				Plane Models			
	5" Gate	7.5" Gate	10" Gate	22364	22363	20183	22353	22615	7 Feet 22616 / 22617	10 Feet 22618 / 22619	10993	19125	19126	19127	AT-502	AT-602	AT-802	Thrush w/5" Gate
54597	X			X					X					X	X			
54597-1	X			X					X				X			X		
54597-2	X			X					X			X					X	
54594			X		X				X					X	X			
54594-1			X		X				X				X			X		
54594-2			X		X				X			X					X	
54596			X		X					X				X	X			
54596-1			X		X					X			X			X		
54596-2			X		X					X		X					X	
54497	X			X						X				X	X			
54497-1	X			X						X			X			X		
54497-2	X			X						X		X					X	
54598		X					X			X				X	X			
54598-1		X					X			X			X			X		
54598-2		X					X			X		X					X	
54593		X					X		X					X	X			
54593-1		X					X		X				X			X		
54593-2		X					X		X			X					X	
54499	X					X			X		X							X
54401	X							X	X						Any Plane with 25" Gate			

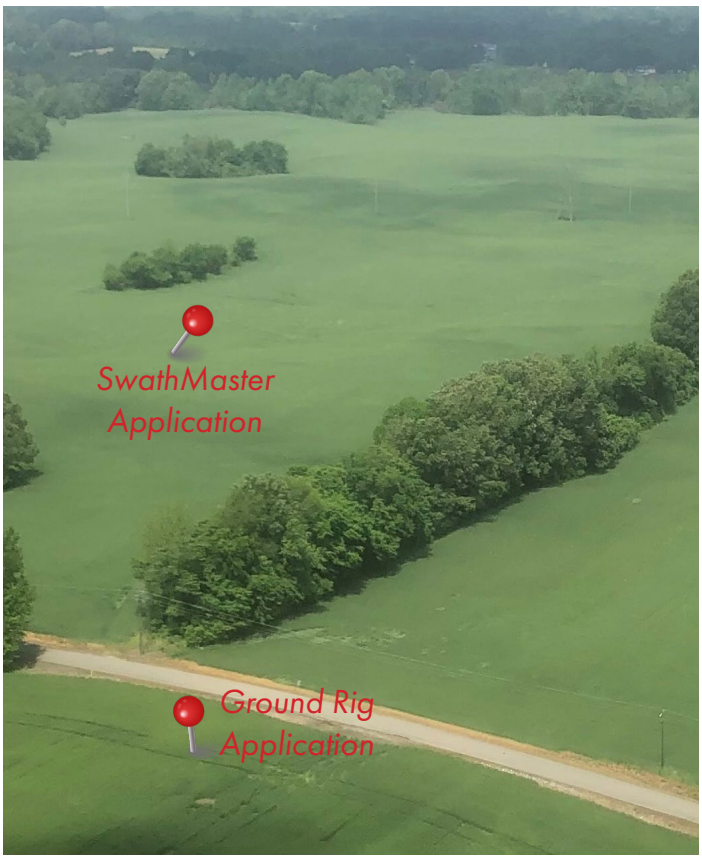
*Wing Extensions (3 feet each) available: LH 20033 and RH 20034

Fertilized Wheat Field by a SwathMaster

Streaking by a Ground Rig



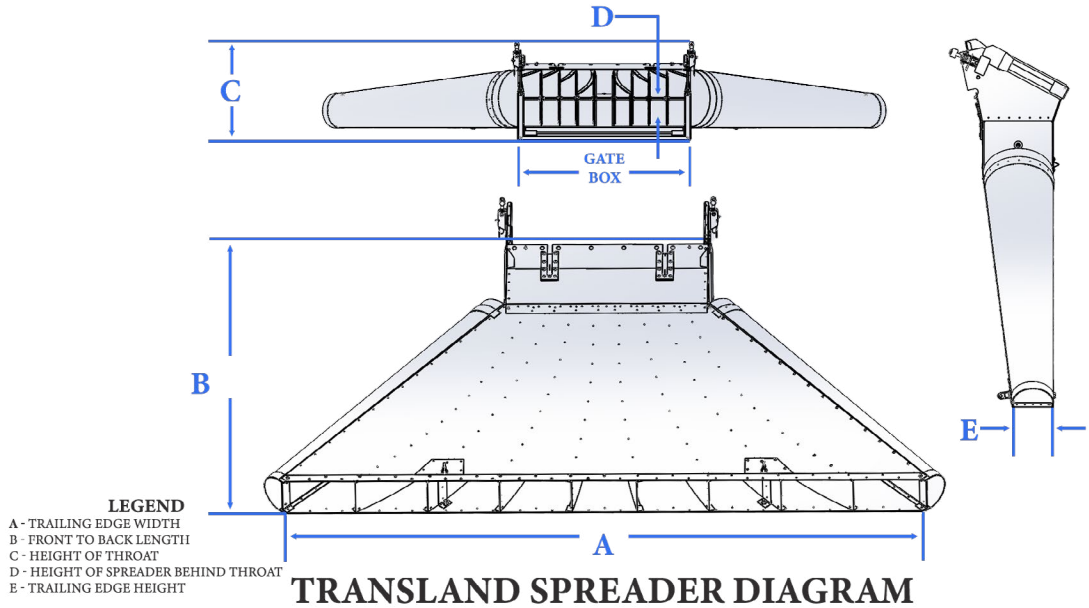
> *I do low poundage more than high poundage. With a SwathMaster, I can do a single pass up to 225 lbs/acre. In our area, the cover crop has become bigger and bigger, and the SwathMaster applies better than a ground rig.*
> *— Keith Anderson of Anderson Flying Service, West Tennessee*



SwathMaster vs. Ground Rig

SPREADERS

Once it's determined that a Spreader is the preferred option, Transland offers a helpful chart to provide customers with a starting point for selecting the most suitable spreaders. In most cases, experienced pilots are aware of their aircraft's capabilities. Additionally, pilots typically expect variations in swath width based on factors such as the gate box size and the type of spreader, whether it's a 10 or 8-vane design with a deep throat. Transland's history of spreader manufacturing dates back to the early 1950s. Since 1965, stainless steel has become the predominant material for all our spreaders. As aircraft speeds have increased, the thickness of stainless steel sheeting for skins and vanes has also evolved from .020 to .032. Below are charts illustrating the dimensions of the spreaders offered by Transland.



TRANSLAND SPREADER DIAGRAM

Spreader Charts

Please reference the letters in the above images. All measurements are in inches.

8 Vane Spreaders									
Gate Size	**PN**	**Door Size**	**A**	**B**	**C**	**D**	**E**	**WT.**	**Comments**
25*	22360	5	92.5	57.5	13	6	4	122	Only spreader for Brave; jointly designed by Transland & Piper
38	22358	5	92.5	46	16.75	9.25	6.75	144	Most widely used 8-vane spreader on Air Tractor (foam filled)
38*	22008	5	100	45	17.25	10.5	6.4	130	Deep throat spreader for high volume on Air Tractor
41	20250	5	100	45	15.5	8.75	6.5	125	Mostly used on Thrush and M18
41	22007	5	100	45	17.25	10.5	6.4	130	Deep throat spreader for high volume on Thrush and M18

10 Vane Spreaders									
Gate Size	**PN**	**Door Size**	**A**	**B**	**C**	**D**	**E**	**WT.**	**Comments**
38	23538	5	157	54	15	8	6.5	200	Deep throat spreader for 5" gate on Air Tractor
38	23502	5	157	54	13.5	7	4.5	180	Most popular 10-vane spreader on Air Tractor
38	23537	10	157	54	19.5	8.5	6.5	200	10-Vane for 10" firegate on Air Tractor
38	23547	7.5	157	54	19.5	8.5	6.5	200	10-Vane for 7 1/2" gate
38	24502	5	157	54	13.5	7	4.5	180	Planes with a Garrett engine, counter-clockwise, on Air Tractor
41	23501	5	157	54	13.5	7	4.5	180	Original 10-Vane spreader designed for Thrush & M18
41	23506	7.5	157	54	15	8	6.5	180	10-Vane deep throat spreader on Thrush
41	23533	10	157	54	19.5	8.5	6.4	200	Use with 10" firegate on Thrush
41	23541	5	157	54	13.5	7	4.5	180	Use with 5" gate on a Garrett engine on Thrush
41	23543	7.5							Thrush
41	23633	10	157	54	19.5	8.5	6.4	200	Use with 10" firegate on Thrush, Garrett engine

*These are not stock items; please call for price and availability.

Fingers in Spreader

Fingers in Spreader Vanes

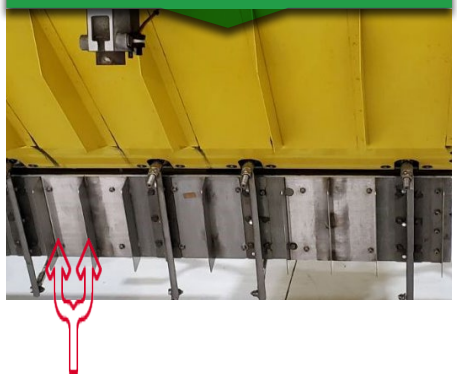
All Transland spreaders now come standard with fingers to diffuse the rope effect of material. This feature can add up to seven feet of swath width. More importantly, the fingers improve swath patterns. Finger Kits are available for older spreader models. Transland even has a kit for a 13-vane spreader.

Kit PN	Fits Spreader Type(s)
55127	Spreaders 23537 & 23547
55128	Spreaders 23501 & 23502 (25", 38", and 41")
55129	Spreader 22007 & 22008
55131	13-Vane Spreader

Door Vanes

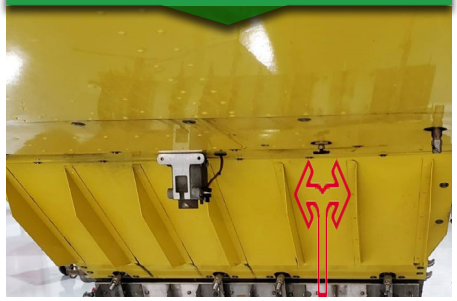
To produce more consistency in dry work, adding door straightening vanes to the gate box door and the fairing located in front of the gate is recommended. It's important to note that most spreaders maintain a consistent pattern and swath width up to 250 lbs of material per acre. Beyond this point, an increase in pounds per acre may lead to a reduction in swath width. Another aspect of this is the more it is opened, the airflow is reduced. The vanes in the throat of the spreader are adjustable. Remember, the setting from the factory is based on testing, in conjunction with Dennis Gardisser and Mike Lee, for the optimal setting for the best overall performance of Transland Spreaders and SwathMasters.

Door Vanes



Door Straightening Vanes PN	Fits Gate Box Type(s)
50025	25" Gate Box, 5" Gate Door
50038	38" Gate Box, 5" Gate Door
50041	41" Gate Box, 5" Gate Door
51036 (for older model)	38" Gate Box, 7 1/2" Gate Door with 3 holes on gate
51037 (for newer model)	38" Gate Box, 7 1/2" Gate Door with 4 holes on gate
51038	38" Gate Box, 10" Gate Door
51041	41" Gate Box, 10" Gate Door

Straightening Vanes



Fairing Straightening Vanes

Straightening Vanes (PN 16999) for fairings are aerodynamic components used on crop duster planes to streamline airflow and reduce drag. This is particularly important for crop dusters, as they often fly at low altitudes and slower speeds than other aircraft, making them more susceptible to aerodynamic inefficiencies. The Straightening Vanes for fairings are designed to smooth the airflow around the plane's gate box, reducing turbulence and drag. This allows for more airflow through the spreader.

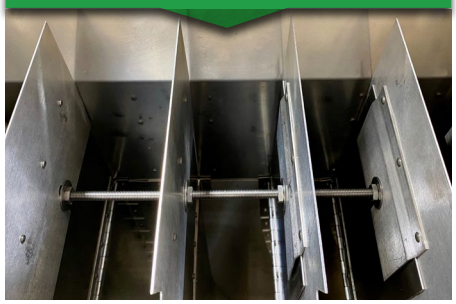
Straightening Vanes (PN 16999) for Fairings only work with the below listed Fairing Part Numbers:

- 57000 – for a 7 1/2" Gate Box on an AT-802
- 57002 – 7 1/2" Gate Box on an AT-602

DID YOU KNOW?

In collaboration with industry experts, Transland performed tests on aircraft with and without fingers in spreader vanes, door vanes, and straightening vanes for fairings. The results showed that these accessories allowed more airflow through the spreader. The testers saw reduced drag, wider swath width, and a better co-efficient pattern. **The most important result is the aerial applicator performed higher-quality work.**

Vane Extension Kits



Vane Extension Kits

The design of the vane extensions, which are attached to the vanes on the throat of the spreader, takes into account the aerodynamics of the material flow. By controlling the flow, the vanes help to maximize the efficiency of the spreading process. Vane extensions help to fan out the material more evenly across a wider swath. This is important for ensuring that the spread pattern is uniform, which is critical for effectively applying the material. Some vane extensions may be adjustable, allowing the pilot or ground crew to change the spread pattern and width depending on the application requirements and weather conditions. This adjustability means the aircraft can be fine-tuned for different materials and application rates.

Kit PN	Fits Spreader Type(s)	Description
55124	Spreaders 23501 & 23502 (25”, 38”, and 41”)	Includes (x10) 23439 vane extensions
54424	Thrush Spreaders 20250 & 20160 high volume	Extends Spreader’s front vanes 3.5” x 4”. Includes 8 vane exensions.
54498	Spreader 20240	Includes 8 vane extensions
55125	Spreader 22007	Includes 8 vane extensions

Hangers

Transland offers hanger kits designed to secure the spreader’s trailing edge directly to the aircraft’s fuselage. If a suitable hanger kit is not available from Transland for your specific model, you will need to procure or fabricate appropriate hangers to ensure the spreader is properly attached at the trailing edge.

Hangers

Hanger PN	Description
58564	Standard - No Clevis on Ends
58567	Clevis on One End
58575	Clevis on Both Ends

Quick Disconnect

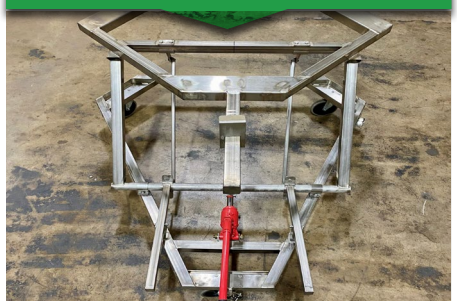
Quick Disconnect (QD)

If you go from Wet to Dry multiple times during the season, adding a Quick Disconnect (QD) to your gate will save you time and money. The Gate Box QDs are available in 25″, 38″ and 41″.

1. Locate the two holes in the QD plate and the two holes in the gate box. Attach QD to gate box
2. Once the QD plate is attached to the gate box, slide the spreader in place and insert pins.
3. Latch your latches on the side, and you’re ready to go.

QD PN	Fits Gate Box Type(s)
23499	25” Gate Boxes for Ag Cat
23507	All 25” Gate Boxes for Air Tractor
23505	38” Gate Boxes for Air Tractor & Ag- Cat (old style)
25505	38” Gate Boxes for Air Tractor & Ag- Cat (new style with studs)
23504	41” Gate Boxes for Thrush & Dromader

Spreader Cart



Spreader Cart
The Spreader Cart (PN 50067) is made from stainless steel with a front-loading design and features a hydraulic lift for ease of use. Additionally, its design is so efficient that a single person can easily attach and detach the spreader.

Top Plate Seal
- PN 12992 Top Plate Seal fits 23502 Spreader
- PN 12993 Top Plate Seal fits 23537 Spreader
- PN 17592 Top Plate Seal fits 23547 Spreader

Hinge Lug
Transland updated the Hinge Lug (PN 16599) to make it stronger.

Kicker Plate
Kicker Plate PN 18984 is for Spreader 22007 & 22008 (8-Vane Spreaders).

Latches
PN 50217

Over Center Latch
Transland offers one Over Center Latch (PN 50217) that fits all of its Spreaders.

Retainer (Cover Plate)
- Use PN 19958 SwathMaster 7 1/2″ Retainer (Cover Plate) to use a 10″ SwathMaster on a 7 1/2″ Gate Box.

- Use PN 19959 Spreader 7 1/2″ Retainer (Cover Plate) to use a 23537 Spreader on a 7 1/2″ Gate Box.

Rivet Kits

Kit PN	Description
82078	Pack of 100 for Rivet PN 82022
82080	Pack of 100 for Rivet PN 82017
82079	Pack of 100 for Rivet PN 82024
82076	Pack of 100 for Rivet PN 82014
82082	Pack of 100 for Rivet PN 82013
82077	Pack of 100 for Rivet PN 82021
82079	Pack of 100 for Rivet PN 82024
82081	Pack of 100 for Rivet PN 82029

Vane Adjustment Nut
Vane Adjustment Nut PN 80552 fits all 38″ and 41″ Gate Boxes. This threaded stainless steel nut measures 5/16-18.

Vane Adjustment Rod
Vane Adjustment Rod PN 10384 fits all 38″ and 41″ Gate Boxes. This threaded stainless steel heavy-duty rod measures 5/16-18.

Washers for Vane Assembly Kits
PN 10870

SPREADER SETUP

Setting up your spreader isn't hard, but it is crucial to spend extra time during the initial setup. Proper setup will give a better result in the long term.

Preparation:
- Ensure the aircraft is on a stable surface and in a safe area for maintenance work.
- Ground the aircraft to prevent static discharge.
- Gather all necessary tools and hanger kits or hardware required for the installation.

Safety Checks:
- Confirm that the aircraft's engine is off.
- Check that the aircraft is properly chocked and secured.
- Ensure that the work area is clear of unnecessary personnel and equipment.

Attaching the Spreader:
- Carefully lift the spreader into position. This may require lifting equipment or multiple personnel, depending on the size and weight of the spreader. Transland sells a Spreader Cart that enables one person to install and remove a spreader.
- Align the spreader with the hangers and attach it using the provided bolts or fasteners.
- Double-check all connections and ensure the spreader is securely fastened to the hangers.

Mounting the Hangers (if applicable):
- Locate the designated attachment points on the fuselage for the hanger kits.
- Secure the hanger brackets to the fuselage, following the specific torque specifications provided by the manufacturer.
- Ensure that the hangers are aligned correctly and firmly attached.

Initial Setup and Alignment:
- Adjust the angle of the spreader so that the bottom is within 2 degrees of the bottom of the plane's wing. This precise alignment is critical to ensure the proper flow of material and to prevent buildup on top of the spreader.

Note: If during operation you notice material building up on top of the spreader, revisit this step as it typically indicates that the angle is incorrect. An improper angle can also lead to abrasive damage to the aircraft, such as paint wear on the plane's underside.

Testing:
- Perform a ground test of the spreader operation, observing the opening and closing of the gate and any other functional aspects.

Safety and Operation Inspection:
- Inspect the installation for any loose components or tools left in the work area.
- Check for any obstructions or potential hazards that may have been introduced during installation.
- Conduct a thorough pre-flight inspection following the installation.

Documentation:
- Log the installation in the aircraft's maintenance records.
- Update any necessary weight and balance calculations and documentation for the aircraft.

Final Steps:
- If needed, have a certified aircraft mechanic or an inspector verify the installation and sign off on the work completed.
- Brief the pilot on any changes to the aircraft's handling or procedures due to the spreader installation, including the importance of monitoring for material buildup and the potential for paint wear.

OLD, BUT IMPORTANT TIPS!

10 inch Transland Gate with Spreader 23537

Written by Dr. Dennis Gardisser

1. Be sure to keep the gate feeding even all the way across. This is one area that is found to be lacking on many aircraft.

2. Always maintain positive pressure in the hopper when dispensing dry materials. Unpressurized hoppers result in big feed rate differences as the hopper empties.

3. 38- and 41-inch gate boxes generally fit the 25 pound step rule. That is: Reduce the swath width 1 step or 3 feet for each 25 pound increase from the 100 pound setting -or- the opposite if reducing the application rate.

4. Pattern uniformity and width is dependent on material quality. Materials that have uniform and slightly larger sizes always produce the widest and most uniform patterns. One must develop a sense for the material qualities and adjust swath widths accordingly!

5. Typical swath width for the 23501 (10 vane) series spreaders on turbines is 75+ feet for 100 lb/ac application rates. The old standard 22007 spreader is still very popular – typical width at 100 lb/ac is 66 feet. As a general rule: one can measure the difference in the tail width of spreaders and obtain the expected difference in swath width.

6. Faster aircraft do not result in wider swath widths! Surprised!!! The effective swath width may be wider in some cases, but only because of better uniformity with the more aerodynamically smooth airframe styles. Heavily loaded radials mushing along just can't produce as wide a widths. Speed is not the key, getting the tail out of the pattern – with the aircraft up on the step flying is!

7. Spreaders should be hung on aircraft so that the attack angle on the bottom surface of the spreader is the same as the bottom of the wing or slightly negative. I recommend not going over 4 degrees with the spreader tail. Negative means the tail is relatively higher than the trailing edge of the wing. The ideal pattern shape may be obtained by having the bottom of the spreader level in flight, but the spreader does not aerodynamically carry itself and the elevator may be semi-blanked out in some turning situations.

8. Spreader vanes should fit snugly – both top and bottom. If material can slide over the top of the vane, the vane adjustment becomes ineffective. The Transland kits to seal the vanes may help solve this problem in many spreaders.

9. Minimum flight altitudes with these wide tail spreaders should be 50 feet with 60 feet being optimum.

10. Many of the streaks that I see continue to be because pilots or their customers are too conservative on swath width. Do not automatically narrow up if you suspect a problem – it may get worse!

11. Pattern test to be sure!

Dr. Dennis R. Gardisser needs no introduction to the ag aviation industry. His resume includes an extensive list of degrees, awards, agricultural work experience, and agricultural chemical application research and development. He is also the son of a dairy farmer, a husband, father, grandfather, and great grandfather — these latter blessings and accomplishments are dear to his heart.

Contact your local Transland dealer to order spreaders, SwathMasters, and much more!

Helping Aerial Applicators Define Effective Swath Width Using Variable Rate *

Applicators can experience streaking when using a variable rate based on prescription mapping if not using the correct base swath width.

For example, streaking could occur if an applicator wanted to disperse urea using an AT 802 while using a base swath width of 81 feet over a wide range for several other rates.

When making variable rate applications, it is best to keep applications close to the base swath. Pick an optimum base swath width for the central rate to help minimize streaking potential.

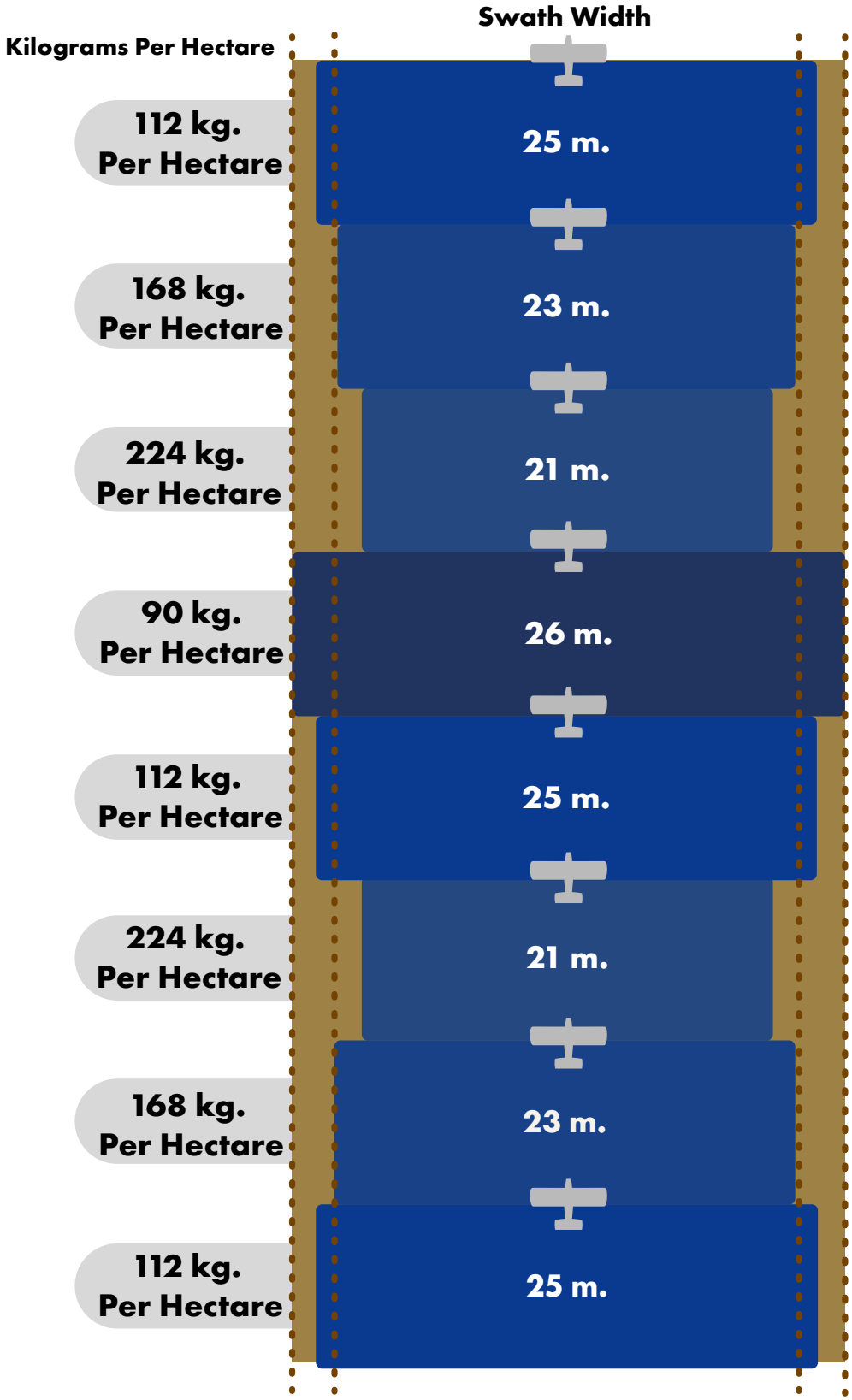
Streaks may occur from overlaps in the lower rates and/or minimization in the overlap region. Larger spreaders, such as the 23537, can handle a wider range of rate changes on the base swath width.

TRANSLAND

* These numbers are based on an AT802 – 10 vane spreader #23502, (Urea-Pounds/Acre) from Dr. Dennis Gardisser's research.

This information is only intended as reference material. Before applying any product/material, Transland highly recommends pattern testing whenever changes are made to equipmnet. Operation S.A.F.E. clinics offer Pattern Deposition Analysis to help guide and calibrate equipment to optimum performance.

Helping Aerial Applicators Define Effective Swath Width Using Variable Rate*



Applicators can experience streaking when using a variable rate based on prescription mapping if not using the correct base swath width.

For example, streaking could occur if an applicator wanted to disperse urea using an AT-802 while using a base swath width of 25 meters over a wide range for several other rates.

When making variable rate applications, it is best to keep applications close to the base swath. Pick an optimum base swath width for the central rate to help minimize streaking potential.

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Transland SwathMaster® & Spreaders Information

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