



**BASF**

The Chemical Company

# AMIDRO<sup>®</sup>

Fire Ant Insecticide

**Aerial  
Application  
Guide**



# AMDRO®

Fire Ant Insecticide

## AERIAL APPLICATION GUIDE

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BASF Corporation

### CONTENTS

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History of Fire Ants .....	Page 2
AMDRO® Fire Ant Insecticide .....	Page 3
Application of AMDRO .....	Page 4
Aerial Spreader Equipment Modifications .....	Page 5
Modification System 1 .....	Page 6
Modification System 2 .....	Page 8
Swath Checks .....	Page 10
Calibration .....	Page 11
Adjustments/Troubleshooting .....	Page 12
Safety .....	Page 12

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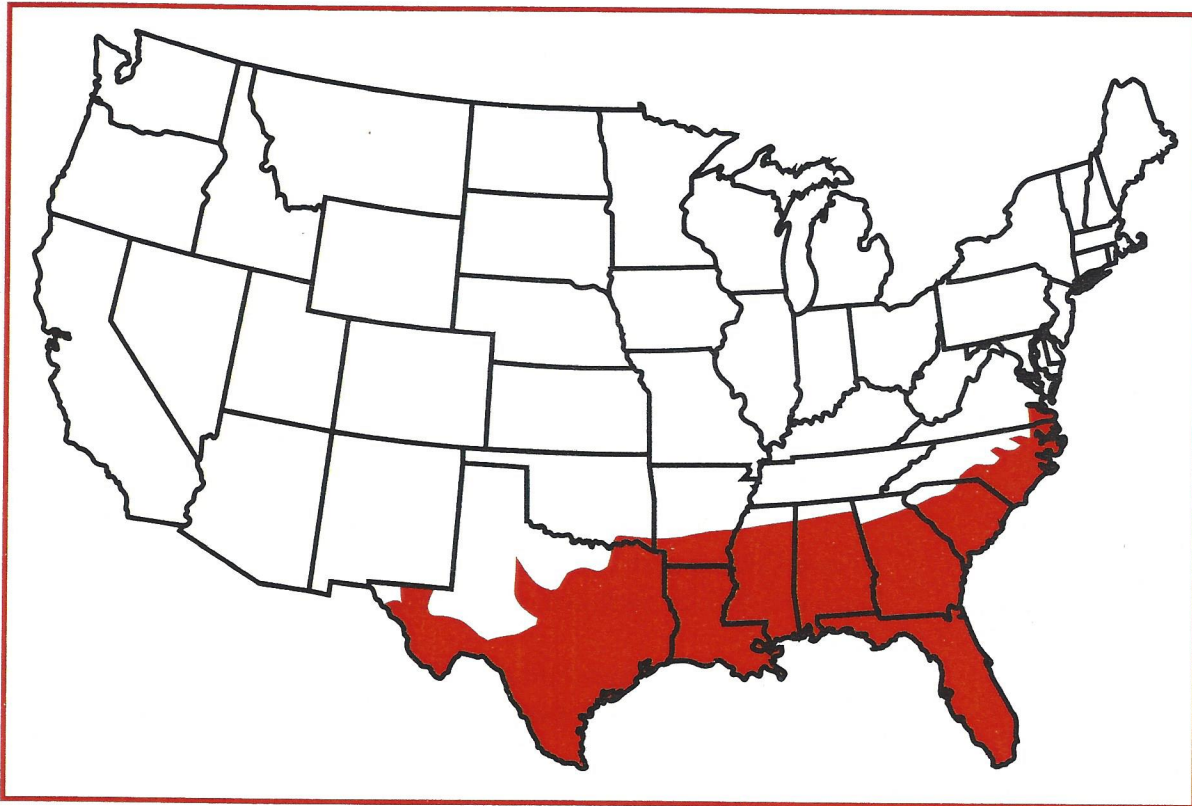
Dr. Bart Drees, Texas A&M University, College Station, Texas for technical assistance and illustrations.

## HISTORY OF FIRE ANTS

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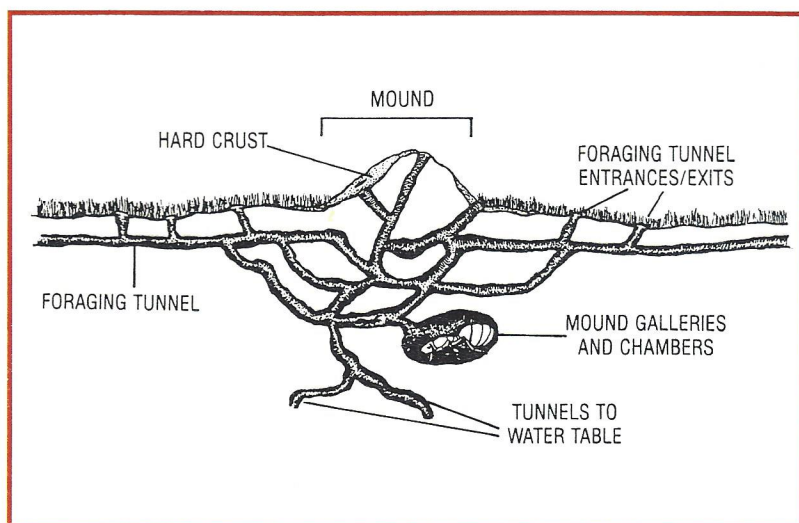
Several different fire ant species are found in the United States. Of greatest concern is the red imported fire ant (RIFA), *Solenopsis invicta*, which was introduced to the U.S. about 1940 in cargo passing into the Port of Mobile, Alabama. Since that time over 260 million acres have been infested, ranging from coastal Virginia to Florida to Texas. Their spread continues at an average rate of 30 miles per year.

Many methods have been used in attempts to control RIFA over the years, including boiling water and gasoline. Insecticide use began in 1957 with heptachlor and dieldrin. Mirex was heavily used from 1962 until 1978 when it was banned by the Environmental Protection Agency (EPA) because of residues found in non-target organisms. Today over 150 RIFA control products are registered for use.





# AMDRO® FIRE ANT INSECTICIDE



## Low Toxicity

The low toxicity of AMDRO is a great advantage for individuals who apply RIFA control products. Dermal toxicity of AMDRO is among the lowest of all fire ant insecticides on the market. If ingested, AMDRO is poorly

absorbed by mammals' digestive systems. More than 95% of the material passes through the system unchanged. Although AMDRO should be kept out of lakes and ponds, it is not likely to be toxic to fish due to its low water solubility. AMDRO is degraded by sunlight relatively quickly, so there is minimal possibility of soil residues or leaching into groundwater.

The slow acting (24-48 hours) toxicant is well suited to the RIFA feeding process. Ants collect food, eat and regurgitate it into the mouths of other ants. By the time the bait begins to kill ants in the mound, it has been passed through the food chain to the queen, the only ant capable of reproducing. AMDRO kills the queen, thereby ending reproduction and destroying the mound.

The odorless, dustless formulation of AMDRO provides applicators with easy handling characteristics.

### TOXICITY DATA AMDRO® Fire Ant Insecticide

Test	Technical (mg/kg body wt or result)	Granular Bait (mg/kg body wt or result)
<b>Acute Toxicity</b>		
Oral LD <sub>50</sub>		
Rat, Male:	817	>5000
Female:	1502	>5000
Combined:	1146	>5000
Dermal LD <sub>50</sub>		
Rabbit:	>2000	>2000
Irritation		
Rabbit, skin:	Non-irritating	Slight
Eye:	Slight to moderate	Non-irritating
Inhalation LC <sub>50</sub>		
Rat:	5.1 mg/l	—
Skin sensitization		
Guinea pig:	Non-sensitizer	—



# APPLICATION OF AMDRO

AMDRO can be applied either to individual mounds (5 tablespoons/mound) or broadcast at the rate of 1 to 1.5 pounds per acre. Treatments should be made when ants are actively foraging for food, usually when temperatures are between 65 and 95 degrees Fahrenheit. Since AMDRO is a bait, it should not be applied to wet ground or if rain is expected. Wetting the bait will cause it to become soggy and unattractive to ants.

AMDRO is labeled for use on lawns, golf courses, non-food bearing ornamen-

tals, sod farms, pastures, range grass, and non-cropland areas. For larger areas, broadcasting the bait is more economical and less labor intensive than individual mound treatments. Hand seeders and chest spreaders are ideal for medium sized areas. Large areas may require a Herd GT77-A<sup>1</sup> seeder/spreader or aerial application.

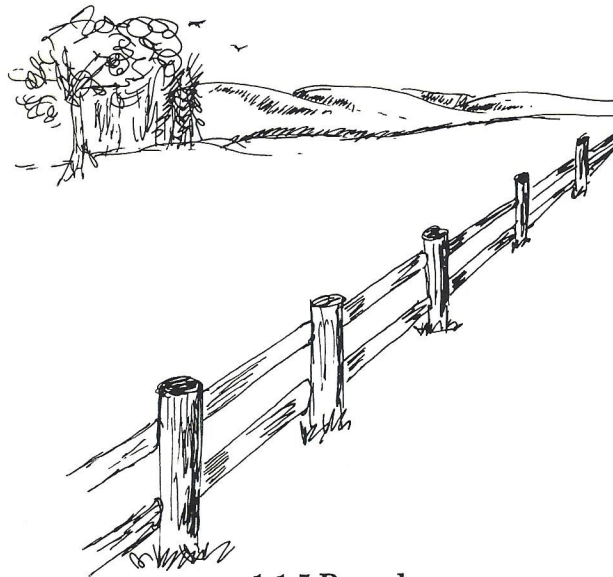
Because fire ants can and do move in from untreated areas, it is suggested that treatments be made every six months to maintain acceptable control.

## Individual Mound Treatment



**5 Tablespoons  
Per Mound  
1-3 Feet Away from Mound**

## Broadcast Treatment



**1-1.5 Pounds  
Per Acre  
Ground or Aerial Application**

1. Herd Seeder Company, P.O. Box 488, Logansport, IN 46947

# AERIAL SPREADER EQUIPMENT/MODIFICATIONS

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Aerial application of AMDRO® fire ant insecticide is the most cost-effective means of controlling RIFA on large areas.

Applying AMDRO through granular spreaders requires some simple spreader modifications to apply the product uniformly and at the proper rate. Modifications are required for several reasons: 1) the product will bridge in the hopper if not agitated; 2) due to the friable nature of AMDRO, crushing the product onto metal surfaces will cause the material to cake; and 3) the low use rate requires uniform flow to be maintained through the hopper.

Transland<sup>2</sup> high volume and slim line spreaders have been successfully

used to apply AMDRO. Transland Swathmaster or spreaders of similar design should **NOT BE USED** due to their potential to crush bait particles and cause caking of AMDRO.

Two modification systems which have been tested and proven to accurately apply AMDRO by air at required rates are described on the following pages.



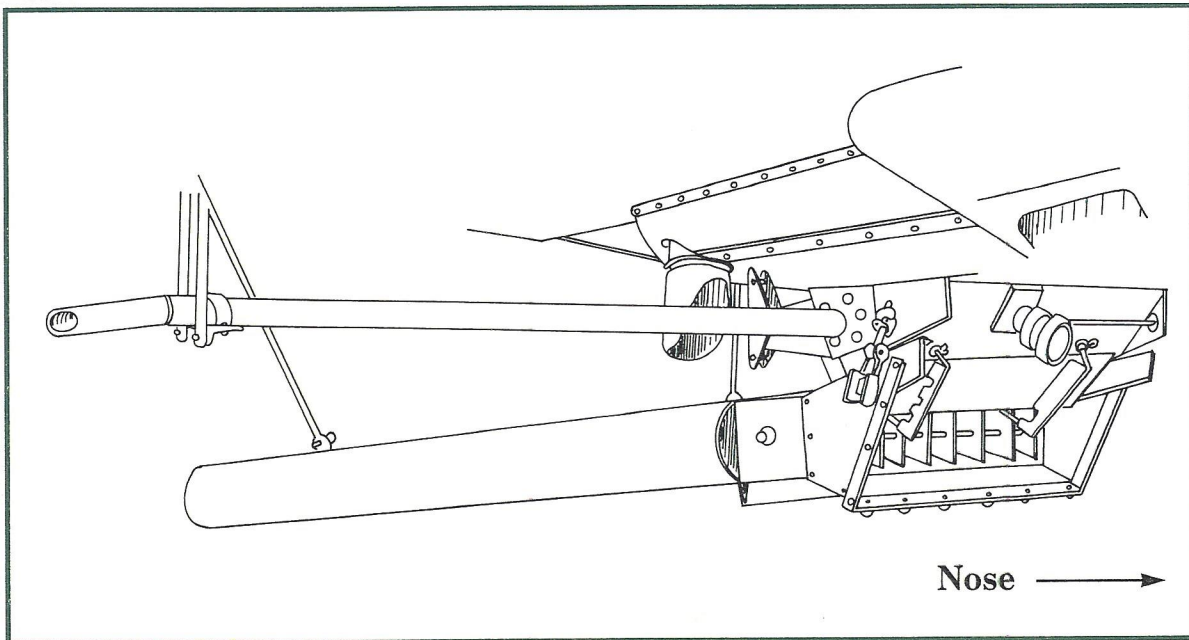
# MODIFICATION SYSTEM 1

Source: USDA-APHIS-PPQ Aircraft and Equipment Operations, Mission, Texas

This system has been utilized on a Cessna 188 Ag-Truck.

**Ram Air Induction Tube:** A 1½-inch diameter tube is attached to the outside of the hopper subtank and extends out-board where it is mounted to the lower wing surface (Figure 1). The end of the tube requires a 45° angle to orient the tube into undisturbed air. Attachment to the hopper subtank will require a 1½-inch hole on the side of the subtank to allow the insertion of the extended Air Agitation Tube.

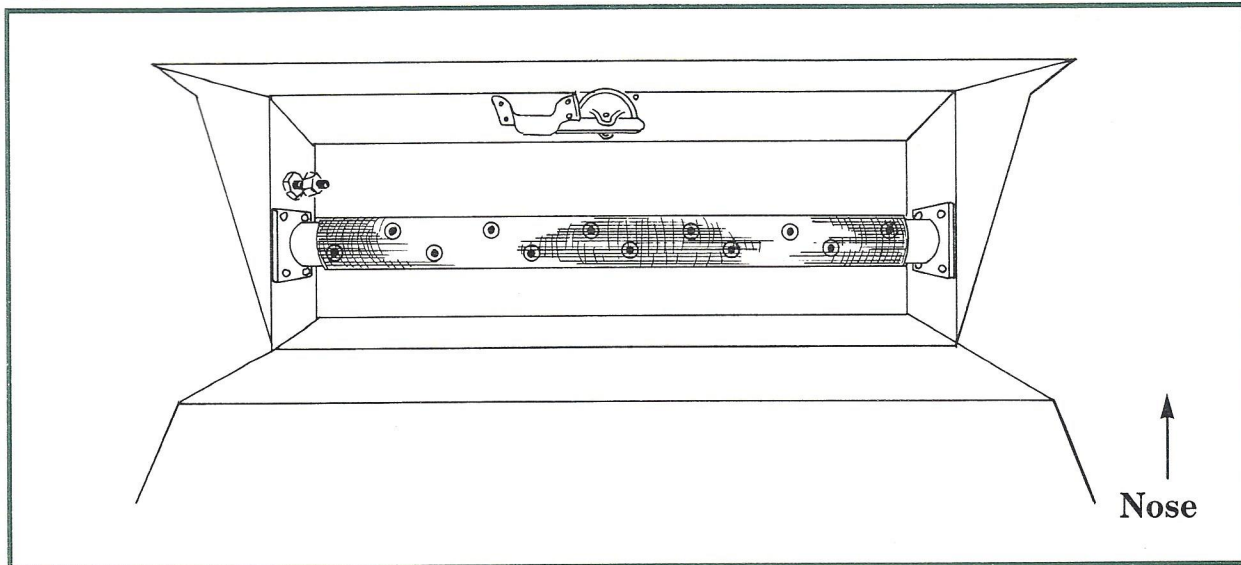
Figure 1. RAM AIR INDUCTION SYSTEM



**Air Agitation Tube:** Extending from the ram air induction tube on the inside of the hopper is the air agitation tube which contains a double row of 1/4-inch holes covered with 50-mesh screen. (See Figure 2) Holes are drilled only on the

top side of the tube and are oriented 45 degrees from vertical. The end of the tube is easily attached to the spray valve attachment point. The air agitation tube should be placed approximately 1 inch above the gate opening.

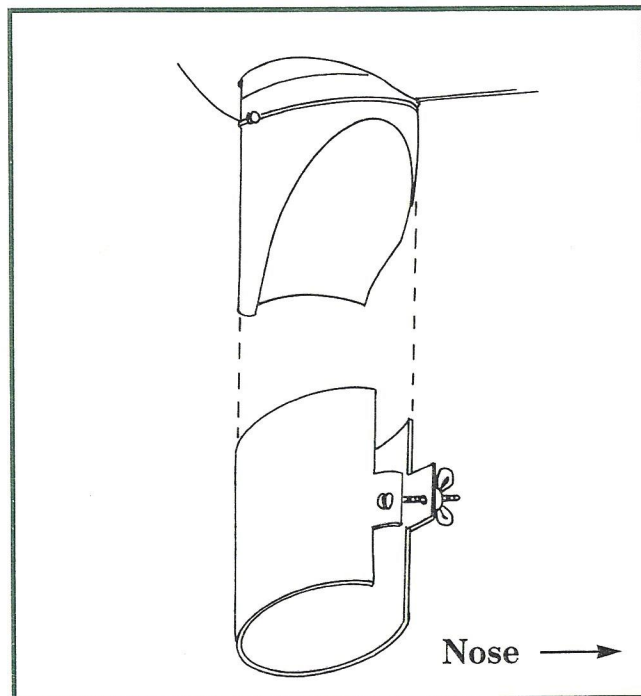
Figure 2. AIR TUBE MOUNTED AT BASE OF HOPPER



### Hopper Vent Tube Air Flow

**Regulator:** In order to adjust the flow of product precisely without altering the gate opening which is set at 1/4 inch, a metal sleeve is used to adjust air flow into the hopper. (See Figure 3) This sleeve is constructed of sheet metal with an adjustment nut to move the sleeve up or down the hopper vent tube to alter air flow. Duct tape may also be used to provide similar results.

Figure 3. HOPPER VENT TUBE AIR FLOW REGULATOR





## MODIFICATION SYSTEM 2

Source: Don Graves, Custom Applicator, Navasota, Texas

The following modification system has been utilized on a Cessna Ag Wagon.

**Ram Air Induction Tube:** A 1-inch diameter PVC tube 16 inches in length with a 45-degree elbow (See Figure 4) is installed through the spray pump inlet into the wind stream (See Figure 5). The end of the tube should be clamped to the spray pump mount to secure it.

Figure 4. RAM INDUCTION TUBE

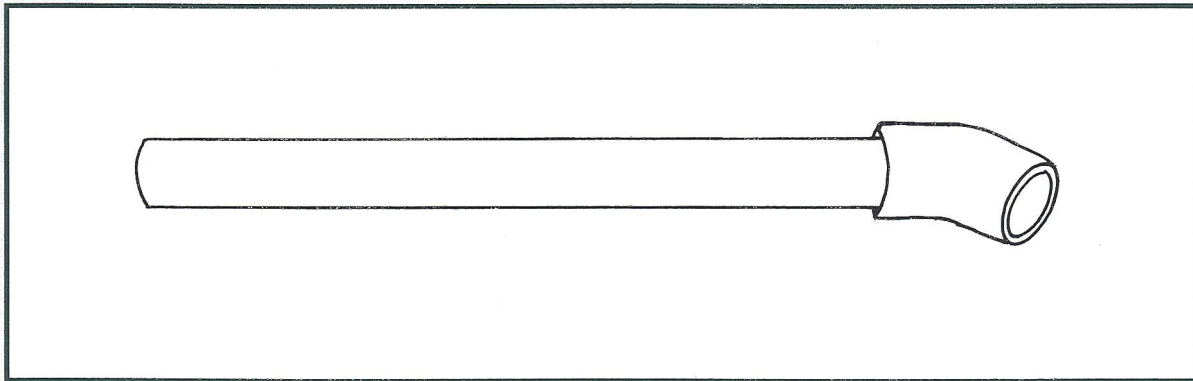
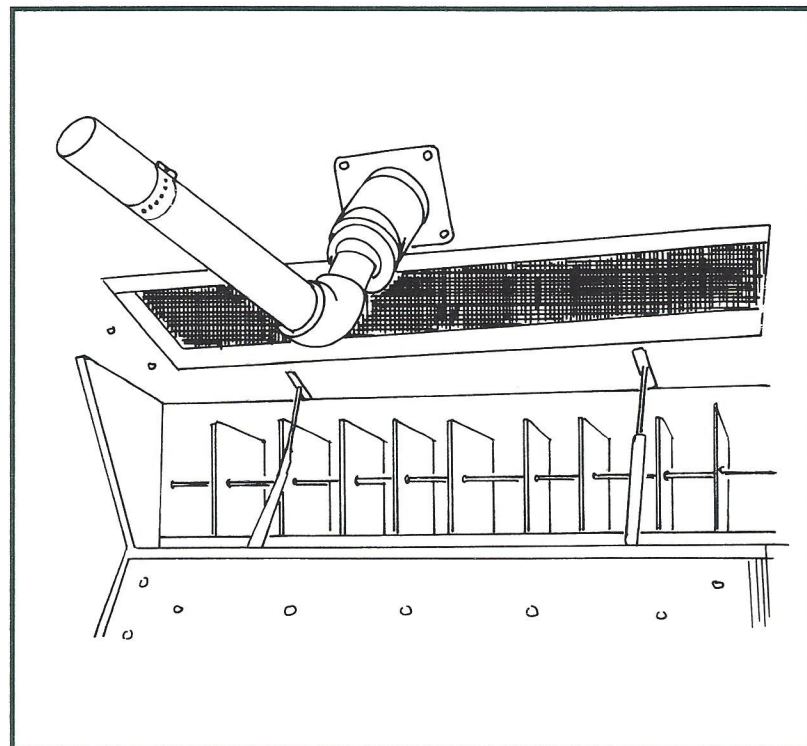


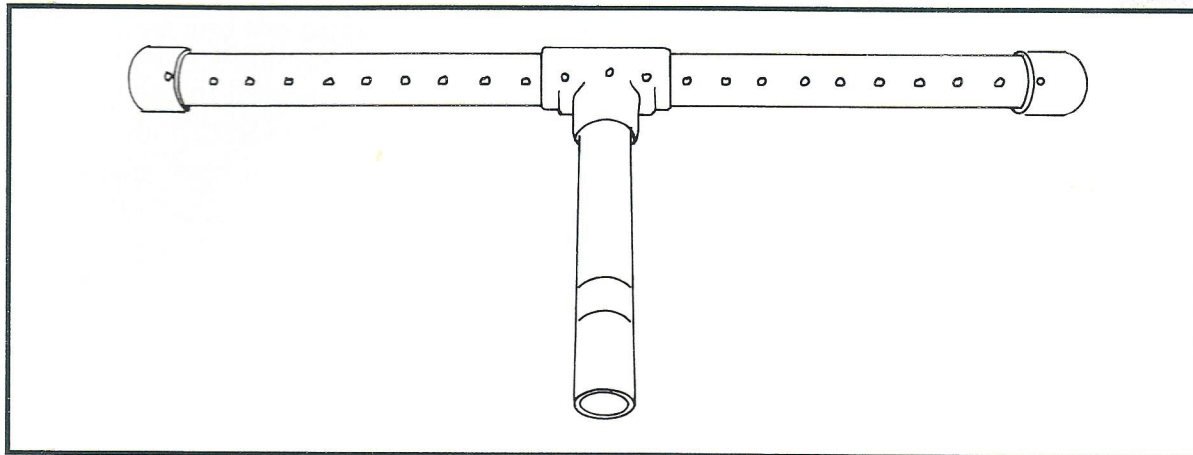
Figure 5. RAM AIR INDUCTION TUBE MOUNTING



**Air Agitation Assembly:** This assembly consists of 1-inch PVC pipe, 1-inch "T" connector, and two 1-inch caps (See

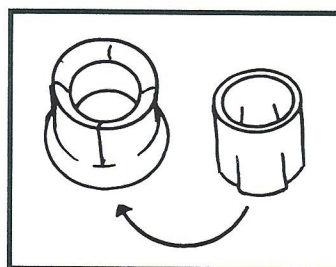
Figure 6). Quarter-inch holes are drilled one inch apart and positioned to blow air down onto the bottom of the hopper gate.

**Figure 6. AIR AGITATION ASSEMBLY**



**Adapter:** A 1½-x 1¼-inch PVC bushing, housing a short piece of 1¼-inch PVC pipe (See Figure 7) slit on the sides is used to attach the ram air induction tube to the air agitation assembly through the spray pump inlet.

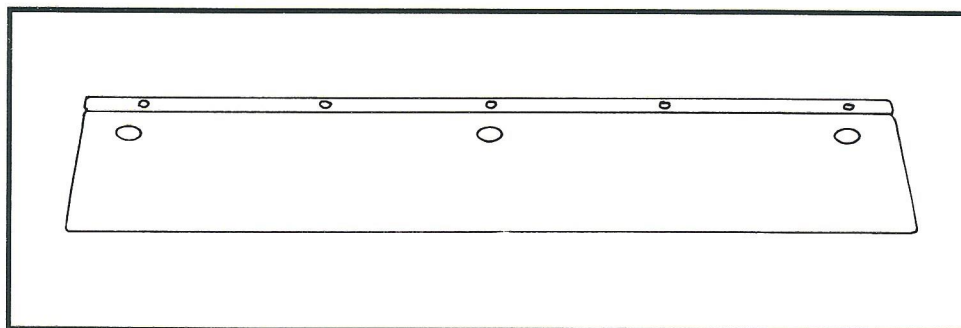
**Figure 7. ADAPTER**



**Gate Seal Plate:** A 1/8-inch metal or stainless steel plate should be cut to fit securely in the bottom of the hopper to close off the gate opening. Three ½-inch holes are drilled along the bottom edge (See Figure 8) to allow product to

flow when the gate is opened. The air agitation assembly should be positioned ½ to 1 inch above the gate seal plate. Product flow is controlled by altering the size of the holes in the gate seal plate.

**Figure 8. GATE SEAL PLATE**





## SWATH CHECKS

Ideally, the application swath width should be checked under minimal or no wind conditions. If wind is present, the aircraft should fly directly into the wind to reduce the possibility of an altered swath width. Flying crosswind for swath checks will cause the bait to drift and result in a wider than normal swath.

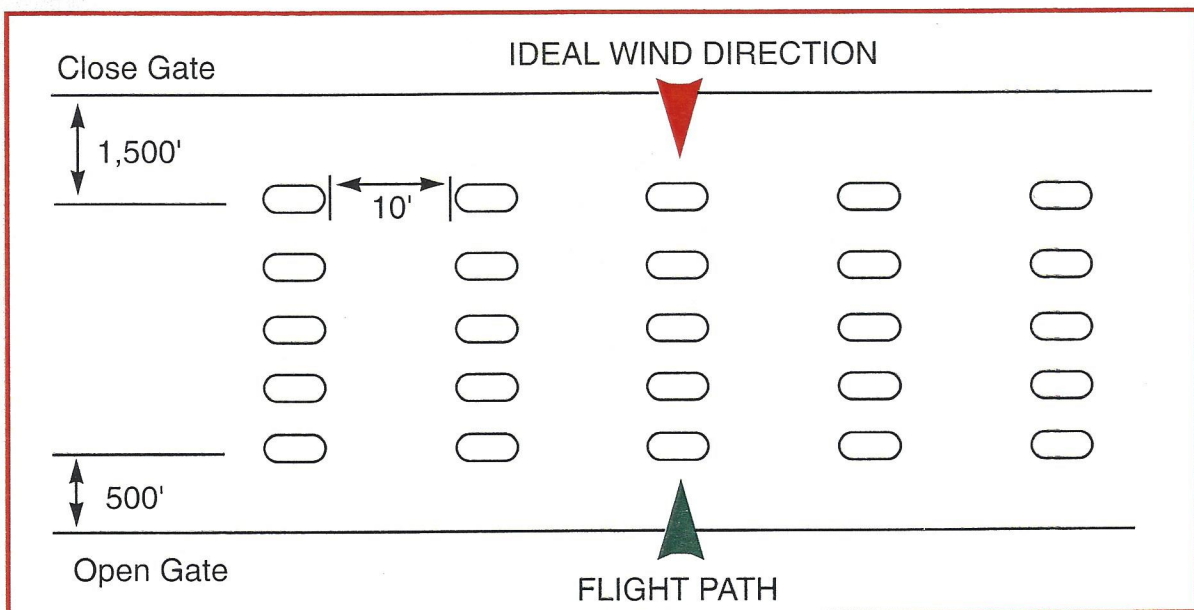
To properly evaluate swath width, checks should be performed in an open area away from trees and other obstructions. Collection pans measuring 12 inches by 12 inches should be placed in a straight line 10 feet apart, oriented perpendicular to the line of flight. Enough pans should be placed to provide a collection area twice the expected swath width, in case the pilot does not fly directly over center or there is drift of bait due to wind.

The widest effective swath is achieved by flying at an altitude equal to the wingspan. Flying lower will reduce swath width, while flying higher

will not appreciably increase swath width.

A minimum 100 pounds of test material should be placed in the hopper for swath checks. The aircraft should be in level flight at the proper operating speed and altitude at least 1,000 feet before reaching the collection pans. Five hundred feet before reaching the collection pans, the gate should be opened and left open until 1,500 feet past the pans. It is also suggested that after closing the gate the aircraft remain in the same flight path for 10 seconds. Turning too soon or abruptly pulling up may distort the deposit pattern.

The overall swath width is determined by inspecting all collection pans for presence of at least one bait particle, and measuring the distance between the extreme pans containing bait. The effective or working swath width is considered to be 90% of the overall swath width.



# CALIBRATION

Once the swath width has been determined and the aircraft ground speed has been set, the number of acres covered per minute should be determined using Table 1.

The next step is to place a minimum of 100 pounds of AMDRO in the spreader hopper. Set the gate opening to 1/4-inch (a 1/4-inch drill bit can be used as a gauge) and perform a one minute calibration run at the set flying speed and

altitude. It is best during calibration runs to fly crosswind if wind is present. Flying upwind will reduce rate, flying downwind will increase rate.

After the one minute calibration run, empty product remaining in the hopper and weigh it to determine the amount of product used. The amount used should be within 10% of the required amount.

**Table 1. TO DETERMINE THE NUMBER OF ACRES TREATED PER MINUTE**

ACRES PER MINUTE									
Flying Speed (mph)	Working Swath Width (ft.)								
	50'	55'	60'	65'	70'	75'	80'	90'	100'
75	7.58	8.33	9.09	9.85	10.61	11.36	12.12	13.64	15.15
80	8.08	8.89	9.70	10.51	11.31	12.12	12.93	14.54	16.16
85	8.59	9.44	10.30	11.16	12.02	12.88	13.74	15.45	17.17
90	9.09	10.00	10.91	11.82	12.73	13.64	14.55	16.36	18.18
95	9.60	10.56	11.52	12.47	13.43	14.39	15.35	17.27	19.19
100	10.10	11.11	12.12	13.13	14.14	15.15	16.16	18.18	20.20
110	11.11	12.22	13.33	14.44	15.56	16.67	17.78	20.00	22.22
120	12.12	13.33	14.55	15.76	16.97	18.18	19.39	21.82	24.24
130	13.13	14.44	15.76	17.07	18.38	19.70	21.01	23.64	26.26
140	14.14	15.56	16.97	18.38	19.80	21.21	22.63	25.45	28.28
150	15.15	16.67	18.18	19.70	21.21	22.73	24.24	27.27	30.30

**Example:** If the swath width was 65 feet and the flying speed was 110 mph, then 14.44 acres would be covered per one minute of application time. At a one-pound-per-acre rate (AMDRO is applied at 1 or 1.5 pounds per acre), 14.44 pounds of product should be dispensed in a one minute calibration flight.



## ADJUSTMENTS/TROUBLESHOOTING

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**Excessive Flow Rate.** If the flow rate per minute exceeds the desired rate with the recommended gate opening:

- With System 1, reduce the amount of airflow into the hopper vent tube. This will reduce the hopper's internal pressure and ultimately reduce bait flow.
- With System 2, the holes on the gate seal plate should be reduced, either by using tape or by replacing the gate seal plate with one that has smaller holes.

**Low Flow Rate.** If the flow rate per minute is below the desired rate:

- With System 1, open the gate assembly 1/2 to 1 turn at the gate stop, or increase the amount of air flow into the hopper vent tube if air flow has been reduced.

- With System 2, increasing the size of the three holes on the gate seal plate will be required.

**Product Flow.** If flow of product in the hopper appears to be a problem, the hopper may not have been dry prior to loading AMDRO, causing the product to adhere to the hopper walls and gate area. The hopper can be easily dried by flying the aircraft with the gate open for several minutes.

**Air Agitation.** To ensure that good air agitation of AMDRO is taking place in the hopper, a visual inspection through the hopper sight glass can be made. Inspection should be made when the amount of AMDRO in the hopper is low, displaying strong blowing or fluffing of the product in the hopper.

## SAFETY

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Before initiating a fire ant control program with AMDRO®, it is essential to **READ THE LABEL CAREFULLY.**

AMDRO should be kept dry during storage in enclosed buildings, trailers, vans, etc. to eliminate the risk of the bait becoming wet and unusable. It is also

suggested that AMDRO be kept in a cool location. Storage of AMDRO for long periods of time in a hot location may cause the bait to become rancid, and reduce its attractiveness to the ants.

Empty bags or containers can be discarded at a sanitary landfill or incinerated.



Example of air tube mounted in base of hopper





Example of rain air induction system coming from base of hopper





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