

FIELD ID NO: \_\_\_\_\_

### IR-4 FIELD DATA BOOK

#### PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER

##### A. EQUIPMENT

*INSTRUCTIONS: Complete a separate form for each piece of test substance application equipment used in the trial.*

EQUIPMENT USED FOR APPLICATION NUMBER(S) \_\_\_\_\_

EQUIPMENT IDENTIFIER<sup>1</sup> \_\_\_\_\_

<sup>1</sup>All test substance application equipment must have unique identifying names or codes

PROPELLANT (Check one)      PTO PUMP \_\_\_\_\_      HYDRAULIC PUMP \_\_\_\_\_

OTHER \_\_\_\_\_ (Describe) \_\_\_\_\_

TANK CAPACITY (Indicate gallons or liters) \_\_\_\_\_

FAN/BLOWER UNIT POWER SOURCE (Check one)      PTO \_\_\_\_\_      HYDRAULIC \_\_\_\_\_

OTHER \_\_\_\_\_ (Describe) \_\_\_\_\_

NUMBER OF NOZZLES UTILIZED PER SIDE		
MESH SIZE USED IN THE STRAINERS		No. OF PASSES NEEDED TO TREAT EACH ROW
NOZZLE DISC AND CORE BRAND/TYPE/SIZE (e.g. TeeJet Hollow Cone DiscD7 CoreDC25)		
If different size nozzles were used along the spray manifold list each Disc/Core combination and their location separately.		

TREATED AREA<sup>2</sup> \_\_\_\_\_

<sup>2</sup>Treated area=row width X # of rows X length of plot sprayed. Treated row width may differ from actual row width when the actual row width is wider than local commercial practices. In this circumstance, the application rate should be calculated using a local commercial row width and an explanation should be included on this page. Contact the Study Director if guidance is needed.

DOES TREATED AREA = PLOT AREA (from Parts 5C and 5F)?      YES \_\_\_\_\_      NO \_\_\_\_\_

IF NOT, PLEASE EXPLAIN: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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PART 6. APPLICATION RECORDS -AIRBLAST SPRAYER

B. DIAGRAM OF APPLICATION EQUIPMENT

EQUIPMENT USED FOR **APPLICATION NUMBER(S)** \_\_\_\_\_

*INSTRUCTIONS: Complete a separate form for **each piece** of test substance application equipment used in the trial. Sketch a diagram and/or provide clear photograph of application equipment. Include the relative location and size of the target crop and the nozzle outlet placement and application pattern in relation to crop, in the sketch or photograph. In addition, on the sketch or photograph assign each nozzle a unique number. Note the side that is open or if both sides are being used.*

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## IR-4 FIELD DATA BOOK

### PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER

C. DISCHARGE CALIBRATION FOR **APPLICATION NUMBER** \_\_\_\_\_

*INSTRUCTIONS: Complete a separate form for additional times when a complete calibration or calibration-recheck of application equipment is required.*

EQUIPMENT IDENTIFIER \_\_\_\_\_

DISCHARGE CALIBRATION DATE \_\_\_\_\_ PERFORMED BY \_\_\_\_\_ (Initials)

APPROXIMATE TIME OF DAY THAT THE CALIBRATION WAS PERFORMED \_\_\_\_\_

STANDARD DISTANCE USED IN DISCHARGE CALIBRATION \_\_\_\_\_

DISCHARGE UNITS MEASURED (e.g. ml, oz., gallons) \_\_\_\_\_

METHOD USED TO DETERMINE AMOUNT DISCHARGED (Check one) REFILLED WITH FLOWMETER \_\_\_\_\_

MEASURED AMOUNT NEEDED TO BACKFILL TANK \_\_\_\_\_ OTHER (Describe below) \_\_\_\_\_

BRIEFLY DESCRIBE PROCEDURE USED TO CHECK DISCHARGE CALIBRATION \_\_\_\_\_

**DISCHARGE CALIBRATION:** Record time applicator is allowed to discharge. Record this value in "RUN" Row 1 under the appropriate outlet. Calculate the total and average discharge. Entry prompts have been provided for 2 additional discharge calibration runs. Show all calculations.

RUN	TIME (sec)	Side(s) of sprayer calibrated (from rear of unit)								
		RIGHT			LEFT			BOTH		
		Initial volume	Volume discharged	Final volume	Initial volume	Volume discharged	Final volume	Initial volume	Volume discharged	Final volume
1										
2										
3										
Total										
Avg.										

**CALCULATIONS:** Note:  $Initial\ volume - volume\ discharged\ (amount\ sprayed) = final\ volume\ (left\ in\ tank)$

WAS THIS A RECHECK OF DISCHARGE CALIBRATION? (Check one) YES \_\_\_\_\_ NO \_\_\_\_\_

IF YES, WERE RESULTS WITHIN 5% OF ORIGINAL CALIBRATION? (Check one) YES \_\_\_\_\_ NO \_\_\_\_\_

**IMPORTANT:** An output consisting of an average of three runs must be used when calculating the sprayer output and amount of test substance to use. If this is a recheck (one run) then the results of the original calibration must be used. If the output result of the recheck is more than 5% different than the original calibration result, then two more runs are needed to produce a new, full calibration. The original calibration data, or a true copy, must be in this field data book.

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PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER

D. SPEED CALIBRATION FOR **APPLICATION NUMBER (S)** \_\_\_\_\_

*INSTRUCTIONS: Complete a separate form for additional times when a complete calibration or calibration recheck of application equipment is required.*

EQUIPMENT IDENTIFIER \_\_\_\_\_

SPEED CALIBRATION DATE \_\_\_\_\_ PERFORMED BY \_\_\_\_\_ (INITIALS)

TERRAIN OF CALIBRATION TRACK (e.g., tilled field) \_\_\_\_\_

BRIEFLY DESCRIBE PROCEDURE USED FOR SPEED CALIBRATION \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

**SPEED CALIBRATION:** Calculate the speed of the application equipment. If appropriate, note the gear setting and /or RPM setting used in the speed calibration. Indicate the distance (in feet) of the track on which the application equipment was tested to determine speed (e.g. speed of application equipment tested for 100 ft.). The speed is calculated by dividing the length of test track (in feet) by the time needed to cover that length (in seconds). Entry prompts have been provided for 2 additional runs. Show all calculations. **For studies beginning in 2011 or later, a speed recheck (one run) is required whenever an output recheck is performed.**

RUN	GEAR	RPM	Length of test track	TIME (sec)	CALCULATED SPEED (include units)
1					
2					
3					
Total of test run times (sec)		Average time (sec)		Average speed	

CALCULATIONS:

**NOTE:** A speed re-check is not required when the nozzle output is re-checked.

WAS THIS A RECHECK OF SPEED CALIBRATION? (Check one) YES \_\_\_\_\_ NO \_\_\_\_\_

IF YES, WERE RESULTS WITHIN 5% OF ORIGINAL CALIBRATION? (Check one) YES \_\_\_\_\_ NO \_\_\_\_\_

*The original calibration data, or a true copy, must be in this field data book.*

**NOTE:** A target speed may be used for application calculations, rather than the mean of three runs, as long as the mean of the three runs in the speed calibration is within 5% of the target speed.

WAS THIS A CHECK OF A TARGET SPEED? (Check one) YES \_\_\_\_\_ NO \_\_\_\_\_

IF YES, WERE RESULTS WITHIN 5% OF TARGET SPEED? (Check one) YES \_\_\_\_\_ NO \_\_\_\_\_

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### PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER

E. DELIVERY RATE CALIBRATION FOR **APPLICATION NUMBER(S)** \_\_\_\_\_

*INSTRUCTIONS: Complete a separate form for each application, unless the same parameters are used-- you are using the same equipment, and have performed a recheck to confirm the result of the full calibration. Determine the rate of delivery from the application equipment. Briefly describe the procedure, including formulas used to determine delivery rate calibration. Show all calculations and units. Equations used in electronic (computer software) calculations in this trial must be transcribed or printed out and attached here. Computer-generated values (as opposed to those entered by the field cooperators) must be reviewed and clearly delineated by circling, initialing, and dating.*

PROCEDURE/FORMULA:

CALCULATIONS:

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## IR-4 FIELD DATA BOOK

### PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER

F. VOLUME, MIXING AND DILUTION CALCULATIONS FOR **APPLICATION NUMBER(S)** \_\_\_\_\_

*INSTRUCTIONS: Complete a separate form for each application, unless there are no changes in multiple applications. Show all calculations, formulas, and results below, define units of measure, and cite the initials of the person performing the calculations. Equations used in electronic (computer software) calculations in this trial must be transcribed or printed out and attached here. Computer-generated values (as opposed to those entered by the field cooperators) must be reviewed and clearly delineated by circling, initialing, and dating.*

DESCRIBE HOLDING AND TRANSPORT OF TEST SUBSTANCE FROM STORAGE AREA TO LOCATION OF TANK MIXING (E.g.: "Test substance held securely in an insulated cooler during transport to field site in the bed of a pickup truck" or "Tank mix prepared within walking distance of the chemical storage building")

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## IR-4 FIELD DATA BOOK

### PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER

G. APPLICATION INFORMATION FOR **APPLICATION NUMBER** \_\_\_\_\_ **APPLICATION DATE** \_\_\_\_\_

HAS THE APPLICATION EQUIPMENT BEEN USED SINCE THE LAST CALIBRATION/RECHECK WAS PERFORMED? (Check one) YES \_\_\_\_\_ NO \_\_\_\_\_  
(If YES, then a recheck is needed.)

**INSTRUCTIONS: Complete a separate form for each application date. Complete one column for each treated plot (use the Treatment Number as indicated in the protocol). Provide the name of the test substance (common chemical name or chemical code number); the batch or lot number of the test substance; the approximate time the test substance was mixed with the carrier and the approximate time the mixture was applied to the plots, along with the initials of the person(s) mixing and spraying the tank mix; the unique name or code for the application equipment used to apply this treatment; the placement of the test substance (e.g. foliar); the amount of carrier, formulated product and other additives in the mix; the approximate spray height (include units) above the ground (indicate which); the pressure in pounds per square inch at the boom, and the carrier ( normally water), its source (e.g. farm pond, city water), the pH of the carrier and its temperature, and the equipment used to measure the carrier pH.**

	TRT Number _____	TRT Number _____
NUMBER OF DAYS SINCE PREVIOUS APPLICATION		
TEST SUBSTANCE		
BATCH/LOT NUMBER		
TIME MIXED/INITIALS		
TIME APPLIED/INITIALS		
EQUIPMENT IDENTIFIER		
PLACEMENT OF PESTICIDE		
TANK MIX AMOUNTS		
- CARRIER (volume of water)		
-Volume of Water Removed (if applicable)		
- FORMULATED PRODUCT		
- ADDITIONAL ADDITIVES		
- TOTAL VOLUME OF TANK MIX		
APPROXIMATE SPRAY HEIGHT (Compare To Tree Or Target Height <sup>1</sup> )		
PSI AT BOOM		
CARRIER SOURCE/TYPE		
CARRIER pH/TEMPERATURE		
EQUIPMENT USED TO MEASURE pH		

<sup>1</sup> Example: Peak spray height was 15 feet into the canopy of a 15-foot tall tree.

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### IR-4 FIELD DATA BOOK

#### PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER

#### H. ADDITIONAL INFORMATION FROM **APPLICATION NUMBER** \_\_\_\_\_

APPLICATION DATE \_\_\_\_\_ (Complete a separate form for each application date)

#### PROVIDE A BRIEF NARRATIVE SUMMARY OF THE APPLICATION

(E.g. "Test substance was applied to the treated test plot in two passes; one pass down each side of the row, using the nozzles on one side of the sprayer only. The foliage was thoroughly covered by the output from the sprayer.")

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NARRATIVE ENTERED BY \_\_\_\_\_ (Initials)

PLANT GROWTH & ENVIRONMENTAL DATA AT THE TIME OF APPLICATION	Enter data in this column
CROP GROWTH STAGE (e.g. seed, vegetative, bud, bloom, fruiting, #true leaves)	
CROP HEIGHT (Measure or estimate crop height, include units of measurements)	
CROP VIGOR (e.g. poor, fair, good, variable)*	
PLANT SURFACE MOISTURE (Check one)	<b>SATURATED</b> ___ <b>DAMP</b> ___ <b>DRY</b> ___ <b>NA</b> ___
ESTIMATED % OF SOIL AREA COVERED BY CROP CANOPY	
MEASURED AIR TEMPERATURE (Check F or C)	°F___ °C___
MEASURED WIND SPEED (Check MPH or Km/Hr)	MPH___ Km/Hr___
WIND DIRECTION FROM (Check one)	N___ NE___ E___ SE___ S___ SW___ W___ NW___ or NO WIND___
ESTIMATED % OF CLOUDS IN THE SKY	
MEASURED RELATIVE HUMIDITY%	
DEW (heavy, light, none, etc.)	
DESCRIPTION OF SOIL TILTH (smooth, firm, packed, cloddy, etc.)	
ESTIMATE OF SOIL SURFACE MOISTURE (wet, moist, dry, etc.)	
SOIL TEMPERATURE (Check F or C)	°F___ °C___
DEPTH OF MEASUREMENT OF SOIL TEMPERATURE (Check INCHES or cm)	INCHES___ cm___

\*IF CROP VIGOR IS POOR OR VARIABLE, EXPLAIN: \_\_\_\_\_

BRIEFLY DESCRIBE PROCEDURE USED TO CLEAN APPLICATION EQUIPMENT \_\_\_\_\_

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CLEANED BY \_\_\_\_\_ (Initials)

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IR-4 FIELD DATA BOOK

**PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER**

I. POST APPLICATION RATE CONFIRMATION FOR **APPLICATION NUMBER** \_\_\_\_\_

APPLICATION DATE \_\_\_\_\_ (COMPLETE A SEPARATE FORM FOR EACH APPLICATION DATE)

RECORD PASS TIME AND PASS DIRECTION - Complete the table by providing the time required to make each pass of the application equipment through the plot and direction of that pass (e.g. N > S, SW > NE, etc.).

Pass Number	Treatment __		Sprayer Side Used <sup>1</sup>	Pass Number	Treatment __		Sprayer Side Used <sup>1</sup>
	Time	Direction			Time	Direction	
1							
2							
3							
4							
5							
6							
Total Pass Time							

<sup>1</sup> FROM REAR OF SPRAYER, INDICATE RIGHT SIDE, LEFT SIDE, OR BOTH

PASS TIMES RECORDED BY (INITIALS) \_\_\_\_\_ DISCHARGE RATE (ml/sec or g/sec) \_\_\_\_\_

ACTUAL AREA TREATED (swath width or treated row width x # of passes x length of plot) \_\_\_\_\_

CALCULATION OF ACTUAL APPLICATION RATE - Using information such as total pass time, plot size, tank mix amounts, and discharge rate (average of 3 outputs) determine the actual amount of test substance applied to treated plots. (If the protocol does not include a rate of formulated product, then the amount of active ingredient should be determined.) Convert this amount to amount applied per acre (or hectare), then determine deviation from target application in the protocol, rounded to the nearest whole percent. Show all calculations and label all units. **It is not sufficient to merely compare the actual pass times to the "practice" pass times.** The example formulas listed at the bottom of 6J may be used to calculate the application rate. Calculations may be entered on a separate page placed after this one, if there is not enough space below.

WAS ACTUAL APPLICATION RATE WITHIN -5% TO +10% OF PROTOCOL RATE?

(Check one) YES \_\_\_\_\_ NO \_\_\_\_\_ IF NO, **Contact the Study Director immediately.**

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**PART 6. APPLICATION RECORDS-AIRBLAST SPRAYER**

**J. POST TREATMENT RECORDS FOR APPLICATION NUMBER \_\_\_\_\_**

APPLICATION DATE \_\_\_\_\_ (Complete a separate form for each application date)

the requested information below for both the first rainfall and first irrigation after each application, regardless of whether subsequent applications were made prior to the first rainfall or irrigation. The rainfall/irrigation data entered below should be transcribed from the data included in Part 9 unless otherwise indicated on this page. **“NONE BEFORE HARVEST” OR “NONE BEFORE SAMPLING” MAY BE ENTERED, IF APPLICABLE.**

DATE OF FIRST RAIN (Note the date of first rainfall after this application date)	
TIME AFTER APPLIC. THAT PLOTS WERE EXPOSED TO FIRST RAINFALL (Check DAYS or HOURS) (Enter #hours if first rainfall was <u>on the date of application.</u> )	DAYS ___ HOURS ___
AMOUNT OF WATER (Check INCHES or mm)	INCHES ___ mm ___
RAIN INFORMATION RECORDED BY (Initials/date)	
TYPE OF IRRIGATION (e.g. overhead, trickle, flood)	
DATE OF FIRST IRRIGATION (Note the date of first irrigation after this application date)	
TIME AFTER APPLIC. THAT PLOTS WERE EXPOSED TO FIRST IRRIGATION (Check DAYS or HOURS) (Enter #hours if first application was <u>on the date of application.</u> )	DAYS ___ HOURS ___
AMOUNT OF WATER (Check INCHES or mm)	INCHES ___ mm ___
IRRIGATION INFORMATION RECORDED BY (Initials/date)	

If the data entered above differ from the rainfall/irrigation data included in Part 9, explain: \_\_\_\_\_

Was There Any Visible Phytotoxicity Damage? (Check one) YES \_\_\_ NO \_\_\_ Recorded By \_\_\_\_\_ (Initials/date)

IF YES, PROVIDE BRIEF DESCRIPTION: \_\_\_\_\_

PHYTOTOXICITY DESCRIBED BY \_\_\_\_\_ (Initials/date)

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EXAMPLE FORMULAS: The formulas below may be used to calculate the amount of test substance (TS) applied per acre as required in Part 6I. Other formulas may be used instead; however, it is not sufficient to merely compare the actual pass times to the “practice” pass times.

- 1) Total Pass Time x Discharge Rate = Volume of Tank Mix applied to Plot
- 2) Volume of Tank Mix applied to Plot x  $\frac{\text{Amount of TS in Tank Mix}}{\text{Total Volume of Tank Mix}}$  = Amount of TS applied to Plot
- 3) Amount of TS applied to Plot x  $\frac{43,560 \text{ sq ft per acre}}{\text{Plot area treated in sq ft}}$  = Amount of TS applied per acre



