FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

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[1] _____

[1]*Each test substance application equipment must have a unique identifying name or code*

APPLICATION EQUIPMENT TYPE *(Check one)* WAIST-BELT_____ BACKPACK____ GRANULAR____

OTHER____ *(Describe)* _____

PROPELLANT *(Check one)* CO_2_____ COMPRESSED AIR_____ PUMP_____

OTHER____ *(Describe)* _____

TYPE OF APPLICATION *(Check one)*

FOLIAR BROADCAST_____ FOLIAR DIRECTED_____ TO THE GROWING MEDIUM (SOIL) _____

OTHER_____ *(Describe)* _____

NUMBER OF PASSES THAT ARE NEEDED TO TREAT THE PLOT _____

NUMBER OF NOZZLES OR HOPPER OUTLETS USED			
MESH SIZE USED IN THE STRAINERS		SPACING BETWEEN NOZZLES OR HOPPER OUTLETS	
NOZZLE BRAND/TYPE/SIZE *(e.g. T-Jet 8004, even flat fan)*			

TREATED AREA[2] _____

[2]*Calculated width of nozzle discharge pattern (CWNDP) at proper boom height X length of plot sprayed or treated. For a broadcast application, CWNDP = (# of nozzles X nozzle spacing). For a banded application, CWNDP = # of nozzles X swath per nozzle. If application is foliar directed enter treated row width X # of rows X length of plot sprayed or treated; treated row width may differ from actual row width when the actual row width is wider or narrower 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 or inserted behind this page. Contact the Study Director if guidance is needed.*

DOES AREA USED FOR APPLICATION RATE CALCS. = PLOT AREA (from Parts 5C/5D)? YES_____ NO_____

(For foliar directed and soil directed applications, check "YES" above unless local commercial row widths are used instead of the actual row width on the research plot. This prompt is intended to help data reviewers calculate the rates correctly.)

IF NO, PLEASE EXPLAIN: _____

_____

_____

ABOVE DATA ENTERED BY: _____ *DATE:* _____

COMPLETE IF APPROPRIATE: "THIS IS A TRUE COPY OF THE ORIGINAL"
THE ORIGINAL IS IN IR-4 FIELD DATA BOOK NO. _____ INITIALS _____DATE_____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

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 or other image of application equipment.*

Include the following required items in the sketch or image:

1) Relative location and size of the target crop
2) Nozzle or hopper outlet placement in relation to crop
3) Application pattern in relation to crop
4) Assign each nozzle or hopper outlet a unique number

ABOVE DATA ENTERED BY: _____ *DATE:* _____

COMPLETE IF APPROPRIATE: "THIS IS A TRUE COPY OF THE ORIGINAL"
THE ORIGINAL IS IN IR-4 FIELD DATA BOOK NO. _____ INITIALS _____DATE_____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

C. DISCHARGE CALIBRATION FOR **APPLICATION NUMBER ____**

INSTRUCTIONS: Use this form when conducting full (3-run) calibrations or rechecks. If conducting a recheck, please provide calculations to verify that the output is within +/-5% of the most recent full calibration.

If you are conducting a 3-run target check, please use the target check form provided on the IR-4 website.

EQUIPMENT IDENTIFIER_____

DISCHARGE CALIBRATION DATE _____ TIME_____ PERFORMED BY_____ *(INITIALS)*

LOCATION WHERE THE CALIBRATION WAS PERFORMED _____

INSTRUMENT USED TO MEASURE WATER *(e.g. 100 ml graduated cylinder)*_____

BRIEFLY DESCRIBE PROCEDURE USED TO CHECK DISCHARGE CALIBRATION_____

_____

_____

_____

PRESSURE (psi) _____ UNITS (e.g. ml, grams) _____

Output Run Number		1	2	3	
Nozzle/Hopper Outlet Number Along Boom *(If more than 6 nozzles, use the alternate form Part-6C. Large Boom provided on the website.)*	1				
	2				
	3				
	4				
	5				
	6				Total
Total Boom Volume					A
Mean per nozzle or outlet					B
Time (seconds)					C
Discharge Rate					Average Discharge Rate* D _____

Is this a recheck?

Yes _____

No _____

*Indicate whether discharge rate is calculated for: Total Boom Volume____ Mean Nozzle Volume_____ *(A or B)/C=D

Is the discharge rate of each run within 5% of the mean? YES____ NO_____ NA_____

Are individual nozzle outputs within 5% of the mean during each run? YES____ NO_____ NA_____

If this is a recheck, are results within 5% of original output? YES____ NO_____ NA_____

ABOVE DATA ENTERED BY: _____ DATE: _____

COMPLETE IF APPROPRIATE: "THIS IS A TRUE COPY OF THE ORIGINAL"
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FIELD ID NO: _____

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PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

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 _____ TIME_____ PERFORMED BY_____ *(INITIALS)*

TERRAIN OF CALIBRATION TRACK *(e.g., tilled field)* _____

LOCATION WHERE THE CALIBRATION WAS PERFORMED_____

BRIEFLY DESCRIBE PROCEDURE USED FOR SPEED CALIBRATION _____

_____

_____

_____

GEAR _____ RPM _____ LENGTH OF TEST TRACK (include units)

_____

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 or meters) of the track on which the application equipment was tested to determine speed (e.g. speed of application equipment tested for 100 ft.). Entry prompts have been provided for 2 additional runs. If this is a recheck, calculate the result is within 5% of the original calibration. Show all calculations.* ***A speed recheck (one run) is required whenever an output recheck is performed, except for multiple applications within a study that are made on the same day on the same farm.***

RUN #	1	2	3	TOTAL	AVERAGE	TARGET OR ORIGINAL CALIBRATION TIME
TIME (sec)						

CALCULATIONS:

WAS THIS A RECHECK OF SPEED CALIBRATION? *(Check one)* YES_____ NO_____

IF YES, WERE RESULTS WITHIN 5% OF ORIGINAL CALIBRATION? 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, but for each application a full speed calibration must be conducted, and the mean of the three runs must be 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? YES_____ NO_____

ABOVE DATA ENTERED BY: _____ *DATE:* _____

COMPLETE IF APPROPRIATE: "THIS IS A TRUE COPY OF THE ORIGINAL"

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PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

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.

PROCEDURE/FORMULA:

CALCULATIONS:

PROTOCOL SPECIFIED SPRAY VOLUME (from Part 15, in gallons per acre or liters per hectare): _____
Enter "NA" if a spray volume is not applicable.

ABOVE DATA ENTERED BY: _____ *DATE:* _____

COMPLETE IF APPROPRIATE: "THIS IS A TRUE COPY OF THE ORIGINAL"
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FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

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, and define units of measure. Equations used in electronic (computer software) calculations in this trial must be transcribed or printed out and attached here.

CALCULATIONS ENTERED BY: _____ *DATE:* _____

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 hand-carried during transport to greenhouse site" or "Tank mix prepared within walking distance of the chemical storage building")*

_____

_____

_____

_____

NARRATIVE ENTERED BY: _____ *DATE:* _____

COMPLETE IF APPROPRIATE: "THIS IS A TRUE COPY OF THE ORIGINAL"
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PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

G. APPLICATION INFORMATION FOR **APPLICATION NUMBER ____** APPLICATION DATE_____

INSTRUCTIONS: Complete a separate form for each application date and for each treatment on one application date (use the Treatment Number as indicated in the protocol).

	TRT Number ____	
NUMBER OF DAYS SINCE PREVIOUS APPLICATION		TIME OF ADDITIONAL AGITATION (if applicable) e.g. "10:00" or "continuous" or "just prior to application"
TEST SUBSTANCE		
BATCH/LOT NUMBER		
TIME MIXED/BY WHOM[1]		
TIME APPLIED/BY WHOM[1]		
EQUIPMENT IDENTIFIER		
APPLICATION TYPE[3] (*e.g., foliar broadcast, soil directed)*		
TANK MIX AMOUNTS		MEASURING EQUIPMENT with INCREMENTS*
CARRIER (starting volume of water)		
VOLUME of WATER REMOVED from starting volume (if applicable)		
TEST SUBSTANCE (formulated product)		
ADJUVANT		
TOTAL VOLUME OF TANK MIX		*e.g. 1000 mL grad. cylinder/10 mL incr.
NOZZLE DISTANCE from TARGET		ORDER IN WHICH ITEMS WERE ADDED TO SPRAY MIXTURE* W=Water, TS=Test Substance, A=Adjuvant *e.g. 1-W, 2-TS, 3-A, 4-W
PSI AT BOOM		
CARRIER SOURCE/TYPE		
CARRIER pH/TEMPERATURE		
EQUIPMENT used to MEASURE pH		

[1] *The identity of the person that performed this task may be entered by the person entering the rest of the data on this page. Initials are acceptable for identification.*

[2] *If application type for this application is different than what is indicated in Part 6A, then a new 6A must be completed.*

WERE THE TREATED PLANTS MOVED TO ANOTHER ROOM OR PROTECTED AREA FOR SPRAYING? YES_____ NO_____

IF YES, IDENTIFY LOCATION: _____

_____

ABOVE DATA ENTERED BY: _____ *DATE:* _____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

H. ADDITIONAL INFORMATION FROM **APPLICATION NUMBER _____**

APPLICATION DATE _____ *(Complete a separate form for each application date)*

PLANT GROWTH & ENVIRONMENTAL DATA AT THE TIME OF APPLICATION	Enter data in this column
CROP HEIGHT *(Measure or estimate crop height, include units of measurements)*	
CROP GROWTH STAGE *(e.g. seed, vegetative, bud, bloom, fruiting, #true leaves)*	
CROP VIGOR *(e.g. poor, fair, good, variable)**	
PLANT SURFACE MOISTURE *(Check one)*	**SATURATED___ DAMP___ DRY___ NA___**
ESTIMATED % OF GROWING MEDIUM AREA COVERED BY CROP CANOPY	
MEASURED AIR TEMPERATURE *(Check F or C)* (*E.g.* 75 °F√ °C___)	**°F___ °C___**
ESTIMATED % OF CLOUD COVER (or indicate below if shade cloth was closed)	
SHADE CLOTH	**OPEN___ CLOSED___ NA___**
MEASURED RELATIVE HUMIDITY%	
TYPE OF SURFACE THAT APPLICATOR WALKED ON DURING APPLICATION	
DESCRIPTION OF GROWING MEDIUM TILTH *(smooth, firm, packed, cloddy, etc.)*	
ESTIMATE OF GROWING MEDIUM SURFACE MOISTURE *(wet, moist, dry, etc.)*	
GROWING MEDIUM TEMPERATURE *(Check F or C)*	**°F___ °C___**
DEPTH OF MEASUREMENT OF GR. MED. TEMPERATURE *(Check INCHES or cm)*	**INCHES___ cm___**

*IF CROP VIGOR IS POOR OR VARIABLE, EXPLAIN: _____

_____

_____

_____

_____

_____

_____

ABOVE DATA ENTERED BY: _____ *DATE:* _____

BRIEFLY DESCRIBE PROCEDURE USED TO CLEAN APPLICATION EQUIPMENT AND IDENTIFY WHO CLEANED IT:

_____

_____

_____

_____

_____

NAME(S) OF PERSON(S) WHO CLEANED EQUIPMENT: _____

CLEANING DESCRIPTION ENTERED BY: _____ *DATE:* _____

ABOVE DATA ENTERED BY: _____ *DATE:* _____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

I. PASS TIMES FOR **APPLICATION NUMBER ____** 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. NE).*

	TREATMENT __		TREATMENT __		
PASS NUMBER	TIME	DIRECTION	PASS NUMBER	TIME	DIRECTION
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		
11			11		
12			12		
TOTAL PASS TIME					

ABOVE DATA ENTERED BY: _____ DATE: _____

PROVIDE A BRIEF NARRATIVE SUMMARY OF THE APPLICATION AND IDENTIFY WHO PERFORMED IT:

(E.g. *"Test substance was applied to the treated plot in two passes; one pass down each side of the row, starting with the east side. Each pass was applied to the potted plants with the boom held vertically so that the swath covered all of the foliage."*)

_____

_____

_____

_____

_____

_____

_____

_____

WERE THERE ANY PROBLEMS DURING THE APPLICATION? YES___ NO___

If YES, then contact the Study Director as soon as possible.

APPLICATION WAS MADE BY: _____

NARRATIVE ENTERED BY_____ *DATE:* _____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

J. POST APPLICATION RATE CONFIRMATION FOR **APPLICATION NUMBER ____**

APPLICATION DATE_____

CALCULATION OF ACTUAL APPLICATION RATE AND SPRAY VOLUME - *Show all calculations and label all units. If a target rate was used for the pre-application calculations, the data from the calibration (average of 3 outputs) must be used for calculating the application rate. Convert this amount to the amount applied per acre (or hectare), and determine deviation from target application in the protocol, rounded to the nearest whole percent.*

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 $\frac{\text{43,560 sq ft per acre}}{\text{Plot area treated in sq ft}}$ = Amount of TS applied per acre

4) Volume of Tank Mix applied to Plot x $\frac{\text{1 gallon}}{\text{3785 ml}}$ x $\frac{\text{43,560 sq ft per acre}}{\text{Plot area treated in sq ft}}$ = Spray Volume in gallons per acre (GPA)

%DEVIATION FROM THE PROTOCOL RATE SHOULD BE ROUNDED LIKE THIS: -5% OR THIS: +10%

****

DISCHARGE RATE (ml/sec or g/sec): _____

ACTUAL AREA TREATED (*swath width or treated row or bed width x # of passes x length of plot*): _____

Note: *Use bed width for plots with multi-row beds.*

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

(Check one) YES____ NO____ IF NO, **Contact the Study Director immediately.**

WAS ACTUAL SPRAY VOLUME WITHIN THE PROTOCOL RANGE?

(Check one) YES____ NO____ NA___ IF NO, **Contact the Study Director immediately.**

ABOVE DATA ENTERED BY: _____ *DATE:* _____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

K. POST TREATMENT RECORDS FOR **APPLICATION NUMBER _____**

APPLICATION DATE_____

Was There Any Visible Phytotoxicity? YES___ NO___

If YES, fill in the box below* and contact the Study Director. Provide a detailed description and if possible email pictures.

Is a phytotoxicity rating required in the protocol? YES___ NO____ If YES, fill in the box below*

Date Crop Was Observed: _____ *Initials/date*: _____

*Alternatively, a separate sheet with a description of the phytotoxicity may be inserted at the back of Part 6.

DESCRIPTION OF PHYTOTOXICITY SYMPTOMS:	
PHYTOTOXICITY DESCRIBED BY:	*(Initials/date)*
DATE STUDY DIRECTOR WAS CONTACTED: CONTACTED BY:	*(Initials/date)*

Enter the requested information below for the first irrigation after each application, regardless of whether subsequent applications were made prior to the first irrigation. The irrigation data entered below should be transcribed from the data included in Part 9 unless otherwise indicated on this page. **If irrigation is required by the protocol to incorporate the test substance, or if the test substance is applied by irrigation, then that event should be recorded below. "NONE BEFORE HARVEST" or "NONE BEFORE SAMPLING" may be entered, if applicable.**

TYPE OF IRRIGATION *(e.g. overhead, trickle, flood)*	
DATE OF FIRST IRRIGATION AFTER THIS APPLICATION	
TIME AFTER APPLICATION THAT PLOTS WERE EXPOSED TO FIRST IRRIGATION (*Check DAYS or HOURS*) *(Enter #hours if first irrigation was on the date of application.)*	**DAYS___** **HOURS ___**
AMOUNT OF WATER (*Check INCHES, mm, or mL*)	**INCHES___** **mm___** **mL___**
IRRIGATION INFORMATION RECORDED BY*(Initials/date*)	

If the data entered above differ from the irrigation data included in Part 9, explain: _____

_____

_____

_____

_____ *Initials/date*: _____

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IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS

L. DIFFERENTIATION OF MULTIPLE TRIALS CONDUCTED IN CLOSE PROXIMITY*

Are you conducting more than one trial in this study? YES___ NO___

Is another field research director in this study conducting a trial within 30 kilometers (18.6 miles) of your trial(s)? YES___ NO___

If "NO" is checked twice, then no other input is needed except for signing and dating at the bottom of each page.

If "YES" is checked at least once, then an independently prepared tank-mix must be used in each trial, except in studies in which this is not applicable such as studies with granular formulations.

In order to differentiate these trials, select one option from the list below.

If 3 or more trials in this study cannot be differentiated by the same options, then you should check all options that have been used, and explain below which options are differentiating between which trials.

If different crop varieties are being used as a differentiation option, then enter below information that explains why these varieties were chosen. Examples: Variety A produces large fruit, whereas Variety B produces small fruit. Variety A produces fruit with a smooth skin, whereas Variety B produces fruit with a rough skin. Variety A has heavy foliage that shields the commodity, whereas Variety B has light foliage that exposes the commodity more.

If options are used that are listed in the protocol but are not listed in the table below, then enter descriptions below.

*Trials conducted in different calendar years are exempt from these requirements. (If separate trials by the same person or within 30 km are conducted in late fall/early winter, then the differentiation options should be used to reduce the possibility of data rejection by a regulatory agency.)

Check the options used to differentiate the trials that you are conducting in this study:

Option	√	Description
A		Trial sites must be separated by at least 30 km (18.6 miles) [measured as straight line distance]
B		Planting date (for annual crops) or first application date in each trial is separated by at least 30 days
C		Different crop variety (different size or shape at maturity, rough vs. smooth surface, different amount of foliage shielding the commodity, different rate of growth)—confirm with Study Director if this option will be chosen

Trial IDs of other trials in this study to which these options are being applied:

_____

Enter below any additional information that will improve the understanding of the options that have been chosen:

_____

_____

_____

_____

ABOVE DATA ENTERED BY: _____ *DATE:* _____

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IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS-GREENHOUSE TRIALS

M. APPLICATION EQUIPMENT MAINTENANCE AND REPAIR LOG

INSTRUCTIONS: Complete this form or attach true copies of maintenance logs. Provide dates and a brief description of maintenance and repair work completed on the application equipment relevant to this trial. Date and initial all entries.

APPLICATION EQUIPMENT IDENTIFIER_____

EQUIPMENT USED FOR **APPLICATION NUMBERS**_____

INITIALS/DATE_____

Initials and Date	Was Maintenance or Repair routine? (Check one)		SOP#	Description
	Yes	No[1]		

[1] If non-routine, include in the description the nature of the defect, when discovered, and the action taken.

COMPLETE IF APPROPRIATE: "THIS IS A TRUE COPY OF THE ORIGINAL"
THE ORIGINAL IS IN IR-4 FIELD DATA BOOK NO. _____ INITIALS _____DATE_____