

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS

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 IDENTIFIER¹ _____

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

APPLICATION EQUIPMENT TYPE (Check one) TRACTOR _____ BACKPACK _____ GRANULAR _____

OTHER _____ (Describe) _____

PROPELLANT (Check one) CO₂ _____ COMPRESSED AIR _____ PUMP _____

OTHER _____ (Describe) _____

TYPE OF APPLICATION (Check all that apply)

1) FOLIAR _____ TO THE GROUND _____

2) BROADCAST _____ BANDED _____ DIRECTED _____ IN-FURROW _____

3) 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 AREA² _____

²Calculated 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 or soil directed enter 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 TREATED AREA = PLOT AREA (from Parts 5C and 5F)? YES _____ NO _____

IF NO, PLEASE EXPLAIN: _____

ABOVE DATA ENTERED BY: _____ DATE: _____

PART 6 PAGE _____

Trial Year 2012

Total number of pages in this section at initial pagination: _____

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

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/hopper outlet placement and application pattern in relation to crop, in the sketch or photograph. In addition, on the sketch or photograph assign each nozzle or hopper outlet a unique number.*

ABOVE DATA ENTERED BY: _____ DATE: _____

PART 6 PAGE ____

Trial Year 2012

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

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

INSTRUCTIONS: Complete a copy of this form (PHOTOCOPY IF NECESSARY) 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 _____

PRESSURE OR OTHER STANDARD SETTING UTILIZED IN CALIBRATION _____

DISCHARGE UNITS MEASURED (e.g. ml, oz., grams) _____

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

BRIEFLY DESCRIBE PROCEDURE USED TO CHECK DISCHARGE CALIBRATION _____

DISCHARGE CALIBRATION Record time applicator is allowed to discharge. Collect output from each nozzle or hopper. Record this value in "RUN" Row 1 under the appropriate outlet. Calculate the total and average discharge for all the nozzles/hoppers. Entry prompts have been provided for 2 additional discharge calibration runs. Calculate sums and averages of each nozzle/hopper outlet. Show all calculations.

RUN	TIME (sec)	Nozzle/hopper Outlet Number Along Boom (see equipment diagram for nozzle numbers)											Total	Avg.	
		1	2	3	4	5	6	7	8	9	10	11			
1															
2															
3															
Total															
Avg.															

CALCULATIONS:

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.

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

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 or meters) 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:

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 _____

ABOVE DATA ENTERED BY: _____ DATE: _____

PART 6 PAGE _____

Trial Year 2012

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

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:

ABOVE DATA ENTERED BY: _____ DATE: _____

PART 6 PAGE _____

Trial Year 2012

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

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")

ABOVE DATA ENTERED BY: _____ DATE: _____

PART 6 PAGE ____

Trial Year 2012

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

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. broadcast, in-furrow, directed, knifed-in, banded); the amount of carrier, formulated product and other additives in the mix; the distance (include units) of the nozzles above the canopy or ground (indicate which); the pressure in pounds per square inch at the boom; if treatment(s) were incorporated, the method and/or equipment used to incorporate the test substance mix (e.g. disked, rotovator, irrigated, etc.), depth to which the test substance was incorporated or the amount of water used to move the test substance into the soil; the time after treatment the incorporation activity was performed; 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 TEST SUBSTANCE		
TANK MIX AMOUNTS		
- CARRIER (starting volume of water)		
-Volume of Water Removed from starting volume (if applicable)		
- TEST SUBSTANCE (formulated product)		
- ADJUVANT OR SURFACTANT		
- TOTAL VOLUME OF TANK MIX		
NOZZLE DISTANCE FROM TARGET		
PSI AT BOOM		
INCORPORATION		
- Methodology and/or Equipment		
- DEPTH		
- TIME		
CARRIER SOURCE/TYPE		
CARRIER pH/TEMPERATURE		
EQUIPMENT USED TO MEASURE pH		

ABOVE DATA ENTERED BY: _____ DATE: _____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS

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. Each pass was applied to the soil, in a 3 ft. band out from the tree, with the spray boom 24 inches above the soil.")

_____ NARRATIVE ENTERED BY _____ (Initials)

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 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 _____

_____ CLEANED BY _____ (Initials)

ABOVE DATA ENTERED BY: _____ DATE: _____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS

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 __		TREATMENT __		
	TIME	DIRECTION	PASS NUMBER	TIME	DIRECTION
1					
2					
3					
4					
5					
6					
TOTAL PASS TIME					

PASS TIMES RECORDED BY (INITIALS) _____ 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.

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 formulated 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 the amount applied per acre (or hectare), and 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.**

ABOVE DATA ENTERED BY: _____ DATE: _____

FIELD ID NO: _____

IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS

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

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

Enter 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.)	
TIME AFTER APPLICATION 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.)	
TIME AFTER APPLICATION THAT PLOTS WERE EXPOSED TO FIRST IRRIGATION (Check DAYS or HOURS) (Enter #hours if first irrigation was <u>on the date of application.</u>)	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 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)

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/Nozzle x #Nozzles = 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

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

FIELD ID NO: _____
IR-4 FIELD DATA BOOK

PART 6. APPLICATION RECORDS

L.2. DIFFERENTIATION OF MULTIPLE TRIALS CONDUCTED BY THE SAME PERSON

IF YOU CHECKED “YES” ON THE PREVIOUS PAGE

Check the options (in the third column) used to differentiate the trials that you are conducting in this study:

Set	Option	√	Description
1	A		Spray volume must vary by at least 25% of the lower volume (minimum 10 GPA difference) Example 1, Trial A has a volume of 20 GPA and Trial B has a volume \geq 30 GPA Example 2, Trial A has a volume of 60 GPA and Trial B has a volume \geq 75 GPA The trial with the lowest spray volume for the first application must remain the lowest for each application; the trial with the highest must remain the highest for each, and so on
	2	A	Different adjuvant class: Crop oil concentrate or Nonionic surfactant (non-silicone) or Silicone surfactant (Do not contradict instructions on the label of either the adjuvant or the test substance)
3	A		Different foliar application type: foliar directed or foliar broadcast
	B		Different types of application equipment be used in each trial (for example, tractor-pulled boom sprayer, tractor-pulled spreader, airblast sprayer, axial fan orchard sprayer, proptec sprayer, cannon mist sprayer, tower sprayer, over-row sprayer, tunnel sprayer, backpack sprayer, waist pack sprayer, hand gun, hand-held spreader, or shaker can)
	C		Different people make the applications, using hand-held equipment such as backpack sprayers, waist pack sprayers, hand guns, hand-held spreaders, or shaker cans
	D		Different spray droplet size (fine, medium, coarse, very coarse, or extra coarse) This may be accomplished by changing nozzles and/or by changing spray pressure Document in the Field Data Book the droplet size that results from the pressure and nozzles used in the trial (nozzle catalog may be used as a reference)
	E		Different granular application type: broadcast or banded (only if label supports both types)
	F		Different incorporation method for soil-applied test substance: mechanical or irrigation
	G		Different band width for soil applications: band width must vary by at least 50% of the lower width
4	A		Different crop variety (different size at maturity, rough vs. smooth surface, different amount of foliage shielding the commodity, etc.)—confirm with Study Director if this option will be chosen
	B		Different irrigation type (drip or furrow or sprinkler/over-the-top) (Irrigation must be applied at least once after each application, but over-the-top irrigation must not be applied within one hour of an application, and irrigation is not needed following the last application if samples are to be collected on the same day)
	C		Different planting arrangement for annual crops: single row beds or multi-row beds (two or more rows on each bed)
	D		For test substances that must be applied through drip irrigation: surface drip line or buried drip line
	E		One trial shall have trellised plants and the other shall not
	F		Different training system for fruit trees (for example, central leader or open center)
	G		Different maturity of trees or bushes in fruit and nut studies—young trees or bushes in one trial and mature trees or bushes in the other; minimum 5 year age difference
5	A		Trial sites must be separated by at least 20 miles (32 km)
	B		First application in each trial is separated by at least 30 days
	C		Different soil series, type, or texture (only in trials in which applications are made to the soil)

Provide any additional details that will further explain the options chosen (such as cultivar names, applicator names, etc.):

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 _____