Control of Cercospora Leaf Spot in Sugarbeet

Project No. IS00436
Date: 05/2023

PROJECT TITLE:

Control of Cercospora leaf spot in sugarbeet.

PROJECT JUSTIFICATION AND OBJECTIVES:

IR-4 received a request for the managing Cercospora diseases in Sugarbeet. The purpose of this research is to collect efficacy and crop safety data to support registration of fungicides mentioned in this protocol.

Adherence to Good Laboratory Practices (GLPs) is not required for trials conducted under this research plan.

IR-4 RESEARCH COORDINATOR:

Consult with the Research Coordinator listed below regarding desired changes in this research plan prior to occurrence.

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Signature of IR-4 Research Coordinator
Jaimin Patel

05/19/2023
Date

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Date: 05/2023

MATERIALS & METHODS:

Host plant: Sugarbeet - Use locally grown commercial varieties that are susceptible to the test pathogen. Report variety/source, lot number, etc.

Test Site: Field

Pathogens(s): Cercospora leaf spot (*Cercospora beticola*)

Treatments:

Treatment	MFG	EPA Reg. #	AI	Application Method	Rate[1]	No. of Appl. & RTI[2]
Untreated	N/A	N/A	N/A	N/A	N/A	N/A
Standard registered control	Depends on product	Depends on product	Depends on product	Read label	Read label	Read label
Switch 62.5 WG	Syngenta	100-953	Cyprodinil + Fludioxonil	Foliar	14 oz/A	4 applications at 14 day RTI
Cannonball WG	Syngnta	100-1454	Fludioxonil		7 oz/A	4 applications at 14 day RTI
Omega 500 F	ISK	71512-1	Fluazinam		16.0 fl. oz/A	4 applications at 14 day RTI; 14 day PHI; **Do not add surfactant/s**
ProBLAD Verde[3]	Sym Agro	84876-2	BLAD polypeptide		9 oz/A (Prepare in **20** gallons)	4 applications at 14 day RTI
Funibiol Gold	Green Seal Company	EPA registration in Process	*Eucalyptus globulus* extract		32 oz/A (Prepare in **20** gallons)	4 applications at 14 day RTI

[1] Apply in a commercially acceptable spray volume for good foliage coverage; Please report in final report about spray volume used per Acre.
[2] **RTI** = Re-treatment Interval
[3] **ProBLAD Verde**: ProBlad is quite water soluble, so applications need to be made when the foliage is dry, and when no rain is expected within 12 hours. Rain within this window of time will reduce the longevity of the prevention because the ProBlad will not have absorbed into the tissue. If weather conditions cannot be avoided, add NuFilm P sticker and it will help prevent wash off.
pH 5.5 is isoelectric at this exact pH and the product will not perform, however if you raise or lower the pH it will be fine (pH 5.5 does not denature ProBlad). Spray solution should have pH between 6 and 6.5 for ProBLAD Verde fungicide.

Application Method for ProBLAD Verde: Mist blower or equivalent delivery system. Make applications in 50 - 100 gallons per acre. Avoid excessive run-off if possible.

Mixing ProBLAD Verde: Ensure the spray tank is clean and free of residues from previous spray treatments. The spray tank should be filled 1/4 to 1/3 full of water. Shake the container of PROBLAD VERDE before use. Pour the required amount of PROBLAD VERDE into the sprayer tank while the tank agitation system is operating and finish

filling the tank with the appropriate amount of water. Maintain adequate agitation prior to and during spraying. Do not store the mixture overnight.

Standards: Use of a surfactant with the standards is acceptable if it is customary practice.

pH Test: Test the pH of spray solution, pH of the final spray solution should be >6.0 for PROBLAD VERDE sprays. Please adjust pH if necessary. If a buffer is used please provide the name in the final report. Report the spray solution pH in the final report.

Rainfastness: PROBLAD VERDE requires two to four hours drying time on plant foliage for the active ingredient to be fixed into the plant tissue before rain or overhead irrigation occurs. If during the next 12 hours it rains significantly, a new application will be needed during the next 4 days. Avoid fungicide application if overhead irrigation is planned or rain is predicted in next 12 hours.

Test Substances Manipulation: Read product use directions prior to manipulation and application. Applicators and handlers must wear the personal protective equipment listed on the product label. Do not use old/expired products for trials conducted under this research plan. The IR-4 Research Coordinator will arrange for new test substance to be delivered.

Researchers are encouraged to use the disease forecasting system to begin the first application of the treatments as a preventative application.

Upon receipt of the test substance(s), document the corresponding lot/batch number. Store the test substance in a secure, clean, dry area at temperature ranges noted in the product label. Use application equipment that will provide uniform application of the test substance and simulates the intended commercial application technique. To ensure accurate delivery, calibrate test application equipment prior to application of the test substance(s).

Experimental Design: Each test site should conduct three (3) or four (4) replicates of each treatment. Arrange plots in a randomized complete block design or other appropriate statistical design. The individual plots should be large enough to permit accurate application of the test substance in a manner that represents the major application technique that will be used commercially. If natural inoculum is not present in the field plot, inoculations should be conducted two (2) days after the first application for all treatments. Conduct appropriate statistical analysis to determine if significant differences exist between treatments.

Supplemental Crop treatments: To protect the integrity of this study, manage pests causing significant damage to the crop other than the target pest. Early season applications of fungicides can be made but separate the first application of the test substances and these other fungicide applications by a minimum of three (3) weeks. Maintenance pesticide applications must be applied across the entire test site including the non-treated control plots. Only EPA-registered maintenance pesticides should be used at labeled rates and applied to all experimental units. Document all supplemental crop treatments.

DATA COLLECTION:

Efficacy:

Evaluate foliar disease severity at the time of first application of each treatment and at every seven (7) days thereafter until harvest. Record foliar disease severity as the percentage of canopy affected with Cercospora leaf spot. Please collect the yield data. When reporting the

results, please include percent change in the disease severity and yield compared to untreated control.

Crop Injury:

Crop health should be evaluated and reported on all plots 2-3 days after each application and once at trial conclusion. If injury is noted, then additional evaluations must be taken on a weekly basis until no more injury is observed. Assess four (4) randomly selected areas within each plot. Use visual ratings on a 0 to 5 scale:

- For foliage injury: 0 = no adverse effect on foliage; 3 = moderate foliage damage; and 5 = severe foliage damage including defoliation and numerous spotting

Specify the type of injury (stunting, stand loss, leaf burn, leaf cupping or twisting, chlorosis, etc.) and record if any delay in maturity occurred. Evaluate if the crop is stunted and provide an overall assessment (if the level of phytotoxicity would be acceptable in commercial production).

STATISTICAL ANALYSIS:

Conduct appropriate statistical analysis to determine if significant differences exist between treatments. Statistical analysis from commonly used agricultural data programs, such as but not limited to Agricultural Research Manager (ARM), SAS, Minitab, etc. is acceptable.

DATA REPORTING:

At trial completion, please submit a final report and the raw data in two separate files to the IR-4 Research Coordinator and the appropriate Regional Field Coordinator (RFC) listed below.

For the sake of consistency and to avoid missing information, IR-4 encourages collaborators to adopt and fill out the Final Report Research Template provided by the Research Coordinator prior to trial conclusion.

The final report and the raw data should be submitted to IR-4 within 90 days of last data collection.

For non-confidential test substances, IR-4 encourages researchers to publish the results obtained from the study. Any publications should acknowledge support by IR-4.

TRIAL SITE INFORMATION

Researcher	Field ID NO.	RFC
Dr. James Woodhall University of Idaho Parma R & E Center 29603 U of I Lane Parma, ID 83660-6699 Phone: 208-722-6701 Email: jwoodhall@uidaho.edu **Shipping address same as above**	IS00436.23-ID28	WSR
Dr. Oliver T. Neher Amalgamated Sugar Company 1951 S. Saturn Way, Suite 100	IS00436.23-ID34	WSR

Boise, ID 83709 Phone: 208-383-6526 Email: ONeher@amalsugar.com **Shipping address same as above**		

RESEARCH FIELD COORDINATORS

WSR: Dr. Kari Arnold, Regional Field Coordinator, Western Region, Western Region IR-4 Project, Cell: (530) 574-9181; email: klarnold@ucdavis.edu