RNA-based biocontrols Open Data - Target Pest CPB and Closely Related Species

syngenta

Contents

1. Summary

The contents of this data package present the results from experiments investigating the efficacy of RNA-based biocontrols on target species. The datasets include biological screening data for the lead RNA-based biocontrol candidate tested for mortality against the target Colorado Potato Beetle pest and other closely related beetle species.

2. Metadata

Description of the dataset	The datasets include biological screening data for the lead RNA-based biocontrol candidate tested for mortality against the target Colorado Potato Beetle pest and other closely related beetle species.
Date of first publication	31st August 2016
Date of last update	30th June 2017
Date of next update	-
Frequency of updates	Periodically
License for re-using the data	The contents of this dataset and all supporting documentation are licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.
Text to use when citing the data	RNA-based biocontrols Open Data - Target Pest CPB and Closely Related Species
URL to use when citing the data	www.syngenta.com
Data language	English
Key words	RNA-based biocontrol; Target; Colorado Potato Beetle (CPB); *Leptinotarsa decemlineata*; Mustard Leaf Beetle (MLB); *Phaedon cochleriae*; Cowpea Seed Beetle; *Callosobruchus maculatus*; Northern Corn Rootworm; *Diabrotica barberi*; Western Corn Rootworm; *Diabrotica virgifera*; Southern Corn Rootworm; *Diabrotica balteata*; Banded Cucumber Beetle
Subject	RNA
Copyright year	2016
Copyright holder	Syngenta AG

3. Structure of the Data

3.1. Callosobruchus_maculatus_Diabrotica_various

Variable name	Definition	Unit	Type of data
species	Species of the test subject		String
treatment	Treatment AI or control type		Categorical
rate	Multiple of field rate		Numeric
repNumber	Replication number		Integer
day	Day number		Integer
living	Number of alive test subjects		Integer
dead	Number of dead test subjects		Integer
mortalityPercent	Percentage of dead test subjects	%	Numeric

3.2. Leptinotarsa_decemlineata_and_Diabrotica_balteata

Variable name	Definition	Unit	Type of data
rate	Multiple of field rate		Integer
repNumber	Replication number		Integer
pestType	Type of pest		Categorical
target	Is the test subject species the target? (N - No) (Y - Yes)		Categorical
species	Species of the test subject		String
infestation	Count of test subjects per test		String
evaluationCode	Evaluation type code		Categorical
evaluationDescription	Evaluation type description		String
stage	Growth stage of the test subject		String
treatment	Treatment or control type		Categorical
testType	Method of treatment		Categorical
testPlant	Plant used in test		String
mortalityPercent	Percentage of dead test subjects	%	Numeric
activityAtFieldRate	Activity observed at field rate?		Categorical
activityAt2xFieldRate	Activity observed at twice field rate?		Categorical

3.3. Phaedon_cochleriae

Variable name	Definition	Unit	Type of data
species	Species of the test subject		String
control	Is the treatment a control? (N - No) (Y - Yes)		Categorical
treatment	Treatment AI or control type		Categorical
day	Day number		Integer
dead	Count of dead test subjects		Integer
mortalityPercent	Percentage of dead test subjects	%	Numeric

4. Background and Methods

4.1. Callosobruchus_maculatus_Diabrotica_various

This dataset is the result of a study to assess 3-day and 7-day mortality of species closely related to target CPB (Colorado Potato Beetle – *Leptinotarsa decemlineata*) after exposure to the RNA-based biocontrol candidate for CPB.

The species involved in the experiment were the Cowpea Seed Beetle (*Callosobruchus maculatus),* Northern Corn Rootworm (*Diabrotica barberi*), Western Corn Rootworm (*Diabrotica virgifera*) and Southern Corn Rootworm (*Diabrotica undecimpuncta howardi*).

The experimental design included a bioassay per species, per treatment, per rate and all replicated twice. The treatments were the lead construct (the RNA-based biocontrol candidate for CPB), a control and a positive control. The rates tested for the lead construct were 2x, 1x and 0.005x the field application rate. The plates were scored on day 3 and day 7 at approximately the same time.

The bioassays were setup and rated using Syngenta's standard bioassay screening procedures, although this was not a GLP experiment. When ascertaining whether the test subjects were alive or dead, they would be poked and subsequently observed for movement.

The mortality was calculated per replicate as {sum of dead test subjects/(sum of all test subjects)}.

4.2. Leptinotarsa_decemlineata_and_Diabrotica_balteata

This dataset is the result of a study to measure the selectivity of the RNA-based biocontrol candidate for CPB. The data here shows the results for CPB and the closely related spotted cucumber beetle (*Diabrotica balteata*). Data for other species assessed during the same experiment, but not closely related to CPB, can be found in the data package 'Other Crop Pests'.

For the Diabrotica tests, the subject was exposed to 1x and 2x the field application rate, with 2 replications. For the CPB tests, the subject was exposed to 0.5x, 0.05x, and 0.005x the field application rate, with 2 replications.

The bioassays were setup and rated using Syngenta's standard bioassay screening procedures, although this was not a GLP experiment.

The mortality was calculated per replicate as {sum of dead test subjects/(sum of all test subjects)}.

4.3. Phaedon_cochleriae

This dataset is the result of a study to assess the survival of the Mustard Leaf Beetle (*Phaedon cochleriae*) after exposure to the RNA-based biocontrol candidate for CPB.

The experiment consisted of two treatments of lead construct and control, with 36 insects each. The plates were scored daily around the same time except for the weekend (hence no data on day 6 and 7). The plate wells were refreshed with a non-treated leaf disc at day 3.

The bioassays were setup and rated using Syngenta's standard bioassay screening procedures, although this was not a GLP experiment. When ascertaining whether the test subjects were alive or dead, they would be poked and subsequently observed for movement. An internal negative control was taken in every experiment. As an internal standard, control mortality had to stay below 20% to be considered as a robust assay. Control mortality was 0% and 5.5% respectively on day 12.

The survival was calculated per replicate as {sum of alive test subjects/(sum of all test subjects)}.

5. Contact Information

For questions and inquiries regarding this dataset and documentation, please contact rna.data@syngenta.com.