Appendix E. Example Output from T-Rex and T-Herps

T-REX

TREX MODEL INPUTS

These values will be used in the calculation of exposure estimates for foliar, granular, liquid and/or seed applications of pesticides.

Chemical Identity and Application Information

Chemical Name:	Acephate
Use:	Cauliflower/Celery/Mint/Peppers
Product name and form:	
% A.I. (leading zero must be entered for formulations <1% a.i.):	100.00%
Application Rate (lbs/A):	1
Half-life (days):	8.2
Application Interval (days):	3
Number of Applications:	2

Assessed Species Inputs (optional, use defaults for RQs for national level assessments)

What body weight range is assessed (grams)?	Birds	Mammals
Small	20	15
Medium	100	35
Large	1000	1000

Note: Sources of wildlife diet are assumed to be available for less than one year for this model.

Endpoints

Avian

Endpoint	Toxicity value	Indicate test species below
LD50 (mg/kg-bw)	109.00	Bobwhite quail
LC50 (mg/kg-diet)	718.00	Other
NOAEL (mg/kg-bw)		Mallard duck
NOAEC (mg/kg-diet)	5.00	Mallard duck
Enter the Mineau et al. Scaling Factor	1.15	

Must Enter >>

Optional Test Organism Body weight (g)	Optional Test Species Name	Toxicity Value Reference (MRID)
22.50	14-d old Japanese Quail	

Mammalian

	Acute Study	Chronic Study
Size (g) of mammal used in toxicity study Default rat body weight is 350 grams	35	350

Endpoint	Toxicity value		Reference (MRID)
LD50 (mg/kg-bw)	321.00		
LC50 (mg/kg-diet)			
Reported Chronic Endpoint	50.00	mg/kg-diet	
Is estimated daily dose (mg/kg-bw) reported from the available chronic mammal study? (yes or no)	no		

Estimated Chronic Daily Dose Equivalent to reported Chronic Dietary Endpoint	2.5	mg/kg-bw based on standard FDA lab rat conversion

LD50 ft-2

Application Type: Rows/Band/In-furrow / Liquid

Enter data below:

Is application rate given in lbs a.i./Acre?	yes
Application rate, lbs a.i./Acre, from B10	1.00
Do not use this input	
Row spacing (in):	30.00
Bandwidth (in):	6.00
% incorporated	0.00%

Upper Bound Kenaga Residues For RQ Calculation

Chemical Name:	Acephate
Use	Cauliflower/Celery/Mint/Peppers
Formulation	0
Application Rate	1 lbs a.i./acre
Half-life	8.2 days
Application Interval	3 days
Maximum # Apps./Year	2
Length of Simulation	1 year

Acute and Chronic RQs are based on the Upper Bound Kenaga Residues.

The maximum single day residue estimation is used for both the acute and reproduction RQs.

RQs reported as "0.00" in the RQ tables below should be noted as <0.01 in your assessment. This is due to rounding and significant figure issues in Excel.

Endpoints			
Avian	Bobwhite quail	LD50 (mg/kg-bw)	109.00
	l-d old Japanese Quail	LC50 (mg/kg-diet)	718.00
	Mallard duck	NOAEL(mg/kg-bw)	0.00
	Mallard duck	NOAEC (mg/kg-diet)	5.00
Mammals		LD50 (mg/kg-bw)	321.00
		LC50 (mg/kg-diet)	0.00
		NOAEL (mg/kg-bw)	2.50
		NOAEC (mg/kg-diet)	50.00

Dietary-based EECs (ppm)	Kenaga Values
Short Grass	426.24
Tall Grass	195.36
Broadleaf plants/sm Insects	239.76
Fruits/pods/seeds/lg insects	26.64

Avian Results

Avian Class	Body Weight (g)	Ingestion (Fdry) (g bw/day)	Ingestion (Fwet) (g/day)	% body wgt consumed	FI (kg-diet/day)
Small	20	5	23	114	2.28E-02
Mid	100	13	65	65	6.49E-02
Large	1000	58	291	29	2.91E-01
Granivores	20	5	5	25	5.06E-03
	100	13	14	14	1.44E-02
	1000	58	65	6	6.46E-02

Avian Body Weight (g)	Adjusted LD50 (mg/kg-bw)
20	78.53
100	99.97
1000	141.21

Dose-based EECs	Avian Classes and Body Weights (grams)					
	small	mid	large	Granivores(grams)		
(mg/kg-bw)	20	100	1000	20	100	1000
Short Grass	485.45	276.82	123.94			
Tall Grass	222.50	126.88	56.80			
Broadleaf plants/sm Insects	273.06	155.71	69.71			
Fruits/pods/seeds/lg insects	30.34	17.30	7.75	6.74	3.84	1.72

Dose-based RQs (Dose-based EEC/adjusted LD50)	Avian Acute RQs Size Class (grams)		
	20	100	1000
Short Grass	6.18	2.77	0.88
Tall Grass	2.83	1.27	0.40
Broadleaf plants/sm insects	3.48	1.56	0.49
Fruits/pods/seeds/lg insects	0.39	0.173	0.055
Seeds (granivore)	0.086	0.038	0.0122

Dietary-based RQs (Dietary-based EEC/LC50 or NOAEC)	RQs	
	Acute	Chronic
Short Grass	0.59	85.25
Tall Grass	0.27	39.07
Broadleaf plants/sm Insects	0.33	47.95
Fruits/pods/seeds/lg insects	0.04	5.33

Note: To provide risk management with the maximum possible information, it is recommended that both the dose-based and concentration-based RQs be calculated when data are available

Mammalian Results

Mammalian Class	Body Weight	Ingestion (Fdry) (g bwt/day)	Ingestion (Fwet) (g/day)	% body wgt consumed	FI (kg-diet/day)
Herbivores/ insectivores	15	3	14	95	1.43E-02
	35	5	23	66	2.31E-02
	1000	31	153	15	1.53E-01
Grainvores	15	3	3	21	3.18E-03
	35	5	5	15	5.13E-03
	1000	31	34	3	3.40E-02

Mammalian Class	Body Weight	Adjusted LD50	Adjusted NOAEL
Herbivores/ insectivores	15	396.73	5.49
	35	321.00	4.45
	1000	138.84	1.92
Grainvores	15	396.73	5.49
	35	321.00	4.45
	1000	138.84	1.92

Dose-Based EECs (mg/kg-bw)	Mammalian Classes and Body weight					
	Herbivores/ insectivores (grams)			Granivores(grams)		
	15	35	1000	15	35	1000
Short Grass	406.39	280.87	65.12			
Tall Grass	186.26	128.73	29.85			
Broadleaf plants/sm Insects	228.59	157.99	36.63			
Fruits/pods/seeds/lg insects	25.40	17.55	4.07	5.64	3.90	0.90

Dose-based RQs (Dose-based EEC/LD50 or NOAEL)	Small mammal 15 grams		Medium mammal 35 grams		Large mammal 1000 grams	
	Acute	Chronic	Acute	Chronic	Acute	Chronic
Short Grass	1.02	73.96	0.87	63.18	0.47	33.87
Tall Grass	0.47	33.90	0.40	28.96	0.21	15.52
Broadleaf plants/sm insects	0.58	41.60	0.49	35.54	0.26	19.05
Fruits/pods/lg insects	0.06	4.62	0.05	3.95	0.03	2.12
Seeds (granivore)	0.01	1.03	0.01	0.88	0.01	0.47

Dietary-based RQs (Dietary-based EEC/LC50 or NOAEC)	Mammal RQs	
	Acute	Chronic
Short Grass	#DIV/0!	8.52
Tall Grass	#DIV/0!	3.91
Broadleaf plants/sm insects	#DIV/0!	4.80
Fruits/pods/seeds/lg insects	#DIV/0!	0.53

Note: To provide risk management with the maximum possible information, it is recommended that both the dose-based and concentration-based RQs be calculated when data are available

Mean Kenaga Residues

Chemical Name:	Acephate
Use	Cauliflower/Celery/Mint/Peppers
Formulation	0
Application Rate	1 lbs a.i./acre
Half-life	8.2 days
Application Interval	3 days
Maximum # Apps./Year	2
Length of Simulation	1 year

For Risk Description Purposes

Note that the ratio of exposure and effects endpoints are termed "RQs" in this output. Caution should be exercised in relating these values to the Agency Levels of Concern

Toxicity Endpoints			
Avian	Bobwhite quail	LD50 (mg/kg-bw)	109.00
	l-d old Japanese Quail	LC50 (mg/kg-diet)	718.00
	Mallard duck	NOAEL (mg/kg-bw)	0.00
	Mallard duck	NOAEC (mg/kg-diet)	5.00
Mammals		LD50 (mg/kg-bw)	321.00
		LC50 (mg/kg-diet)	0.00
		NOAEL (mg/kg-bw)	2.50
		NOAEC (mg/kg-diet)	50.00

Dietary-based EECs (ppm)	Kenaga Values
Short Grass	150.96
Tall Grass	63.94
Broadleaf plants/sm Insects	79.92
Fruits/pods/seeds/lg insects	12.43

Avian Results

Avian Class	Body Weight	% body wgt consumed	Adjusted LD50
Small	20	114	78.53
Mid	100	65	99.97
Large	1000	29	141.21
Grainvores	20	25	79
	100	14	100
	1000	6	141

Dose-based EEC (mg/kg-bw)	Avian Classes and Body Weights (grams)					
	small 20	mid 100	large 1000	Granivores(grams) 20	100	1000
Short Grass	171.93	98.04	43.89			
Tall Grass	72.82	41.52	18.59			
Broadleaf plants/sm Insects	91.02	51.90	23.24			
Fruits/pods/lg insects	14.16	8.07	3.61	3.15	1.79	0.80

Dose-based RQs (Dose-based EEC/LD50)	Avian Acute "RQs" Size class (grams)		
	20	100	1000
Short Grass	2.19	0.98	0.31
Tall Grass	0.93	0.42	0.13
Broadleaf plants/sm insects	1.16	0.52	0.16
Fruits/pods/lg insects	0.18	0.08	0.03
Seeds (granivore)	0.04	0.02	0.01

Dietary-based RQs (Dietary-based EEC/LC50 or NOAEC)	"RQs"	
	Acute	Chronic
Short Grass	0.21	30.19
Tall Grass	0.09	12.79
Broadleaf plants/sm Insects	0.11	15.98
Fruits/pods/lg insects	0.02	2.49

Acephate | Cauliflower/Celery/Mint/Peppers | Mean Kenaga Residues

Mammalian Results

Mammalian Class	Body Weight	% body wgt consumed	Adjusted LD50	Adjusted NOAEL
Herbivores/ insectivores	15	95	396.73	5.49
	35	66	321.00	4.45
	1000	15	138.84	1.92
Grainvores	15	21	396.73	5.49
	35	15	321.00	4.45
	1000	3	138.84	1.92

Dose-based EEC (mg/kg-bw)	Mammalian Classes and Body weight (grams)					
	Herbivores/ insectivores			Granivores		
	15	35	1000	15	35	1000
Short Grass	143.93	99.47	23.06			
Tall Grass	60.96	42.13	9.77			
Broadleaf plants/sm Insects	76.20	52.66	12.21			
Fruits/pods/seeds/lg insects	11.85	8.19	1.90	2.63	1.82	0.42

Dose-based RQs (Dose-based EEC/LD50 or NOAEL)	Small mammal 15 grams		Medium mammal 35 grams		Large mammal 1000 grams	
	Acute	Chronic	Acute	Chronic	Acute	Chronic
Short Grass	0.36	26.19	0.31	22.38	0.17	11.99
Tall Grass	0.15	11.09	0.13	9.48	0.07	5.08
Broadleaf plants/sm insects	0.19	13.87	0.16	11.85	0.09	6.35
Fruits/pods/lg insects	0.03	2.16	0.03	1.84	0.01	0.99
Seeds (granivore)	0.01	0.48	0.01	0.41	0.00	0.22

Dietary-based "RQs" (EEC/LC50 or NOAEC)	Mammal "RQs"	
	Acute	Chronic
Short Grass	#DIV/0!	3.02
Tall Grass	#DIV/0!	1.28
Broadleaf plants/sm insects	#DIV/0!	1.60
Fruits/pods/seeds/lg insects	#DIV/0!	0.25

Chemical: Acephate

LD50 ft-2

INPUTS	Do not overwrite these numbers.	
Application Rate:	1	lbs / acre
% A.I.:	100.00%	
Avian LD50 (20g):	78.53	mg/kg bw
(100g)	99.97	
(1000g)	141.21	
Mammalian LD50 (15g):	396.73	mg/kg bw
(35g)	321.00	
(1000g)	138.84	
Row Spacing:	30	inches
Bandwidth:	6	inches
Unincorporation:	100%	

Changes to the inputs must be made in the "INPUTS" worksheet.

Row/Band/In-furrow applications

Liquid

Intermediate Calculations

# rows acre-1:	83.48
row length (ft):	208.71
lb ai/1000 ft row:	0.06
bandwidth (ft):	0.50
mg ai/ft2:	52.06
exposed mg ai/ft2:	52.06

LD50 ft-2

	wgt class (grams)	
Avian	20	33.15
	100	5.21
	1000	0.37
Mammal	15	8.75
	35	4.63
	1000	0.37

N/A

Intermediate Calculations

mg a.i./1000 ft row:	N/A
bandwidth:	N/A
mg a.i./ft2:	N/A
exposed mg a.i./ft2:	N/A

N/A

	wgt class (grams)	
Avian	20	N/A
	100	N/A
	1000	N/A
Mammal	15	N/A
	35	N/A
	1000	N/A

Broadcast applications

Liquid

Intermediate Calculations

mg ai/ft2:	10.41

LD50 ft-2

	wgt class (grams)	
Avian	20	N/A
	100	N/A
	1000	N/A
Mammal	15	N/A
	35	N/A
	1000	N/A

Formulas used in the calculations are in the User's Guide

The analysis below calculates the number of granules needed to be consumed by a bird and mammal to achieve a dose that would exceed the adjusted LD50 and trigger the endangered species LOC of 0.1 and the acute LOC of 0.5. There are three inputs (blue cells): (1) weight of assessed animal (2) weight of a single granule; and (3) percent a.i. in the formulation. Weight of assessed bird and mammal is typically 20 grams (0.02 kg) and 15 grams (0.015 kg), respectively, but any weight may be entered. In addition, the minimum foraging area with sufficient number of granules to achieve a dose that exceedes the adjusted LD50, 1/2 the adjusted LD50, or 1/10th the adjusted LD50 is estimated by assuming that a bird consumes 100%, 50%, and 10% of the available granules. This analysis may be used to characterize the LD50/square foot calculation presented in the "LD50 ft-2" worksheet.

Estimation of the number of granules needed to achieve toxicity thresholds			
Step 1. Estimate mass of a.i. consumed for the assessed species weight to achieve the desired toxicity threshold			
Parameter	**Value**		**Comment**
	Bird	**Mammal**	
Weight of assessed bird (kg)	0.020	0.015	**INPUT (0.02 kg and 0.015 kg are typically used for general assessments for birds and mammals, respectively).**
Adjusted LD50, mg/kg-bw	78.53	705.50	Calculated from the body weight entered in B13 and C13 and the LD50 entered in the "Inputs" sheet.
Mg a.i. needed to achieve the adjusted LD50 for bird of assessed weight	1.57	10.58	mg a.i./kg-bw * kg-bw = mg a.i.
Mg a.i. needed to achieve acute LOC exceedance (1/2 adjusted LD50) for bird of assessed weight	0.79	5.29	
Mg a.i. needed to achieve endangered species LOC exceedance (1/10th adjusted LD50) for bird of assessed weight	0.16	1.06	
Step 2. Determine the mass of a.i. per granule			
Percent of a.i. in formulated product	15.00%	15.00%	**Must enter percent a.i. specified on the label**
Weight of 1 granule (mg, obtained from registrant)	20.00	20.00	**INPUT (Note: Be sure to enter units in mg!)**
mg a.i./granule	3.0000	3.0000	weight of granule (mg) x fraction of a.i. = mg a.i./granule
Step 3. Calculate number of granules with mass of a.i. equivalent to adjusted LD50 for bird of assessed weight			
No. of granules needed to achieve adjusted LD50	0.52	3.53	mg a.i. needed to achieve adjusted LD50 (B/C14) / mg a.i. per granule (B/C20)
No. of granules needed to achieve acute LOC exceedance (1/2 adjusted LD50)	0.26	1.76	mg a.i. needed to achieve 1/2 adjusted LD50 (B/C15) / mg a.i. per granule (B/C20)
No. of granules needed to achieve endangered species LOC exceedance (1/10 adjusted LD50)	0.05	0.35	mg a.i. needed to achieve 1/10 adjusted LD50 (B/C16) / mg a.i. per granule (B/C20)

Minimum Foraging Area Needed to Allow for Ingestion of Sufficient Mass of a.i. to Achieve LOC Exceedance			
EEC (mg a.i./square foot)	10.41	10.41	From LD50 ft-2 page
Foraging area (square feet) needed to achieve endangered species LOC exceedance assuming 100% feeding efficiency	0.02	0.10	mg a.i. needed to achieve LD50 in 20-gram bird (B/C16) / mg a.i.per sq. ft (B/C27)
Foraging area (square feet) needed to achieve endangered species LOC exceedance assuming 50% feeding efficiency	0.03	0.20	Foraging area needed to achieve LOC Exceedance assuming 100% feeding efficiency (B/C28) * 2 (i.e., twice the foraging area is needed for 50% feeding efficiency)
Foraging area (square feet) needed to achieve endangered species LOC exceedance assuming 10% feeding efficiency	0.15	1.02	Foraging area needed to achieve LOC Exceedance assuming 100% feeding efficiency (B/C28) * 10 (i.e., 10 times the foraging area is needed for 10% feeding efficiency)

Chemical:	**Acephate**			**Data inputs are in blue**	
Name of seed treatment formulation:					
Percent AI in formulation:	**100%**			**Density of product (lbs/gal):**	**8.33**
Endpoints	**Reported**	**Tested Body Weight (g)**	**Adjusted LD50**		
Avian LD50:	**109.00**	**178**	**78.53**		
Avian repro. NOAEC:	**5.00**				
Mammalian LD50:	**321.00**	**35**	**396.73**		
Mammalian NOAEC:	**50.00**				

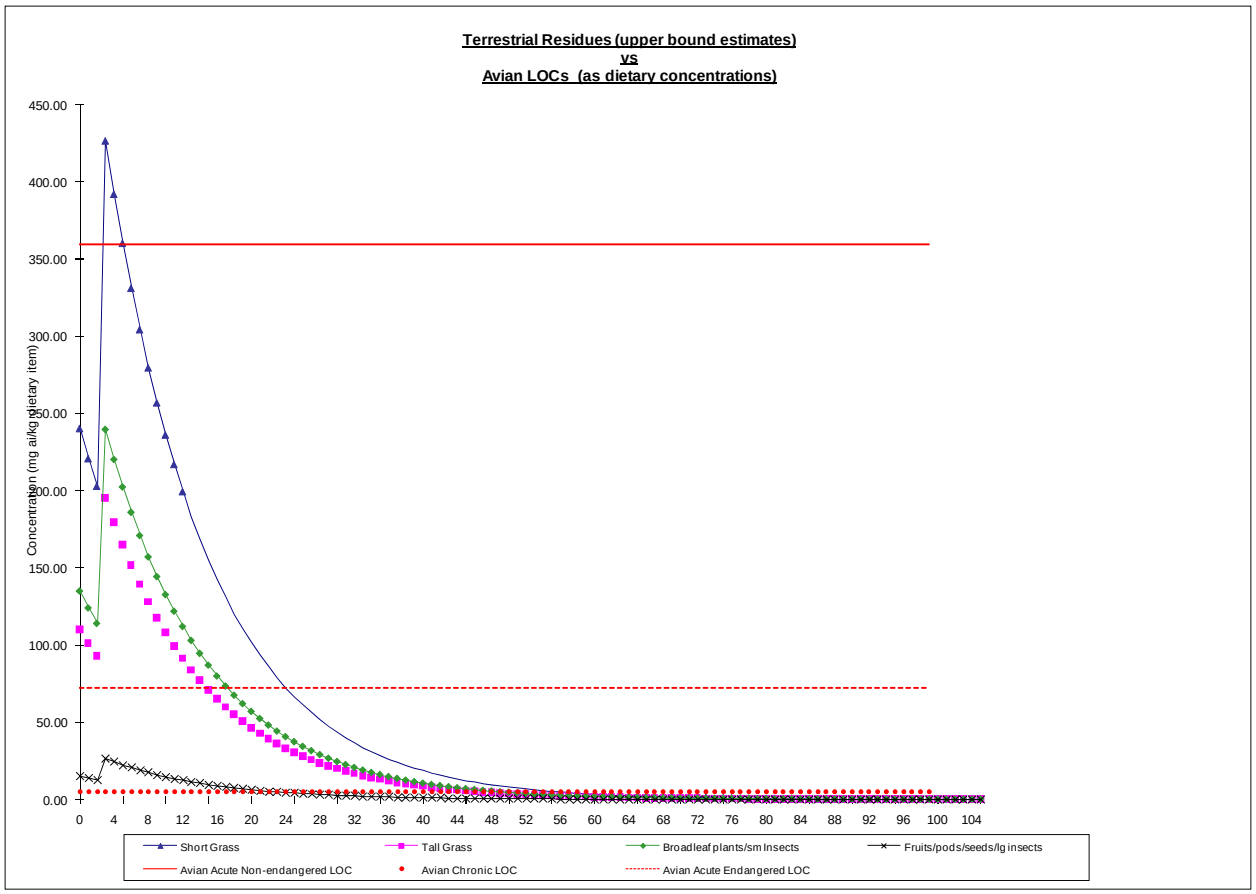
Crop	Maximum Seeding Rate (lbs/acre)	Reference	Application Rate (fl oz/cwt)	Application Rate (lbs. Ai/cwt)
Barley	**100**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
beans	**160**	http://www.ext.nodak.edu/extpubs/plantsci/rowcrops/a1133-1.htm#Planting	0	0.0000
dried beans	**160**	http://www.ext.nodak.edu/extpubs/plantsci/rowcrops/a1133-1.htm#Planting	0	0.0000
lima beans (succulent)	**100**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
snap beans	**100**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Canola	**8**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Corn	**25**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Cotton	**18.9**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.3200
Oats	**128**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Onion	**15**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
cowpeas/ blackeyed peas	**50**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Pea	**180**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
lupine	**170**	http://www.hort.purdue.edu/newcrop/afcm/lupine.html	0	0.0000
grain lupine	**170**	http://www.hort.purdue.edu/newcrop/afcm/lupine.html	0	0.0000
field peas	**225**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Peanuts	**228**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.1970
Rice	**160**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Rye	**150**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Safflower	**100**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Sorghum	**8**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Soybeans	**100**	http://www.nsrl.uiuc.edu/aboutsoy/production02.html	0	0.0000
soybeans, edible	**100**	http://www.nsrl.uiuc.edu/aboutsoy/production02.html	0	0.0000
Sugar beets	**8**	http://www.agecon.ucdavis.edu/outreach/crop/Archives/SugarBeets.pdf	0	0.0000
Triticale	**90**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000
Wheat	**135**	http://www.ipmcenters.org/cropprofiles/CP_form.cfm	0	0.0000

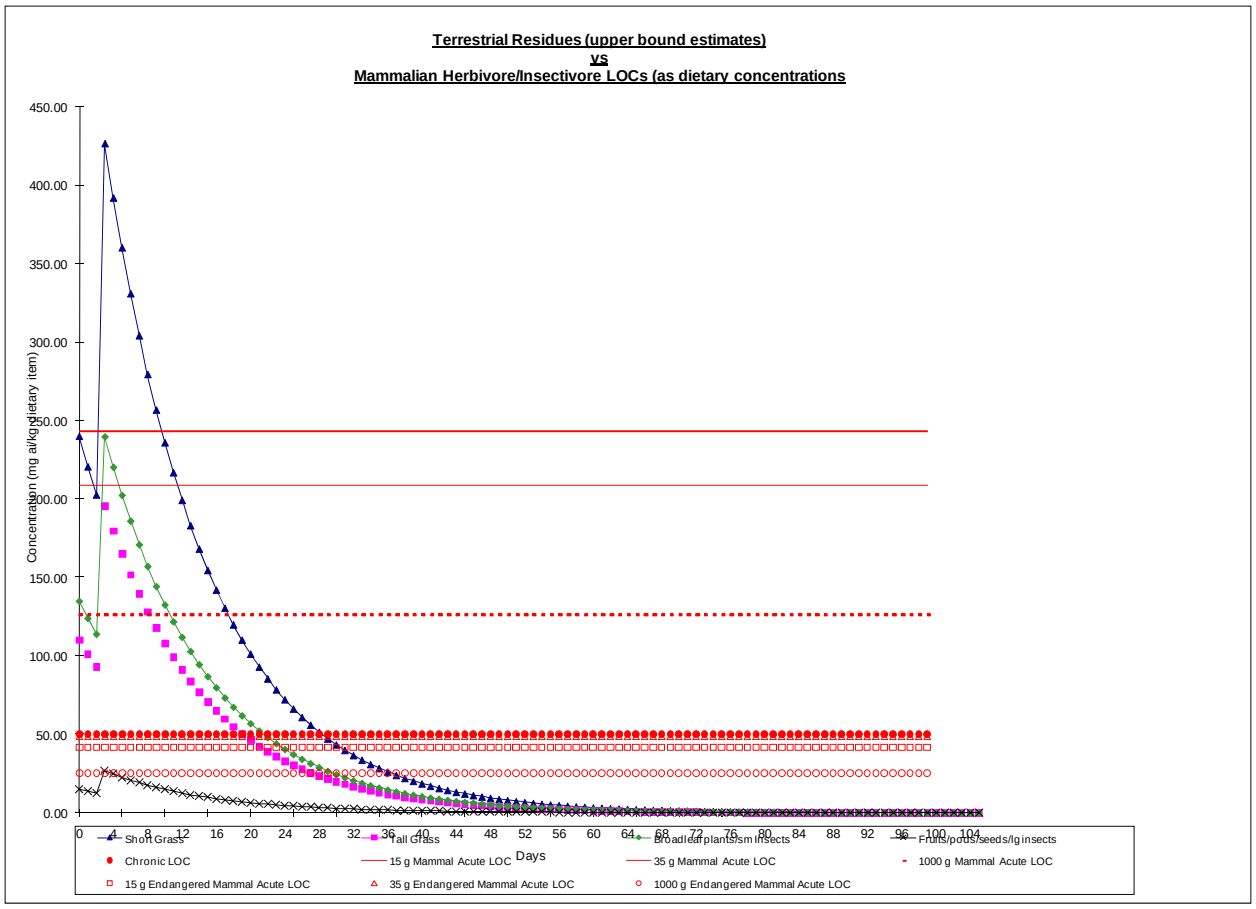
Crop	Maximum Application Rate (lbs ai/A)	Maximum Seed Application Rate (mg ai/kg seed)	Avian Nagy Dose (mg ai/kg-bw/day)	Mammalian Nagy Dose (mg ai/kg-bw/day)	Available AI (mg ai ft-2)
Barley	0.00	0.00	0.00	0.00	0.00
beans	0.00	0.00	0.00	0.00	0.00
dried beans	0.00	0.00	0.00	0.00	0.00
lima beans (succulent)	0.00	0.00	0.00	0.00	0.00
snap beans	0.00	0.00	0.00	0.00	0.00
Canola	0.00	0.00	0.00	0.00	0.00
Corn	0.00	0.00	0.00	0.00	0.00
Cotton	0.06	3200.00	809.88	677.99	0.63
Oats	0.00	0.00	0.00	0.00	0.00
Onion	0.00	0.00	0.00	0.00	0.00
cowpeas/ blackeyed peas	0.00	0.00	0.00	0.00	0.00
Pea	0.00	0.00	0.00	0.00	0.00
lupine	0.00	0.00	0.00	0.00	0.00
grain lupine	0.00	0.00	0.00	0.00	0.00
field peas	0.00	0.00	0.00	0.00	0.00
Peanuts	0.45	1970.00	498.59	417.39	4.69
Rice	0.00	0.00	0.00	0.00	0.00
Rye	0.00	0.00	0.00	0.00	0.00
Safflower	0.00	0.00	0.00	0.00	0.00
Sorghum	0.00	0.00	0.00	0.00	0.00
Soybeans	0.00	0.00	0.00	0.00	0.00
soybeans, edible	0.00	0.00	0.00	0.00	0.00
Sugar beets	0.00	0.00	0.00	0.00	0.00
Triticale	0.00	0.00	0.00	0.00	0.00
Wheat	0.00	0.00	0.00	0.00	0.00

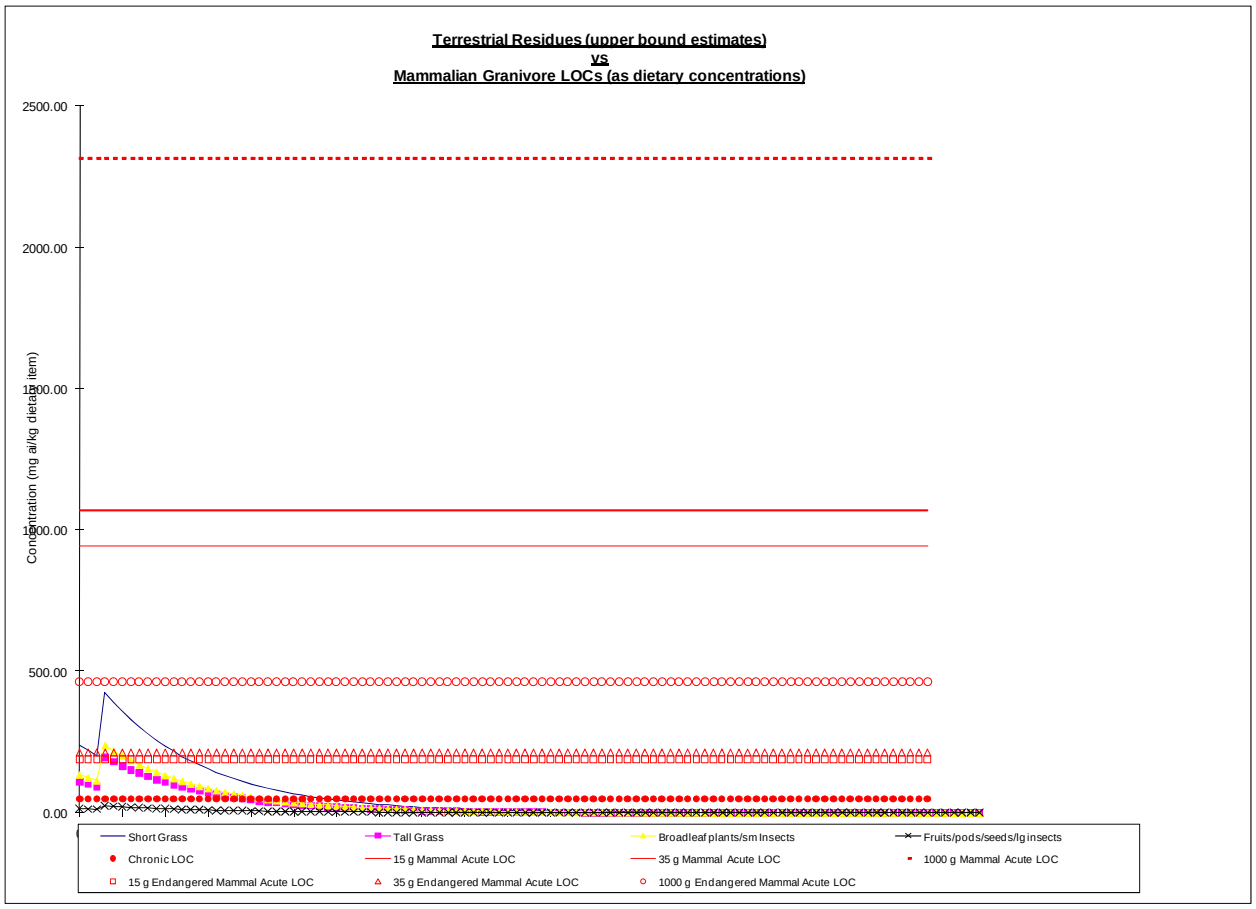
Animal	Nagy allometry Food ingestion value g/day
20 g Bird	5.061777181
15 g Mammal	3.178078065

Crop	Risk Quotients†					
	Avian (20 g)			Mammalian (15 g)		
	Acute (# 1)	Acute (# 2)	Chronic	Acute (# 1)	Acute (# 2)	Chronic
Barley	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
beans	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
dried beans	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
lima beans (succulent)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
snap beans	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Canola	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Corn	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Cotton	**10.31**	**0.40**	**640.00**	**1.71**	**0.11**	**64.00**
Oats	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Onion	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
cowpeas/ blackeyed peas	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Pea	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
lupine	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
grain lupine	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
field peas	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Peanuts	**6.35**	**2.98**	**394.00**	**1.05**	**0.79**	**39.40**
Rice	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Rye	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Safflower	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Sorghum	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Soybeans	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
soybeans, edible	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Sugar beets	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Triticale	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Wheat	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

† **Acute RQ #1 = (mg ai /kg-bw/day) / LD50**
Acute RQ #2 = mg ai ft-2 /(LD50*bw)
Chronic RQ = mg kg-1 seed / NOEC


Terrestrial Residues (upper bound estimates)
vs
Avian LOCs (as dietary concentrations)
Concentration (mg ai/kg dietary item)
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0
4
8
12
16
20
24
28
32
36
40
44
48
52
56
60
64
68
72
76
80
84
88
92
96
100
104
Short Grass
Tall Grass
Broadleaf plants/sm Insects
Fruits/pods/seeds/lg insects
Avian Acute Non-endangered LOC
Avian Chronic LOC
Avian Acute Endangered LOC


Terrestrial Residues (upper bound estimates)
vs
Mammalian Herbivore/Insectivore LOCs (as dietary concentrations
Concentration (mg ai/kg dietary item)
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0
4
8
12
16
20
24
28
32
36
40
44
48
52
56
60
64
68
72
76
80
84
88
92
96
100
104
Days
Short Grass
Tall Grass
Broadleaf plants/sm insects
Fruits/pods/seeds/lg insects
Chronic LOC
15 g Mammal Acute LOC
35 g Mammal Acute LOC
1000 g Mammal Acute LOC
15 g Endangered Mammal Acute LOC
35 g Endangered Mammal Acute LOC
1000 g Endangered Mammal Acute LOC


Terrestrial Residues (upper bound estimates)
vs
Mammalian Granivore LOCs (as dietary concentrations)
2500.00
2000.00
1500.00
1000.00
500.00
0.00
Concntration (mg ai/kg dietary item)
Short Grass
Tall Grass
Broadleaf plants/sm Insects
Fruits/pods/seeds/lg insects
Chronic LOC
15 g Mammal Acute LOC
35 g Mammal Acute LOC
1000 g Mammal Acute LOC
15 g Endangered Mammal Acute LOC
35 g Endangered Mammal Acute LOC
1000 g Endangered Mammal Acute LOC

T-HERPS

T-HERPS MODEL INPUTS	
These values will be used in the calculation of exposure estimates for foliar applications of pesticides.	
Chemical Name:	Acephate
Use:	Cauliflower/Celery/Mint/Peppers
Product name and form:	
% A.I. (leading zero must be entered for formulations <1% a.i.):	100.00%
Application Rate (lbs/A):	1
Half-life (days):	8.2
Application Interval (days):	3
Number of Applications:	2
What taxonomic group are you assessing?	Reptile
Does the assessed animal eat mammals?	Yes
Does the assessed animal eat amphibians or reptiles?	Yes
Do you know the maximum size mammal that can be consumed by the assessed species? If so, choose "yes" in cell B16 and enter the corresponding sizes in the cells that appear. Note that data for 3 size classes can be entered. If you do not have data for specific size classes, then use professional judgement regarding whether the data allow for an estimate of the maximum size animal that can be consumed.	No
Do you know the maximum size amphibian or reptiles that can be consumed by the assessed species? If so, choose "yes" in cell B18 and enter the corresponding sizes in the cells that appear. Note that data for 3 size classes can be entered. If you do not have data for specific size classes, then use professional judgement regarding whether the data allow for an estimate of the maximum size animal that can be consumed.	No

Note: Sources of wildlife diet are assumed to be available for less than one year for this model.

Toxicity Data Inputs

Avian/Terrestrial Phase Amphibian - Enter **oral exposure terrestrial phase amphibian toxicity data** if available. Otherwise, enter avian toxicity data as you would for T-REX version 1.3.1.

		Indicate test species below		Optional Test Organism Body	Optional Test Species Name
LD50 (mg/kg-bw)	109.00	Bobwhite quail	Must Enter >>		
LC50 (mg/kg-diet)	718.00	Other		22.50	14-d old Japanese Quail
NOAEL (mg/kg-bw)		Mallard duck			
NOAEC (mg/kg-diet)	5.00	Mallard duck			
Enter the Mineau et al. Scaling Factor	1				

Assessed Species Inputs

What is the body weight range of the assessed herptile (choose up to 3)? Defaults are 2 grams, 20 grams, and 200 grams for amphibians and 2 grams, 20 grams, and 800 grams.	**Small**	**2**	grams
	Medium	**20**	grams
	Large	**200**	grams

What is the water content (percent as a whole number) of the assessed **small** herptile's diet	**80%**	Enter percent in whole numbers; in the absence of data indicating otherwise, assume 80% to be consistent with T-REX. Consult U.S. EPA (1993) for appropriate alternatives if specific diet is known. If there is a difference in dietary content of different sizes of the assessed species, enter different values for each size class and provide justification. For example, small individuals may consume mainly invertebrates, while larger adults may consume vertebrates.
What is the water content (percent as a whole number) of the assessed **medium** herptile's diet	**80%**	
What is the water content (percent as a whole number) of the assessed **large** herptile's diet	**80%**	

	Small Animal	Medium	Large
What is the maximum size **mammal** that can be consumed by the assessed species? NOTE: check the literature for appropriate value to use for the assessed species and enter into Row 16 if available. Default is that amphibians can eat an animal that is 2/3 of its body weight (based on observations of the CRLF, Cook, 1997). Maximum size prey for reptiles is calculated using the following equation: BW of assessed species ^1.071 (King, 2002).	**2.10**	**24.74**	**291.34**
What is the maximum size **amphibian/reptile** that can be consumed by the assessed species? NOTE: check the literature for appropriate value to use for the assessed species and enter into Row 16 if available. Default is that amphibians can eat an animal that is 2/3 of its body weight (based on observations of the CRLF, Cook, 1997). Maximum size prey for reptiles is calculated using the following equation: BW of assessed species ^1.071 (King, 2002).	**2.10**	**24.74**	**291.34**

Upper Bound Kenaga Residues For RQ Calculation

Chemical Name:	Acephate
Use	Cauliflower/Celery/Mint/Peppers
Formulation	0
Application Rate	1 lbs a.i./acre
Half-life	8.2 days
Application Interval	3 days
Maximum # Apps./Year	2
Length of Simulation	1 year

Acute and Chronic RQs are based on the Upper Bound Kenaga Residues.

The maximum single day residue estimation is used for both the acute and reproduction RQs.

RQs reported as "0.00" in the RQ tables below should be noted as <0.01 in your assessment. This is due to rounding and significant figure issues in Excel.

Endpoints

Avian	Bobwhite quail	LD50 (mg/kg-bw)	109.00
	l-d old Japanese Quail	LC50 (mg/kg-diet)	718.00
	Mallard duck	NOAEL(mg/kg-bw)	0.00
	Mallard duck	NOAEC (mg/kg-diet)	5.00

Dietary-based EECs (ppm)	Kenaga Values
Short Grass	426.24
Tall Grass	195.36
Broadleaf plants/sm Insects	239.76
Fruits/pods/seeds/lg insects	26.64
Small herbivore mammals	957.53
Medium herbivore mammal	326.73
Large herbivore mammal	111.49
Small insectivore mammals	59.85
Medium Insectivorous mammal	20.42
Large Insectivorous mammal	6.97
Small terrestrial phase amphibians	13.17
Medium terrestrial phase amphibians	7.52
Large terrestrial phase amphibians	4.30

Terrestrial Herpetofauna Results

Weight Class	Body Weight (g)	Ingestion (Fdry) (g bw/day)	Ingestion (Fwet) (g/day)	% body wgt consumed	FI (kg-diet/day)
Small	2	0.022	0.1	5.6	1.11E-04
Mid	20	0.132	0.7	3.3	6.59E-04
Large	200	0.781	3.9	2.0	3.90E-03

Body Weight (g)	Adjusted LD50 (mg/kg-bw)
2	109.00
20	109.00
200	109.00

Dose-based EECs (mg/kg-bw)	Herpetofaunal Size Classes and Body Weights		
	small (g)	mid (g)	large (g)
	2	20	200
Short Grass	23.67	14.04	8.32
Tall Grass	10.85	6.43	3.81
Broadleaf plants/sm Insects	13.32	7.90	4.68
Fruits/pods/seeds/lg insects	1.48	0.88	0.52
Herbivore mammals	1005.83	404.17	162.41
Insectivore mammals	62.86	25.26	10.15
Reptile/Terrestrial phase amphibian	13.83	9.31	6.26

Dose-based RQs (Dose-based EEC/adjusted LD50)	Amphibian/Reptile Acute RQs for Small, Medium, and Large Species (grams)		
	2	20	200
Short Grass	0.22	0.13	0.08
Tall Grass	0.10	0.06	0.03
Broadleaf plants/sm insects	0.12	0.07	0.04
Fruits/pods/seeds/lg insects	0.01	0.01	0.00
Herbivore mammals	9.23	3.71	1.49
Insectivore mammals	0.58	0.23	0.09
Terrestrial phase amphibian	0.13	0.09	0.06

Dietary-based RQs (Dietary-based EEC/LC50 or NOAEC)	RQs	
	Acute	Chronic
Short Grass	0.59	85.25
Tall Grass	0.27	39.07
Broadleaf plants/sm Insects	0.33	47.95
Fruits/pods/seeds/lg insects	0.04	5.33
Herbivore mammals	0.46	65.35
Insectivore mammals	0.03	4.08
Terrestrial phase amphibian	0.01	1.50

Note: To provide risk management with the maximum possible information, it is recommended that both the dose-based and concentration-based RQs be calculated when data are available

Mean Kenaga Residues	
Chemical Name:	Acephate
Use	Cauliflower/Celery/Mint/Peppers
Formulation	0
Application Rate	1 lbs a.i./acre
Half-life	8.2 days
Application Interval	3 days
Maximum # Apps./Year	2
Length of Simulation	1 year

For Risk Description Purposes

Note that the ratio of exposure and effects endpoints are termed "RQs" in this output. Caution should be exercised in relating these values to the Agency Levels of Concern

Endpoints			
Avian	Bobwhite quail	LD50 (mg/kg-bw)	109.00
	4-d old Japanese Quail	LC50 (mg/kg-diet)	718.00
	Mallard duck	NOAEL (mg/kg-bw)	0.00
	Mallard duck	NOAEC (mg/kg-diet)	5.00

Dietary-based EECs (ppm)	Kenaga Values
Short Grass	150.96
Tall Grass	63.94
Broadleaf plants/sm Insects	79.92
Fruits/pods/seeds/lg insects	12.43
Small herbivore mammals	339.12
Medium herbivore mammals	115.72
Large herbivore mammals	39.49
Small insectivore mammals	27.93
Medium insectivore mammals	9.53
Large insectivore mammals	3.25
Small terrestrial phase amphibians	4.39
Medium terrestrial phase amphibians	2.51
Large terrestrial phase amphibians	1.43

Terrestrial Herpetofauna Results

Weight Class	Body Weight	% body wgt consumed	Adjusted LD50
Small	2	5.6	109.00
Mid	20	3.3	109.00
Large	200	2.0	109.00

Dose-based EEC (mg/kg-bw)	Herpetofaunal Size Classes and Body Weights		
	small (g)	mid (g)	large (g)
	2	20	200
Short Grass	8.38	4.97	2.95
Tall Grass	3.55	2.11	1.25
Broadleaf plants/sm Insects	4.44	2.63	1.56
Fruits/pods/lg insects	0.69	0.41	0.24
Herbivore mammals	356.23	143.14	57.52
Insectivore mammals	29.34	11.79	4.74
Terrestrial phase amphibians	4.61	3.10	2.09

Dose-based RQs (Dose-based EEC/LD50)	Amphibian/Reptile Acute RQs for Small, Medium, and Large Species (grams)		
	small	mid	large
Short Grass	0.08	0.05	0.03
Tall Grass	0.03	0.02	0.01
Broadleaf plants/sm insects	0.04	0.02	0.01
Fruits/pods/lg insects	0.01	0.00	0.00
Herbivore mammals	3.27	1.31	0.53
Insectivore mammals	0.27	0.11	0.04
Terrestrial phase amphibian	0.04	0.03	0.02

Dietary-based RQs (Dietary-based EEC/LC50 or	RQs	
	Acute	Chronic
Short Grass	0.21	30.19
Tall Grass	0.09	12.79
Broadleaf plants/sm Insects	0.11	15.98
Fruits/pods/lg insects	0.02	2.49
Herbivore mammals	0.16	23.14
Insectivore mammals	0.01	1.91
Terrestrial phase amphibian	0.00	0.50

Mammal and Terrestrial Phase Amphibian Prey Exposure Calculations

The purpose of this spreadsheet is to derive daily doses of small food mammals and amphibians, which may serve a prey items of the assessed species. No additional inputs are needed to run this page. All inputs should be entered i the "inputs" sheet. For the California Red Legged Frog assessment, body weights of a common prey species (pacific tree frog) were used. Results of this page (cells in blue circles) are entered into the "upper bound Kenaga" and "mean Kenaga" worksheets automatically. Note that some cells appear blank. This is to allow for an evaluation of additiona size prey items in future versions if that need arises.

Daily doses are derived using methodology currently used byT-REX version 1.3.1. Daily doses are in units of mg/kg- T-HERPS calculates the mass of pesticide potentially consumed (mg/kg-bw x kg bw = mg pesticide) and uses the ma as the basis for the dose based EEC for the assessed herptile. See the User's Guide for a discussion of uncertainties related to this calculation. It is assumed that amphibian prey items are eating small insects. Mammalian prey item E calculations assume that prey mammals are consuming short grass and large insects (two EECs) to give a range of EECs.

Dietary-based EECs (ppm)	Upper Bound Kenaga Values	Mean Kenaga Values
Short Grass	426.24	150.96
Tall Grass	195.36	63.94
Broadleaf plants/sm Insects	239.76	79.92
Fruits/pods/seeds/lg insects	26.64	12.43

Derivation of Dietary EECs for Terrestrial Amphibians or Reptiles that Eat Mammals

Mammalian Class	Body Weight	Ingestion (Fdry) (g bwt/day)	Ingestion (Fwet) (g/day)	% body wgt consumed	FI (kg-diet/day)
	2.100889088	1	5	225	4.72E-03
Herbivores/	24.7402	4	19	77	1.90E-02
insectivores	291.34	15	76	26	7.62E-02

Upper Bound Kenaga Dose-Based EECs (mg/kg-bw)	Mammalian Classes and Body weight - Upper Bound Kenega: Herbivores/ insectivores Size Class (g) 2.10	24.74	291.34	Granivores 2.100889088	24.74	291.34
Short Grass	957.53	326.73	111.49			
Tall Grass						
Broadleaf plants/sm Insects						
Fruits/pods/seeds/lg insects	59.85	20.42	6.97			

Mean Kenaga Dose-Based EECs	Mammalian Classes and Body weight - Mean Kenega: Herbivores/ insectivores Weight Class (g) 2.10	24.74	291.34	Granivores 15 g	35 g	1000 g
Short Grass	339.12	115.72	39.49			
Tall Grass						
Broadleaf plants/sm Insects						
Fruits/pods/seeds/lg insects	27.93	9.53	3.25			

Derivation of Dietary EECs for Amphibians or Reptiles that Eat Amphibians or Reptiles

Frog Class	Body Weight (g)	Ingestion (Fdry) (g/day)	Ingestion (Fwet) (g/day)	% body wgt consumed	FI (kg-diet/day)
Small	2.1	0.023	0.115	5.5	1.15E-04
Mid	24.7	0.155	0.776	3.1	7.76E-04
Large	291.3	1.045	5.223	1.8	5.22E-03

Upper Bound Kenaga Dose-based EECs (mg/kg-bw)	Herpetofaunal Size Class / Body Weight		
	small (g)	mid (g)	large (g)
	2.10	24.74	291.34
Short Grass			
Tall Grass			
Broadleaf plants/sm Insects	13.1676	7.5230	4.2981
Fruits/pods/seeds/lg insects			

Mean Kenaga Dose-based EECs	Herepetofaunal Size Class / Body Weight		
	small (g)	mid (g)	large (g)
	2.10	24.74	291.34
Short Grass			
Tall Grass			
Broadleaf plants/sm Insects	4.3892	2.5077	1.4327
Fruits/pods/seeds/lg insects			