

**RESEARCH REPORT TO:**

THE AGRICULTURAL RESEARCH FOUNDATION FOR 2009

TITLE: VegNet Regional Pest Monitoring Program

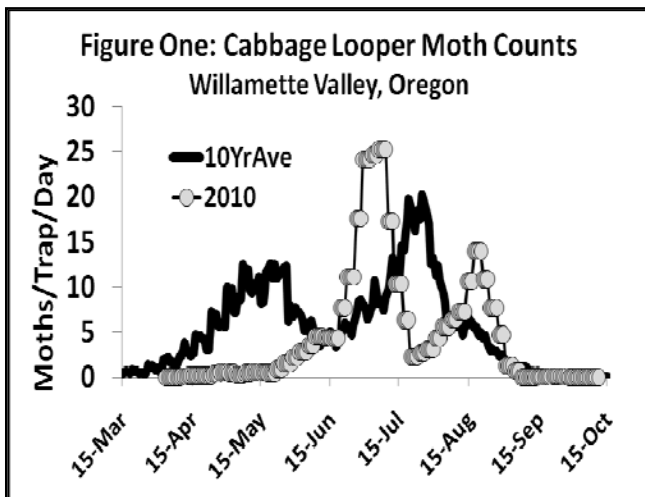
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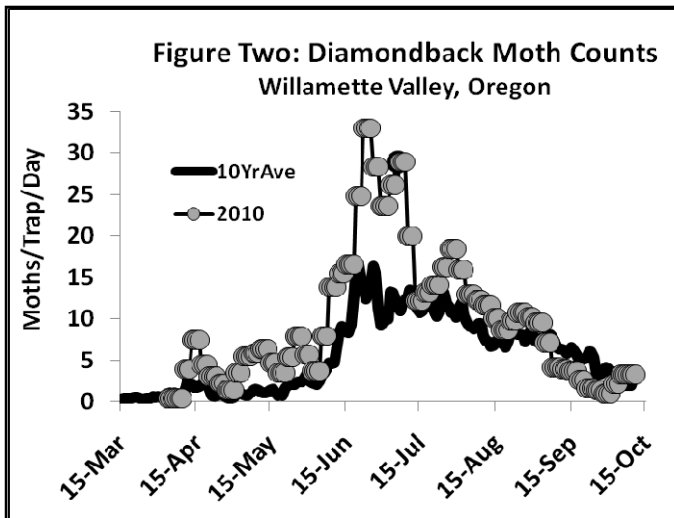
This Report is also submitted to the Oregon Processed Vegetable Commission Broccoli and Cauliflower, Corn and Bean Research Committees.

**Introduction ~ Regional Pest Monitoring**

VegNet is a regional pest monitoring and reporting network serving the Oregon processed vegetable industry, managed by the OSU Extension Service, and funded by the Oregon Processed Vegetable Commission. In the early spring of 2010, thirty six insect monitoring stations were established on cooperating farms located strategically throughout the Willamette Basin and maintained during the growing season.



Farms were monitored with pheromone traps for adult insects (cabbage looper, cabbage white butterfly, diamondback moth, Bertha armyworm, black cutworm, corn ear worm, 12 spot beetles, and variegated cutworm). Selected broccoli and cauliflower fields were scouted for the immature stages of the lepidopteron pests and the cabbage aphid. Insect samples from were collected during the growing season from cooperating processors to determine which insect contaminants were intercepted by quality assurance programs.



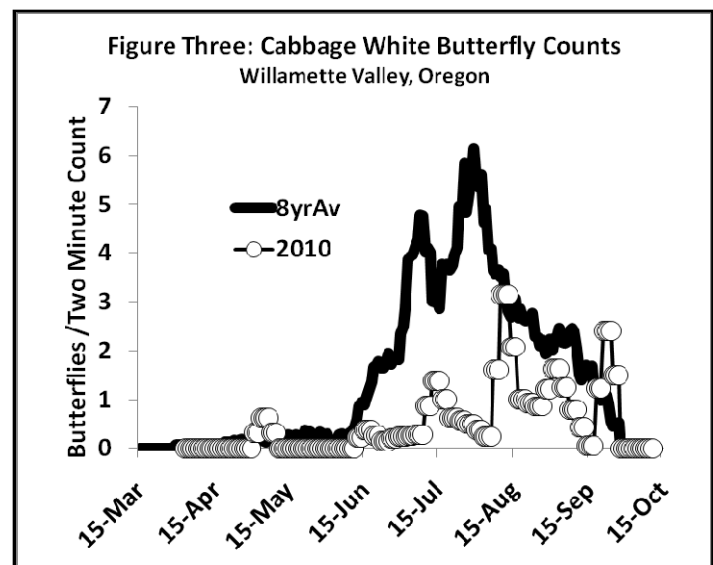
Twelve VegNet newsletters were distributed to three hundred and twenty (320) growers and agricultural professionals. VegNet narratives emphasize that pest control decisions are made on the basis of field-specific scouting results. Regional pest trends serve as an “early warning” system which signals (high or low) when field-specific scouting efforts should be intensified. The goals of the VegNet Regional Pest Monitoring and Reporting System are:

- 1) to save growers money by providing them with advanced notice of population outbreaks for key vegetable pests in broccoli, cauliflower, snap beans, and sweet corn
- 2) to demonstrate the commitment by the Oregon Processed Vegetable industry toward the use of integrated pest management strategies to protect crops and the quality of the environment

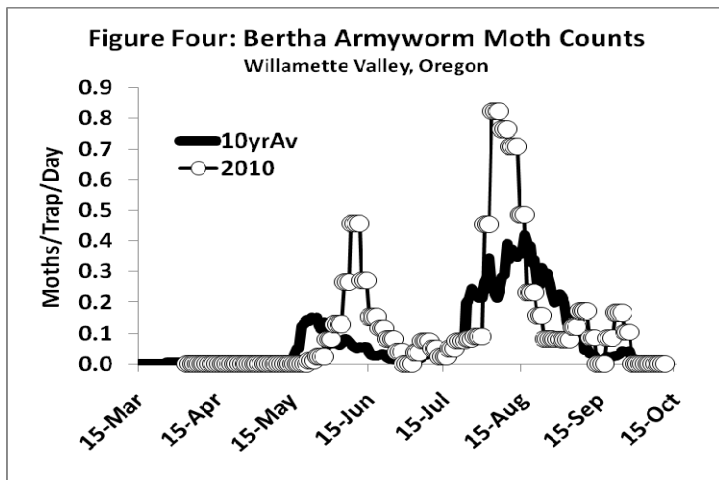
## Results Part One ~ Broccoli and Cauliflower Pests

Four Lepidopteron insects and one aphid species damage and contaminate broccoli and cauliflower: diamondback moth (*Plutella xylostella*), cabbage white butterfly (*Pieris rapae*), Bertha armyworm (*Mamestra campestra*), cabbage loopers (*Trichoplusia ni*), and the cabbage aphid (*Brevicorynae brassicae*).

Field scouting plus regional pest monitoring generally do not lead to no-spray decisions because the probability of all five contaminating insect populations reaching low levels during the same growing season is very low. Regional pest monitoring does lead to reduced number of insecticide applications.



The 2010 growing season was a good example of reduced insecticide applications. Due to the cool, wet spring, insect population development was delayed by about a



month (Figure One). Cabbage looper moth counts were normal in terms of intensity. The delayed population development explains, in part, the failure of the looper population to progress from eggs to pupae and contaminate broccoli and cauliflower.

The diamondback moth counts were slightly above average during the 2010 growing season (Figure Two). The cabbage white butterfly counts

were significantly below normal in 2010 (Figure Three). The cabbage white butterfly population development was delayed by about a month. Bertha armyworm counts were a little above average, but it was not an outbreak year and bertha armyworm did not show up as contaminates in broccoli or cauliflower (Figure Four).

Field scouting on a cooperating farm confirmed what we saw in terms of moth counts. We found plenty of looper eggs but very few looper worms (Table One to Five). The primary insect contaminate encountered during field scouting were cabbage aphids and the diamondback moth.

Table One: Dever-Conner Broccoli Planting One ~ **Field Scouting Results**<sup>1)</sup>

Date (week of)	Wk	Activity	%Aph <sup>2)</sup>	DBM %WP <sup>3)</sup>	DBM Larvae <sup>4)</sup>		DBM Pupa	Looper Eggs	Looper Larvae <sup>5)</sup>	
					Sm	Lg			Sm	Lg
April 17	0	Planting								
		Chlorpyrifos								
July 3		Bifenthrin/ Imacloprid								
		Scout ~ Leaf <sup>6)</sup>								
July 9		Sprayed	0%	0%	0	0	1	1	0	0
		Unsprayed	0%	8%	1	4	2	2	0	0

- 1) At harvest, no broccoli from this field was rejected due to insect contamination.
- 2) %Aph = % leaves contaminated with cabbage aphids
- 3) %WP = % leaves with feeding holes ("window panes") caused by diamondback moth (DBM). Window panes are an indication of egg laying activity by DBM.
- 4) Small (2<sup>nd</sup> or 3<sup>rd</sup> instar) and large (4<sup>th</sup> instar) diamondback moth (DBM)
- 5) Small (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> instar) and large (4<sup>th</sup> and 5<sup>th</sup> instar) cabbage looper.
- 6) Flowers ("buttons") 1-1.5 centimeter in diameter.
- 7) Ten sets of ten leaves (100 total) were examined for insect contamination.

**Table Two: Dever-Conner Broccoli Planting Two ~ Field Scouting Results<sup>1)</sup>**

Date (week of)	Wk	Activity	%Aph <sup>2)</sup>	DBM %WP <sup>3)</sup>	DBM Larvae <sup>4)</sup>		DBM Pupa	Looper Eggs	Looper Larvae <sup>5)</sup>	
					Sm	Lg			Sm	Lg
April 24		Planting								
		Chlorpyrifos								
July 9		Scout ~ Leaf <sup>6)</sup>	1%	4%	2	2	2	0	0	0
July 9		Bifenthrin/ Imacloprid								
July 14		Scout ~ Leaf <sup>6)</sup>								
		Sprayed	1%	2%	0	0	3	0	0	0
		Unsprayed	0%	7%	0	0	4	0	0	0

- 1) At harvest, no broccoli from this filed was rejected due to insect contamination.
- 2) %Aph = % leaves contaminated with cabbage aphids
- 3) %WP = % leaves with feeding holes ("window panes") caused by diamondback moth (DBM). Window panes are an indication of egg laying activity by DBM.
- 4) Small (2<sup>nd</sup> or 3<sup>rd</sup> instar) and large (4<sup>th</sup> instar) diamondback moth (DBM)
- 5) Small (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> instar) and large (4<sup>th</sup> and 5<sup>th</sup> instar) cabbage looper.
- 6) Flowers ("buttons") 1-1.5 centimeter in diameter.
- 7) Ten sets of ten leaves (100 total) were examined for insect contamination.

**Table Three: Dever-Conner Broccoli Planting Three ~ Field Scouting Results<sup>1)</sup>**

Date (week of)	Wk	Activity	%Aph <sup>2)</sup>	DBM %WP <sup>3)</sup>	DBM Larvae <sup>4)</sup>		DBM Pupa	Looper Eggs	Looper Larvae <sup>5)</sup>	
					Sm	Lg			Sm	Lg
May 12		Planting								
		Chlorpyrifos								
July 19		Scout ~ Leaf <sup>6)</sup>	0%	6%	0	2	1	0	0	0
July 24		Bifenthrin/ Imacloprid								
July 30		Scout ~ Leaf <sup>6)</sup>								
		Sprayed	0%	1%	0	0	0	0	0	0
		Unsprayed	0%	2%	0	0	0	0	0	0

- 1) At harvest, no broccoli from this filed was rejected due to insect contamination.
- 2) %Aph = % leaves contaminated with cabbage aphids
- 3) %WP = % leaves with feeding holes ("window panes") caused by diamondback moth (DBM). Window panes are an indication of egg laying activity by DBM.
- 4) Small (2<sup>nd</sup> or 3<sup>rd</sup> instar) and large (4<sup>th</sup> instar) diamondback moth (DBM)
- 5) Small (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> instar) and large (4<sup>th</sup> and 5<sup>th</sup> instar) cabbage looper.
- 6) Flowers ("buttons") 1-1.5 centimeter in diameter. Ten sets of ten leaves (100 total) were examined for insect contamination.

**Table Four: Dever-Conner Broccoli Planting Four ~ Field Scouting Results<sup>1)</sup>**

Date (week of)	Wk	Activity	%Aph <sup>2)</sup>	DBM %WP <sup>3)</sup>	DBM Larvae <sup>4)</sup>		DBM Pupa	Looper Eggs	Looper Larvae <sup>5)</sup>	
					Sm	Lg			Sm	Lg
May 19		Planting								
		Chlorpyrifos								
July 28		Scout ~ Leaf <sup>6)</sup>	3%	19%	3	2	1	0	0	0
July 28		Bifenthrin/ Imacloprid								
Aug 4		Scout ~ Leaf	0%	7%	0	0	3	1	0	0
Aug 11		Scout ~ Leaf	0%	1%	0	0	1	0	0	1

- 1) At harvest, no broccoli from this filed was rejected due to insect contamination.
- 2) %Aph = % leaves contaminated with cabbage aphids
- 3) %WP = % leaves with feeding holes (“window panes”) caused by diamondback moth (DBM). Window panes are an indication of egg laying activity by DBM.
- 4) Small (2<sup>nd</sup> or 3<sup>rd</sup> instar) and large (4<sup>th</sup> instar) diamondback moth (DBM)
- 5) Small (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> instar) and large (4<sup>th</sup> and 5<sup>th</sup> instar) cabbage looper.
- 6) Flowers (“buttons”) 1-1.5 centimeter in diameter. Ten sets of ten leaves (100 total) were examined for insect contamination.

**Table Five: Dever-Conner Broccoli Planting Five ~ Field Scouting Results<sup>1)</sup>**

Date (week of)	Wk	Activity	%Aph <sup>2)</sup>	DBM %WP <sup>3)</sup>	DBM Larvae <sup>4)</sup>		DBM Pupa	Looper Eggs	Looper Larvae <sup>5)</sup>	
					Sm	Lg			Sm	Lg
May 30		Planting								
		Chlorpyrifos								
Aug 4		Scout ~ Leaf <sup>6)</sup>	1%	24%	1	4	10	1	0	0
Aug 5		Bifenthrin/ Imacloprid								
Aug 11		Scout ~ Leaf	0%	0%	0	0	1	0	0	0
Aug 24		Scout ~ Leaf	0%	0%	0	0	3	0	0	0

- 1) At harvest, no broccoli from this filed was rejected due to insect contamination.
- 2) %Aph = % leaves contaminated with cabbage aphids
- 3) %WP = % leaves with feeding holes (“window panes”) caused by diamondback moth (DBM). Window panes are an indication of egg laying activity by DBM.
- 4) Small (2<sup>nd</sup> or 3<sup>rd</sup> instar) and large (4<sup>th</sup> instar) diamondback moth (DBM)
- 5) Small (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> instar) and large (4<sup>th</sup> and 5<sup>th</sup> instar) cabbage looper.
- 6) Flowers (“buttons”) 1-1.5 centimeter in diameter. Ten sets of ten leaves (100 total) were examined for insect contamination.

**Table Six: Dever-Conner Broccoli Planting One ~ Small Plot Harvest Results<sup>1)</sup>**

Date	Activity	Ave Head Count	Ave Weight (lbs)	%Aphid Head <sup>2)</sup>	DBM Larvae <sup>3)</sup>		DBM Pupa	Looper Larvae <sup>4)</sup>	
					Sm	Lg		Sm	Lg
April 17	Planting								
	Chlorpyrifos								
June 24	Bifenthrin/ Imacloprid								
	Harvest								
July 14	Sprayed	19	8	0%	0	0	0	0	0
	Unsprayed	23	9	0%	0	3	0	0	0

1) All harvestable heads were taken from 25 row feet per plot. Heads for each plot were counted, weighed, and carefully examined for insect contaminants.  
 2) %Aph = % heads contaminated with cabbage aphids  
 3) Small (2<sup>nd</sup> or 3<sup>rd</sup> instar) and large (4<sup>th</sup> instar) diamondback moth (DBM)  
 4) Small (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> instar) and large (4<sup>th</sup> and 5<sup>th</sup> instar) cabbage looper.

**Table Seven: Dever-Conner Broccoli Planting Two ~ Small Plot Harvest Results<sup>1)</sup>**

Treatment July 12th	Treatment July 16th	Ave Head Count	Ave Weight (lbs)	%Aphid Head <sup>2)</sup>	DBM Larvae <sup>3)</sup>		DBM Pupa <sup>4)</sup>	Looper Larvae <sup>5)</sup>	
					Sm	Lg		Sm	Lg
Untreated	Untreated	23	8	0%	0	0	2	0	1
Bifenthrin/ Imacloprid	Untreated	22	8	0%	0	0	0	0	0
Bifenthrin/ Imacloprid	Permethrin	19	8	0%	0	0	0	0	0
Bifenthrin/ Imacloprid	L-cyhalothrin	23	8	0%	0	0	2	0	0
Untreated	Permethrin	21	7	0%	0	0	0	0	0
Untreated	L-cyhalothrin	19	10	0%	0	0	1	0	0
Bifenthrin	Untreated	21	9	0%	0	0	1	0	0
Imacloprid	Untreated	23	9	0%	0	0	2	0	0

1) Broccoli was seeded and Lorsban15G was banded over the seed row on April 24, 2010. Insecticide treatments were applied using a CO<sub>2</sub> pressurized backpack sprayer on July 12<sup>th</sup> and July 16<sup>th</sup>. At harvest, all harvestable heads were taken from 25 row feet per plot. Heads from each plot were separately counted, weighed, and examined for insect contaminants.  
 2) %Aph = % heads contaminated with cabbage aphids  
 3) Small (2<sup>nd</sup> or 3<sup>rd</sup> instar) and large (4<sup>th</sup> instar) diamondback moth (DBM), four plots combined.  
 4) Diamondback moth pupa, four plots combined.  
 5) Small (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> instar) and large (4<sup>th</sup> and 5<sup>th</sup> instar) cabbage looper, four plots combined.

Table Eight: Dever-Conner Broccoli Planting Three ~ **Small Plot Harvest Results**<sup>1)</sup>

Treatment July 12th	Treatment July 16th	Ave Head Count	Ave Weight (lbs)	%Aphid Head <sup>2)</sup>	DBM Larvae <sup>3)</sup>		DBM Pupa <sup>4)</sup>	Looper Larvae <sup>5)</sup>	
					Sm	Lg		Sm	Lg
Untreated	Untreated	23	10	2%	0	0	2	0	0
Bifenthrin/ Imacloprid	Untreated	23	11	2%	0	0	0	0	0
Bifenthrin/ Imacloprid	Permethrin	20	9	0%	0	0	0	0	0
Bifenthrin/ Imacloprid	L-cyhalothrin	21	9	1%	0	0	0	0	0
Untreated	Permethrin	22	9	1%	0	0	1	0	0
Untreated	L-cyhalothrin	23	11	0%	0	0	1	0	0
Bifenthrin	Untreated	22	9	0%	0	0	0	0	0
Imacloprid	Untreated	23	10	0%	0	0	0	0	1

- 1) Broccoli was seeded and Lorsban15G was banded over the seed row on April 24, 2010. Insecticide treatments were applied using a CO<sub>2</sub> pressurized backpack sprayer on July 12<sup>th</sup> and July 16<sup>th</sup>. At harvest, all harvestable heads were taken from 25 row feet per plot. Heads from each plot were separately counted, weighed, and examined for insect contaminants.
- 2) %Aph = % heads contaminated with cabbage aphids
- 3) Small (2<sup>nd</sup> or 3<sup>rd</sup> instar) & large (4<sup>th</sup> instar) diamondback moth (DBM) found in four plots combined.
- 4) DBM pupae found in all four plots combined.
- 5) Small (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> instar) and large (4<sup>th</sup> and 5<sup>th</sup> instar) cabbage loopers in four plots combined.

Small plot trials confirmed the results of the regional moth counts and the field scouting (Tables Six to Eight). Very few looper contaminants were found in harvested broccoli. The threat of cabbage aphid plus diamondback moth pupae justified the single insecticide clean up spray. The data from field scouting is useful for future reference. These data represent low levels of insect pressure indicating an opportunity to reduce the number of insecticide applications with limited risk of insect contamination at harvest. Finally, the results from cooperating processors confirm that 2010 was a low pressure year.

During the 2010 growing season, many broccoli and cauliflower planting required only a single clean up spray. During the entire growing season, only six samples of insect contaminated broccoli were intercepted by quality assurance (Table Nine). No broccoli or cauliflower was rejected during the 2010 growing season due to insect contamination (Table Ten).

**Table Nine: Regional Looper Moth Counts  
Willamette Valley, Oregon 1998-2010**

	<b>Looper Pressure</b>	<b>1st Flight High M/T/D<sup>1)</sup></b>	<b>2nd Flight High M/T/D<sup>1)</sup></b>	<b>#QA Samples</b>	<b>%Loopers</b>
<b>1998</b>	<b>moderate</b>	<b>4</b>	<b>31</b>	<b>1261</b>	<b>68%</b>
<b>1999</b>	<b>low</b>	<b>0.1</b>	<b>1</b>	<b>9</b>	<b>11%</b>
<b>2000</b>	<b>low</b>	<b>3</b>	<b>5</b>	<b>389</b>	<b>21%</b>
<b>2001</b>	<b>high</b>	<b>42</b>	<b>35</b>	<b>76</b>	<b>99%</b>
<b>2002</b>	<b>low</b>	<b>1</b>	<b>2</b>	<b>94</b>	<b>20%</b>
<b>2003</b>	<b>high</b>	<b>33</b>	<b>50</b>	<b>94</b>	<b>45%</b>
<b>2004</b>	<b>moderate</b>	<b>4</b>	<b>16</b>	<b>103</b>	<b>73%</b>
<b>2005</b>	<b>high</b>	<b>79</b>	<b>49</b>	<b>554</b>	<b>95%</b>
<b>2006</b>	<b>low</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>
<b>2007</b>	<b>low</b>	<b>8</b>	<b>11</b>	<b>12</b>	<b>69%</b>
<b>2008</b>	<b>high</b>	<b>47</b>	<b>10</b>	<b>na</b>	<b>na</b>
<b>2009</b>	<b>high</b>	<b>24</b>	<b>42</b>	<b>38</b>	<b>87%</b>
<b>2010</b>	<b>moderate</b>	<b>25</b>	<b>14</b>	<b>6</b>	<b>95%</b>

1) Moths/trap/day averaged across all stations.

**Table Ten: Broccoli Loses Due to Looper Contamination  
Willamette Valley, Oregon 1998 to 2009**

<b>Year</b>	<b>Moth Counts</b>	<b>Totes<sup>1)</sup> Rejected</b>	<b>Losses Adjusted<sup>2)</sup> by Volume (\$/5,000Tons)</b>
<b>1998</b>	<b>moderate</b>	<b>313</b>	<b>\$18,537</b>
<b>1999</b>	<b>low</b>	<b>0</b>	<b>\$0</b>
<b>2000</b>	<b>low</b>	<b>20</b>	<b>\$1,848</b>
<b>2001</b>	<b>high</b>	<b>63</b>	<b>\$8,043</b>
<b>2002</b>	<b>low</b>	<b>0</b>	<b>\$0</b>
<b>2003</b>	<b>high</b>	<b>0</b>	<b>\$0</b>
<b>2004</b>	<b>moderate</b>	<b>24</b>	<b>\$2,297</b>
<b>2005</b>	<b>high</b>	<b>235</b>	<b>\$17,938</b>
<b>2006</b>	<b>low</b>	<b>0</b>	<b>\$0</b>
<b>2007</b>	<b>low</b>	<b>0</b>	<b>\$0</b>
<b>2008</b>	<b>high</b>	<b>0</b>	<b>\$0</b>
<b>2009</b>	<b>high</b>	<b>0</b>	<b>\$0</b>
<b>2010</b>	<b>moderate</b>	<b>0</b>	<b>\$0</b>

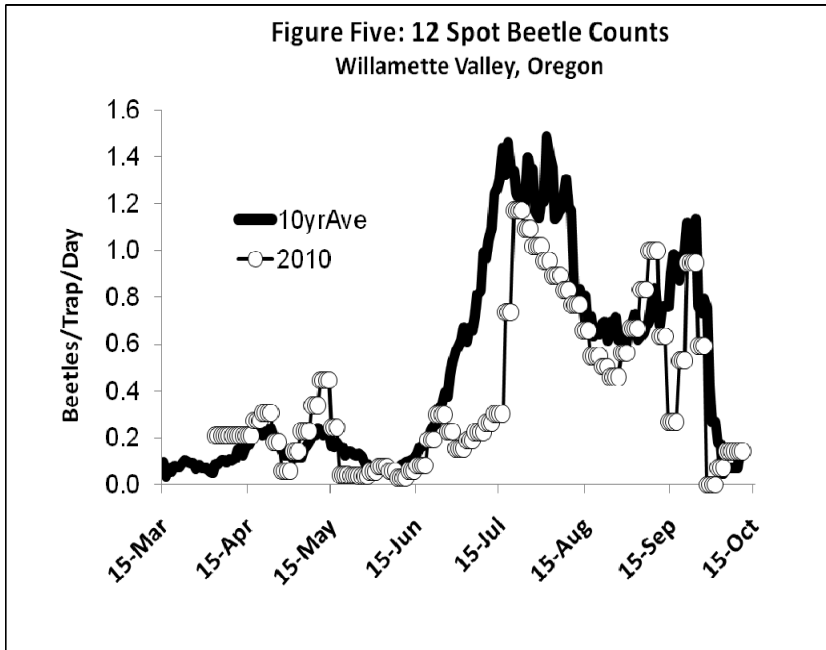
1) Totes of broccoli rejected due to Cabbage looper contamination.

2) Dollar losses per ton of broccoli, average raw-product prices.



## Results Part Two ~ Snap Bean Pests

Twelve spot beetle populations were normal compared to the longer term average during the 2010 growing season.



From the graph, one can see the three key events in the life cycle of the 12 spot beetle, the early spring activity, the first and the second summer generation flights. The period from mid May to mid July is generally a low risk period for snap beans in bloom. A significant portion of the snap bean crop flower during this period.

Growers can take advantage of a sustained period of low

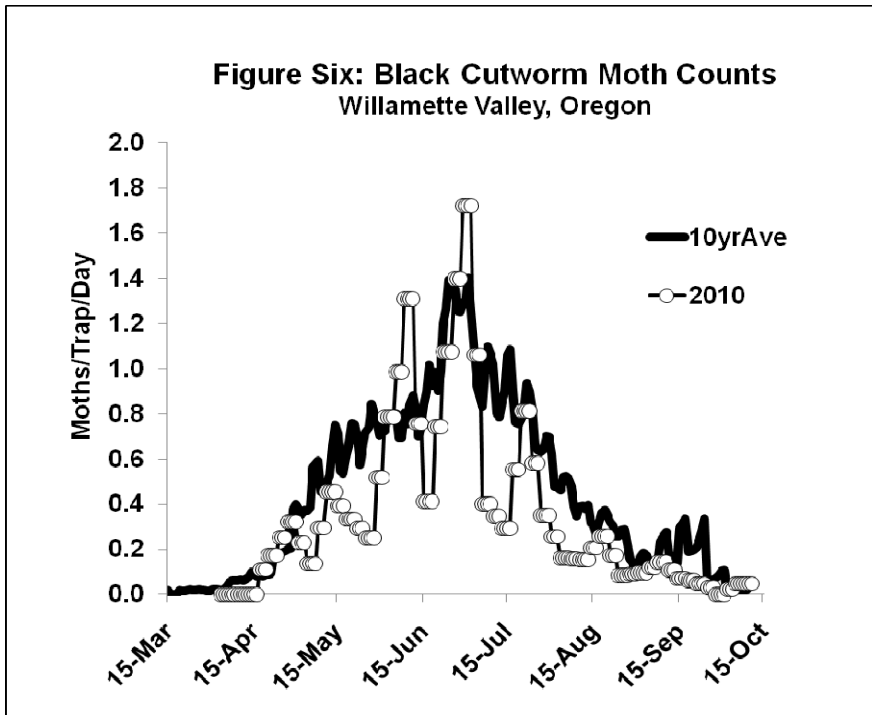
beetle pressure during the early flower period to reduce insecticide sprays based on sweep net sampling and an action threshold of 2 to 4 beetles per ten arcs of the sweep net.

The combination of regional population trend reporting plus field scouting creates a double safe decision making environment. If there are not beetles in the field where one is sweep net sampling, and there are not beetles in the surrounding landscape, it is safe to skip an insecticide spray. No loads of beans were rejected due to bug bite in 2010.

## Results Part Three ~ Sweet Corn Pests

Black cutworm outbreaks occur about once per decade. Cutworms are hard to detect in the field because early cutworm instars are small, gray-brown in color, and subterranean. Significant cutworm moth egg laying flights, on the other hand, are easy to detect.

The last major Willamette Valley black cutworm outbreak occurred in 1997. Based on historical trends, we are due for another black cutworm outbreak in the near future. Black cutworm moth counts on a valley wide basis were average during the 2010



vegetable planting season. We did not pick up the late flight that damage grass seed plantings. We had already begun to take down trapping stations when this occurred.

The black cutworm moth egg laying flight was delayed due to the cold wet conditions in the early spring.

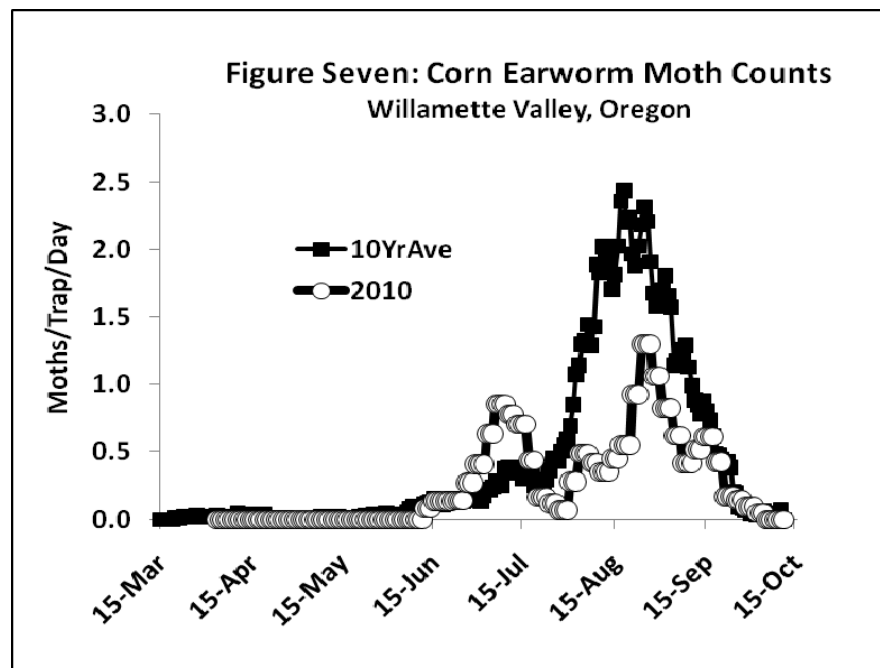
Relatively late in the growing season there was a significant egg laying event in the south end of the Willamette Valley.

In late August, sweet corn plantings were well established and well beyond the vulnerable stage for black cutworm damage. There were no vegetables to attach, so the cutworm eggs were deposited in seedling annual ryegrass plantings.

Damage to young grass seed plantings was significant and worse on plantings along the riparian areas.

Corn earworm moth counts were average or below average on a regional basis during 2010 (Figure Seven).

Even in a low pressure year, fresh market growers will need to apply insecticide sprays at first silk.



## Conclusion

The VegNet regional pest monitoring program sponsored by the Oregon Processed Vegetable Commission has been fruitful.

- The program has, on occasion, saved growers money by providing growers and agricultural professionals with early warnings of insect pest outbreaks.
- The combination of regional pest monitoring plus field scouting has allowed growers, in some cases, to reduce insecticide applications without significantly increasing risk of crop damage.
- Processors have taken advantage of this integrated pest management program in their stewardship marketing campaigns.
- This may have helped Oregon processors maintain market shares with national brokers of processed food who are aggressively looking for ways to protect and enhance their brand image.
- Every year is different. Every year, we learn something new.

It takes many years to accumulate the data that characterizes what is high, low, or normal for a specific insect population in a specific region.

The VegNet Newsletter, which is widely circulated in the Willamette Basin serves as a platform for dealing with new issues that arise during the growing season (Appendix A).

At the end of this report, we have listed the long term averages for ten insect populations. The numbers represent normal population trends for the ten populations in the Willamette Valley (See Appendix B).

VegNet is an insect pest monitoring program funded by the Oregon Processed Vegetable Commission and managed by OSU Extension. To add or remove your name from this email, contact Dan McGrath, (503) 931-8307; [daniel.mcgrath@oregonstate.edu](mailto:daniel.mcgrath@oregonstate.edu)

## **Bertha Army Worm**

(*Mamestra configurata*)

Bertha moth counts are normal for this time of year and increasing. The second summer generation has begun. We are picking up a few moths in the Mt. Angel area. It is too early to see how intense the second flight will be.

## **Black Cutworm**

(*Agrotis ipsilon*)

Moth counts are normal for this time of year, and a little higher in the south end of the valley.

## **Cabbage White Butterfly**

(*Pieris rapae*)

The number of white Cabbage Butterflies continues to be remarkably low so far this year. Cabbage white butterfly larvae are referred to by many growers as “green worms”. They are uncommon this year.

## **12 Spot Beetles**

(*Diabrotica undecimpunctata*)

On a regional basis, the above ground 12 spot beetle count moderately high and rising. Judging risk of bug bite is more complex now.

The best time to use a sweep net to sample beetles is in the morning. On a hot, sunny afternoon, beetles move low in the bean plant canopy. If you sweep in the afternoon, it is possible to sweep right over their heads and get a “false zero.”

The best place to use a sweep net in a bean field is on the edge of the field. This is true regardless of what is on the edge, even bare dirt. Beetles collect in higher densities on the edge of the bean fields. If you sample the edges, you will have a higher and in this sense, a more conservative sample. This is a good thing.

If you are going to base your spray decision in beans on a sweep net action threshold of 2-4 beetles per ten arcs of the sweep net at first blossom, plan to sweep a second time 5-7 days later. There are significant numbers of beetles in the landscape. They can invade bean fields after the first sweep net sampling. Be careful.

## **Diamondback Moth**

(*Plutella xylostella*)

Diamondback moth pressure continues to be slightly above average. Look for “window pane” holes in the leaves. These are a sign of early instar diamondback larvae. The most common contaminates in unsprayed checks in the early and mid season broccoli harvests were diamondback moth pupa and cabbage aphid. Make your spray decision for diamondback moth and cabbage aphid at early button stage in broccoli.

## **Cabbage Looper**

(*Trichoplusia ni*)

Cabbage looper pressure never added up to much this year. Looper eggs and larvae were highly regulated by weather, disease, and natural enemies. Alfalfa looper counts are above average. Alfalfa looper is sometimes a pest in mint. It generally does infest broccoli and cauliflower.

## VEGNET 2010

### Week of Aug 2, 2010 Willamette Valley, Oregon

	Aurora	Dayton	MtAngel	Salem	Dever	Corvallis	Lebanon	Stayton
BCW	0.00	0.14	0.00	0.14	0.80	0.14	1.57	0.00
CEW	0.00	0.00	0.14	0.29	0.00	0.14	0.00	0.00
PHX	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12S-YST	0.57	0.00	0.43	1.29	1.00	1.00	1.43	2.43
12S-SN	na	na	6.00	1.00	na	5.00	na	na
CL	2.29	1.43	10.14	3.86	1.80	0.00	3.00	2.00
AL	1.43	13.00	9.29	3.14	8.00	0.00	5.29	2.60
DBM	26.43	12.71	19.57	17.00	29.00	18.57	4.00	20.20
BAW	0.57	0.00	0.14	0.00	0.00	0.00	0.00	0.00
VCW	0.00	0.29	1.00	0.00	0.00	0.00	0.00	0.20
CWB/2min	0.00	2.00	1.00	1.00	0.00	0.00	0.00	0.00

### Willamette Valley 7day Ave Week of Aug 2nd

Insects	5-Yr			Note
	Ave.	2009	2010	
BCW	0.54	0.34	0.35	Normal risk
CEW	1.13	0.91	0.07	Normal risk
PHX	0.09	0.04	0.05	Normal risk
12S-YST	0.97	3.48	1.02	See Narrative
12S-SN	na	4.55	4.00	See Narrative
CL	9.53	37.40	3.06	Normal risk
AL	0.25	0.11	5.34	Above Ave
DBM	9.09	15.13	18.44	Above Ave
BAW	na	0.18	0.09	See Narrative
VCW	1.35	1.33	0.19	Normal risk
CWB/2min	7.26	2.83	0.50	Low Risk

## VegNet Key

BCW = Black Cutworm Moths  
 PHX = False Corn Earworm Moths  
 CL = Cabbage Looper Moths  
 DBM = Diamondback Moths  
 VCW = Varigated Cutworm Moths  
 YST = Yellow Sticky Trap Counts  
 na = not available

CEW = Corn Earworm Moths  
 12S = 12 Spot Beetle  
 AL = Alfalfa Looper Moths  
 BAW = Bertha Armyworm Moths  
 CWB/2min = Cabbage Butterflies  
 SN = Sweep Net Counts/10 Arcs

## Appendix B ~ VegNet Species Averages 2010

	BCW	CEW	PHX	12S	CL	AL	DBM	BAW	VCW	CWB
Date	10yrAv	10YrAv	9YrAv	10yrAv	10YrAv	10yrAv	10YrAv	10yrAv	10yrAv	8yrAv
15-Mar	0.02	0.00	0.00	0.09	0.47	0.21	0.35	0.00	0.87	0.0
16-Mar	0.00	0.00	0.00	0.04	0.65	0.25	0.46	0.00	1.14	0.0
17-Mar	0.00	0.00	0.00	0.07	0.60	0.23	0.43	0.00	1.09	0.0
18-Mar	0.00	0.00	0.00	0.06	0.47	0.20	0.40	0.00	1.25	0.0
19-Mar	0.02	0.00	0.00	0.08	0.82	0.27	0.46	0.00	1.69	0.0
20-Mar	0.02	0.01	0.01	0.07	0.71	0.27	0.54	0.00	1.48	0.0
21-Mar	0.02	0.01	0.01	0.07	0.71	0.27	0.54	0.00	1.48	0.0
22-Mar	0.02	0.02	0.00	0.09	0.46	0.22	0.48	0.00	1.14	0.0
23-Mar	0.02	0.02	0.01	0.10	0.54	0.20	0.42	0.00	1.25	0.0
24-Mar	0.02	0.02	0.01	0.10	0.43	0.20	0.37	0.00	1.56	0.0
25-Mar	0.02	0.02	0.01	0.09	0.44	0.21	0.38	0.00	1.63	0.0
26-Mar	0.02	0.01	0.01	0.09	1.34	0.23	0.43	0.01	1.98	0.0
27-Mar	0.02	0.03	0.00	0.07	1.13	0.28	0.43	0.01	1.66	0.0
28-Mar	0.02	0.03	0.00	0.08	1.24	0.34	0.60	0.01	1.49	0.0
29-Mar	0.02	0.03	0.00	0.07	0.90	0.30	0.53	0.01	1.01	0.0
30-Mar	0.02	0.02	0.00	0.07	0.97	0.96	0.68	0.01	1.15	0.1
31-Mar	0.02	0.02	0.00	0.07	0.76	0.77	0.56	0.00	1.51	0.1
1-Apr	0.02	0.02	0.00	0.06	0.80	0.80	0.58	0.00	1.54	0.1
2-Apr	0.02	0.01	0.00	0.05	1.99	0.75	0.59	0.00	1.56	0.1
3-Apr	0.02	0.03	0.05	0.09	1.99	0.90	0.59	0.00	1.39	0.0
4-Apr	0.02	0.03	0.05	0.09	2.19	0.86	1.06	0.00	1.41	0.0
5-Apr	0.04	0.03	0.05	0.10	1.62	0.89	0.99	0.00	1.04	0.0
6-Apr	0.05	0.02	0.05	0.10	1.60	1.09	1.05	0.00	1.16	0.0
7-Apr	0.06	0.02	0.05	0.09	1.37	0.93	0.83	0.00	1.33	0.0
8-Apr	0.06	0.02	0.05	0.11	1.51	1.09	0.86	0.00	1.47	0.0
9-Apr	0.06	0.02	0.05	0.10	2.29	0.77	0.75	0.00	1.38	0.0
10-Apr	0.06	0.04	0.07	0.11	2.36	1.15	1.27	0.00	1.20	0.0
11-Apr	0.06	0.04	0.06	0.15	3.79	1.28	2.26	0.00	1.35	0.0
12-Apr	0.07	0.04	0.05	0.15	2.79	1.40	2.11	0.00	1.35	0.0
13-Apr	0.08	0.03	0.02	0.13	2.77	1.38	2.19	0.00	1.36	0.1
14-Apr	0.10	0.03	0.03	0.16	2.39	1.33	1.70	0.00	1.60	0.1
15-Apr	0.09	0.03	0.03	0.17	2.63	1.80	1.77	0.00	1.73	0.1
16-Apr	0.08	0.03	0.03	0.19	4.69	1.68	1.89	0.00	1.77	0.1
17-Apr	0.09	0.04	0.06	0.22	4.65	1.98	2.17	0.00	1.64	0.1
18-Apr	0.08	0.04	0.06	0.23	4.63	1.92	2.19	0.00	1.71	0.1
19-Apr	0.09	0.04	0.05	0.23	4.30	1.84	2.08	0.00	1.73	0.1
20-Apr	0.09	0.01	0.05	0.21	4.22	1.57	1.65	0.00	1.76	0.1
21-Apr	0.09	0.02	0.04	0.22	3.09	1.48	0.71	0.00	1.72	0.1
22-Apr	0.17	0.02	0.05	0.23	3.10	1.26	0.65	0.00	1.62	0.1
23-Apr	0.18	0.02	0.05	0.24	7.28	1.29	0.73	0.00	1.66	0.2
24-Apr	0.17	0.01	0.08	0.21	6.92	1.33	0.82	0.00	1.36	0.1

## Appendix B ~ VegNet Species Averages 2010

	BCW	CEW	PHX	12S	CL	AL	DBM	BAW	VCW	CWB
Date	10yrAv	10YrAv	9YrAv	10yrAv	10YrAv	10yrAv	10YrAv	10yrAv	10yrAv	8yrAv
25-Apr	0.18	0.01	0.08	0.19	7.00	1.05	0.87	0.00	1.37	0.2
26-Apr	0.19	0.01	0.07	0.18	5.75	1.07	0.78	0.00	1.46	0.2
27-Apr	0.20	0.00	0.04	0.15	5.75	0.89	0.54	0.00	1.52	0.2
28-Apr	0.21	0.00	0.04	0.13	5.98	0.93	0.46	0.00	1.66	0.2
29-Apr	0.38	0.00	0.05	0.13	5.63	0.86	0.40	0.00	1.67	0.1
30-Apr	0.40	0.00	0.05	0.14	10.01	0.96	0.50	0.00	1.74	0.2
1-May	0.38	0.01	0.07	0.11	9.13	1.00	0.89	0.00	1.46	0.2
2-May	0.35	0.01	0.06	0.11	9.82	1.06	1.02	0.00	1.60	0.2
3-May	0.37	0.01	0.06	0.12	7.25	1.01	0.92	0.00	1.80	0.2
4-May	0.37	0.00	0.02	0.11	7.22	0.97	0.90	0.00	1.98	0.2
5-May	0.38	0.01	0.09	0.16	8.83	1.16	0.79	0.00	2.60	0.1
6-May	0.56	0.01	0.10	0.17	8.67	1.14	0.71	0.00	2.40	0.1
7-May	0.58	0.01	0.12	0.18	12.52	1.23	1.06	0.00	2.39	0.2
8-May	0.59	0.02	0.14	0.20	11.57	1.76	1.41	0.00	2.00	0.1
9-May	0.45	0.02	0.13	0.21	11.95	1.90	1.54	0.00	2.01	0.2
10-May	0.45	0.02	0.32	0.24	9.72	1.75	1.38	0.00	2.09	0.2
11-May	0.50	0.02	0.33	0.22	9.43	1.72	1.15	0.00	2.45	0.2
12-May	0.53	0.02	0.33	0.21	10.28	1.92	1.07	0.00	2.86	0.2
13-May	0.66	0.02	0.38	0.22	9.75	2.00	1.04	0.00	2.63	0.2
14-May	0.75	0.02	0.44	0.23	11.07	2.11	1.17	0.00	2.56	0.2
15-May	0.71	0.02	0.35	0.17	8.26	1.93	1.42	0.00	1.74	0.3
16-May	0.55	0.02	0.34	0.16	8.36	2.01	1.54	0.03	1.82	0.3
17-May	0.54	0.02	0.35	0.18	11.56	1.84	1.16	0.05	2.91	0.3
18-May	0.60	0.00	0.37	0.16	11.88	1.28	0.79	0.05	3.19	0.3
19-May	0.67	0.01	0.44	0.16	12.60	1.32	0.83	0.12	3.56	0.3
20-May	0.76	0.01	0.24	0.13	10.98	1.30	0.78	0.13	3.33	0.2
21-May	0.75	0.02	0.28	0.14	12.50	1.27	1.62	0.14	3.14	0.2
22-May	0.70	0.02	0.24	0.14	10.95	1.40	1.99	0.14	2.56	0.4
23-May	0.57	0.03	0.27	0.13	11.40	1.30	2.26	0.15	2.62	0.4
24-May	0.65	0.03	0.26	0.13	11.56	1.27	2.10	0.15	2.82	0.3
25-May	0.72	0.03	0.26	0.13	12.11	1.22	2.08	0.15	3.27	0.3
26-May	0.74	0.03	0.36	0.12	12.28	1.21	2.35	0.12	3.79	0.3
27-May	0.84	0.04	0.35	0.09	6.14	1.20	2.41	0.11	2.79	0.3
28-May	0.80	0.04	0.35	0.09	7.90	1.05	2.41	0.13	3.27	0.3
29-May	0.77	0.04	0.22	0.07	6.69	1.16	3.00	0.06	2.52	0.3
30-May	0.70	0.05	0.22	0.07	7.69	1.21	3.47	0.06	2.64	0.3
31-May	0.72	0.03	0.21	0.06	7.26	1.18	2.51	0.07	2.87	0.3
1-Jun	0.72	0.04	0.21	0.06	7.18	0.75	2.33	0.07	3.21	0.1
2-Jun	0.78	0.03	0.18	0.07	6.47	0.72	2.23	0.06	4.55	0.1
3-Jun	0.78	0.04	0.18	0.07	5.29	0.68	2.10	0.06	4.14	0.1
4-Jun	0.77	0.04	0.21	0.06	5.93	0.56	2.51	0.07	3.92	0.2

## Appendix B ~ VegNet Species Averages 2010

	BCW	CEW	PHX	12S	CL	AL	DBM	BAW	VCW	CWB
Date	10yrAv	10YrAv	9YrAv	10yrAv	10YrAv	10yrAv	10YrAv	10yrAv	10yrAv	8yrAv
5-Jun	0.80	0.04	0.07	0.07	5.13	0.55	3.21	0.08	3.16	0.3
6-Jun	0.69	0.06	0.06	0.08	6.25	0.55	3.50	0.08	3.14	0.3
7-Jun	0.69	0.08	0.06	0.07	5.34	0.49	4.02	0.07	3.85	0.2
8-Jun	0.80	0.10	0.06	0.07	4.62	0.22	4.69	0.06	4.78	0.2
9-Jun	0.75	0.10	0.06	0.09	3.92	0.21	4.58	0.06	5.40	0.3
10-Jun	0.84	0.09	0.07	0.09	3.53	0.23	4.69	0.05	5.18	0.3
11-Jun	0.88	0.09	0.08	0.10	4.06	0.23	6.15	0.05	4.94	0.4
12-Jun	0.82	0.11	0.14	0.10	4.23	0.37	8.22	0.05	3.61	0.6
13-Jun	0.70	0.12	0.13	0.11	4.69	0.40	9.05	0.06	3.77	0.9
14-Jun	0.75	0.13	0.12	0.11	5.02	0.38	8.46	0.06	4.45	0.9
15-Jun	0.84	0.15	0.12	0.13	4.94	0.33	8.86	0.04	5.05	0.9
16-Jun	0.90	0.14	0.13	0.16	4.24	0.31	8.27	0.03	5.97	1.0
17-Jun	1.02	0.13	0.15	0.16	3.35	0.36	9.28	0.03	5.37	1.2
18-Jun	0.92	0.11	0.17	0.18	4.30	0.36	12.80	0.03	5.03	1.4
19-Jun	0.98	0.12	0.31	0.19	4.77	0.47	15.48	0.03	4.18	1.7
20-Jun	0.90	0.13	0.30	0.23	5.20	0.48	16.57	0.03	4.24	1.7
21-Jun	0.99	0.16	0.27	0.25	5.97	0.42	14.72	0.03	4.51	1.8
22-Jun	1.20	0.15	0.21	0.26	5.66	0.29	13.84	0.02	5.06	1.6
23-Jun	1.26	0.15	0.21	0.33	5.57	0.26	12.42	0.02	5.62	1.6
24-Jun	1.40	0.14	0.24	0.34	4.68	0.40	13.59	0.02	5.42	1.8
25-Jun	1.33	0.13	0.26	0.39	6.10	0.42	13.97	0.01	5.12	1.9
26-Jun	1.35	0.14	0.30	0.38	7.18	0.61	16.30	0.01	4.34	1.7
27-Jun	1.26	0.14	0.29	0.47	8.39	0.60	15.59	0.01	3.95	1.8
28-Jun	1.25	0.16	0.25	0.52	8.61	0.56	11.33	0.02	4.11	1.9
29-Jun	1.30	0.15	0.12	0.57	8.16	0.50	9.20	0.01	4.52	1.8
30-Jun	1.28	0.14	0.12	0.59	7.50	0.47	9.49	0.01	5.19	2.4
1-Jul	1.40	0.14	0.13	0.62	6.39	0.55	9.99	0.01	4.89	2.5
2-Jul	1.26	0.17	0.15	0.67	7.01	0.58	10.00	0.01	4.58	2.9
3-Jul	1.11	0.22	0.19	0.61	8.08	0.75	13.31	0.02	3.47	3.9
4-Jul	0.92	0.22	0.18	0.67	10.68	0.60	13.18	0.01	2.97	3.9
5-Jul	0.88	0.24	0.15	0.66	9.38	0.55	12.18	0.02	3.00	4.0
6-Jul	0.83	0.28	0.10	0.72	8.13	0.36	11.58	0.02	2.93	4.1
7-Jul	0.99	0.26	0.11	0.81	8.39	0.33	10.92	0.03	5.23	4.3
8-Jul	1.10	0.25	0.12	0.83	7.44	0.46	11.74	0.03	5.06	4.8
9-Jul	1.06	0.37	0.13	0.99	8.86	0.45	12.27	0.04	4.74	4.8
10-Jul	1.02	0.38	0.12	0.97	9.62	0.82	12.64	0.04	4.00	4.0
11-Jul	0.80	0.38	0.12	1.04	11.33	0.79	13.48	0.04	3.97	4.1
12-Jul	0.79	0.35	0.11	1.10	13.19	0.70	13.16	0.04	4.04	4.0
13-Jul	0.85	0.34	0.05	1.24	12.40	0.62	11.99	0.04	4.44	3.0
14-Jul	0.90	0.35	0.09	1.27	11.87	0.66	11.16	0.04	4.52	3.0
15-Jul	1.06	0.30	0.11	1.30	11.31	0.90	10.73	0.04	4.19	3.0



## Appendix B ~ VegNet Species Averages 2010

	BCW	CEW	PHX	12S	CL	AL	DBM	BAW	VCW	CWB
Date	10yrAv	10YrAv	9YrAv	10yrAv	10YrAv	10yrAv	10YrAv	10yrAv	10yrAv	8yrAv
16-Jul	1.09	0.30	0.12	1.44	14.46	0.91	10.94	0.04	3.89	2.9
17-Jul	0.90	0.31	0.12	1.32	14.16	1.15	12.38	0.04	1.34	3.8
18-Jul	0.76	0.34	0.12	1.46	16.27	1.07	12.44	0.04	1.39	3.7
19-Jul	0.76	0.25	0.11	1.34	19.70	1.01	11.54	0.07	1.38	3.8
20-Jul	0.78	0.25	0.10	1.34	18.97	0.64	11.81	0.07	1.36	3.7
21-Jul	0.82	0.29	0.10	1.24	18.18	0.66	10.70	0.07	1.39	3.7
22-Jul	0.93	0.27	0.11	1.22	16.25	1.03	10.31	0.08	0.97	4.0
23-Jul	0.90	0.29	0.13	1.24	18.51	1.07	11.01	0.07	0.91	4.1
24-Jul	0.82	0.36	0.08	1.19	17.55	1.33	12.23	0.20	0.90	5.0
25-Jul	0.66	0.45	0.08	1.40	20.17	1.18	13.16	0.21	1.03	4.8
26-Jul	0.64	0.43	0.07	1.35	19.49	1.15	11.83	0.24	1.05	5.8
27-Jul	0.63	0.43	0.06	1.35	18.40	0.94	11.37	0.23	0.95	4.8
28-Jul	0.64	0.50	0.07	1.16	17.01	0.89	10.69	0.22	1.01	5.2
29-Jul	0.70	0.55	0.08	1.14	12.57	0.96	10.83	0.21	0.98	5.7
30-Jul	0.70	0.59	0.09	1.22	13.22	0.96	10.15	0.21	0.86	6.1
31-Jul	0.62	0.69	0.09	1.21	11.36	1.03	11.28	0.27	1.00	5.4
1-Aug	0.48	0.84	0.09	1.49	12.27	0.78	11.94	0.29	1.10	5.3
2-Aug	0.48	1.07	0.08	1.40	10.56	0.77	10.43	0.34	1.12	5.6
3-Aug	0.46	1.14	0.15	1.36	9.66	0.41	9.63	0.24	1.39	4.6
4-Aug	0.52	1.29	0.19	1.14	8.32	0.38	9.06	0.23	1.28	4.9
5-Aug	0.52	1.32	0.21	1.15	5.86	0.38	9.13	0.21	1.26	4.1
6-Aug	0.51	1.44	0.23	1.18	6.21	0.41	8.81	0.23	1.15	4.1
7-Aug	0.48	1.29	0.20	1.23	5.31	0.50	9.13	0.28	1.02	3.6
8-Aug	0.39	1.43	0.20	1.31	5.63	0.49	9.47	0.29	1.06	3.6
9-Aug	0.35	1.89	0.17	1.19	5.78	0.51	9.41	0.39	1.10	3.6
10-Aug	0.39	1.83	0.17	1.17	5.60	0.33	8.01	0.34	1.21	3.5
11-Aug	0.39	2.02	0.22	0.80	5.74	0.25	7.37	0.37	1.33	3.6
12-Aug	0.38	1.92	0.25	0.77	4.74	0.22	7.24	0.36	1.33	3.1
13-Aug	0.40	1.95	0.20	0.84	5.81	0.23	6.68	0.35	0.80	2.8
14-Aug	0.31	1.70	0.12	0.79	5.86	0.28	6.80	0.36	0.81	2.7
15-Aug	0.31	1.81	0.11	0.80	6.40	0.28	7.38	0.36	0.84	2.8
16-Aug	0.27	2.03	0.10	0.68	5.95	0.31	7.09	0.42	0.94	3.1
17-Aug	0.32	2.36	0.10	0.72	5.57	0.22	7.17	0.39	1.10	2.7
18-Aug	0.36	2.44	0.11	0.63	5.49	0.17	6.85	0.38	0.99	2.9
19-Aug	0.37	2.20	0.13	0.66	4.71	0.14	6.57	0.33	1.01	2.6
20-Aug	0.35	2.24	0.15	0.64	4.95	0.15	7.33	0.34	0.64	2.6
21-Aug	0.32	1.97	0.05	0.69	4.32	0.16	8.27	0.26	0.47	2.7
22-Aug	0.30	1.88	0.05	0.69	4.60	0.18	8.34	0.26	0.49	2.6
23-Aug	0.26	2.02	0.04	0.62	3.71	0.18	8.23	0.31	0.51	2.8
24-Aug	0.26	2.18	0.04	0.69	3.01	0.13	8.15	0.29	0.59	2.3
25-Aug	0.28	2.32	0.04	0.69	3.08	0.21	8.07	0.29	0.57	2.3

## Appendix B ~ VegNet Species Averages 2010

	BCW	CEW	PHX	12S	CL	AL	DBM	BAW	VCW	CWB
Date	10yrAv	10YrAv	9YrAv	10yrAv	10YrAv	10yrAv	10YrAv	10yrAv	10yrAv	8yrAv
26-Aug	0.29	2.21	0.05	0.71	2.91	0.18	8.05	0.26	0.49	2.1
27-Aug	0.22	1.91	0.06	0.62	2.87	0.18	7.22	0.23	0.29	2.2
28-Aug	0.16	1.68	0.01	0.63	2.35	0.21	7.69	0.20	0.30	1.9
29-Aug	0.14	1.58	0.01	0.62	2.42	0.21	8.69	0.20	0.33	2.0
30-Aug	0.10	1.68	0.01	0.60	2.17	0.21	8.19	0.23	0.39	2.2
31-Aug	0.10	1.70	0.01	0.68	1.84	0.18	7.29	0.22	0.34	2.0
1-Sep	0.16	1.80	0.01	0.69	1.72	0.15	7.25	0.20	0.28	2.3
2-Sep	0.18	1.65	0.01	0.73	1.77	0.17	7.63	0.13	0.29	2.3
3-Sep	0.17	1.57	0.00	0.62	1.74	0.18	7.24	0.14	0.13	2.5
4-Sep	0.13	1.14	0.00	0.63	1.09	0.05	6.64	0.13	0.13	2.2
5-Sep	0.13	1.17	0.00	0.65	1.22	0.05	7.50	0.12	0.22	2.2
6-Sep	0.14	1.26	0.00	0.68	1.21	0.07	8.06	0.12	0.23	2.2
7-Sep	0.13	1.24	0.00	0.69	1.16	0.06	7.90	0.11	0.22	2.4
8-Sep	0.23	1.29	0.01	0.78	1.20	0.06	7.22	0.10	0.19	2.5
9-Sep	0.25	1.13	0.01	0.84	1.09	0.06	6.48	0.05	0.13	2.4
10-Sep	0.28	0.99	0.01	0.74	0.73	0.07	6.38	0.05	0.13	2.0
11-Sep	0.18	0.88	0.01	0.68	0.59	0.07	6.30	0.03	0.15	1.5
12-Sep	0.17	0.84	0.01	0.76	0.60	0.07	6.19	0.03	0.14	1.4
13-Sep	0.15	0.78	0.01	0.76	0.58	0.07	5.80	0.03	0.14	1.5
14-Sep	0.14	0.87	0.01	0.76	0.60	0.06	6.28	0.01	0.13	1.7
15-Sep	0.30	0.79	0.02	0.91	0.52	0.06	6.61	0.01	0.05	1.6
16-Sep	0.31	0.73	0.02	0.98	0.51	0.03	6.18	0.01	0.03	1.7
17-Sep	0.33	0.61	0.02	0.97	0.48	0.04	5.63	0.01	0.03	1.2
18-Sep	0.19	0.48	0.01	0.88	0.36	0.04	5.00	0.02	0.03	1.2
19-Sep	0.19	0.47	0.01	0.97	0.34	0.04	5.13	0.02	0.05	1.1
20-Sep	0.20	0.44	0.01	1.00	0.42	0.04	5.15	0.02	0.05	1.0
21-Sep	0.21	0.41	0.01	1.12	0.44	0.03	5.29	0.03	0.05	1.1
22-Sep	0.24	0.43	0.01	1.00	0.39	0.03	6.04	0.03	0.08	1.1
23-Sep	0.28	0.38	0.01	1.10	0.34	0.03	5.99	0.03	0.07	0.9
24-Sep	0.33	0.20	0.02	1.13	0.31	0.02	5.37	0.04	0.09	0.5
25-Sep	0.05	0.19	0.00	0.76	0.28	0.02	3.35	0.04	0.08	0.5
26-Sep	0.06	0.09	0.00	0.73	0.23	0.03	3.33	0.04	0.09	0.5
27-Sep	0.07	0.09	0.00	0.79	0.25	0.03	3.44	0.04	0.10	0.5
28-Sep	0.07	0.07	0.00	0.76	0.27	0.02	3.81	0.01	0.12	0.0
29-Sep	0.09	0.08	0.00	0.42	0.28	0.02	4.13	0.02	0.10	0.0
30-Sep	0.10	0.04	0.00	0.27	0.04	0.01	3.89	0.00	0.11	0.0
1-Oct	0.11	0.06	0.00	0.27	0.05	0.04	3.67	0.00	0.09	0.0
2-Oct	0.02	0.03	0.00	0.18	0.05	0.05	1.39	0.00	0.00	0.0
3-Oct	0.01	0.07	0.00	0.18	0.01	0.10	1.64	0.00	0.00	0.0
4-Oct	0.01	0.07	0.00	0.05	0.01	0.10	1.64	0.00	0.00	0.0
5-Oct	0.02	0.05	0.00	0.07	0.01	0.14	1.91	0.00	0.00	0.0

## Appendix B ~ VegNet Species Averages 2010

	<b>BCW</b>	<b>CEW</b>	<b>PHX</b>	<b>12S</b>	<b>CL</b>	<b>AL</b>	<b>DBM</b>	<b>BAW</b>	<b>VCW</b>	<b>CWB</b>
<b>Date</b>	<b>10yrAv</b>	<b>10YrAv</b>	<b>9YrAv</b>	<b>10yrAv</b>	<b>10YrAv</b>	<b>10yrAv</b>	<b>10YrAv</b>	<b>10yrAv</b>	<b>10yrAv</b>	<b>8yrAv</b>
6-Oct	0.02	0.05	0.00	0.07	0.01	0.14	1.91	0.00	0.00	0.0
7-Oct	0.02	0.05	0.00	0.07	0.01	0.14	1.91	0.00	0.00	0.0
8-Oct	0.02	0.05	0.00	0.07	0.01	0.14	1.91	0.00	0.00	0.0
9-Oct	0.02	0.05	0.00	0.07	0.01	0.14	1.91	0.00	0.00	0.0
10-Oct	0.04	0.08	0.00	0.14	0.02	0.17	2.67	0.00	0.00	0.0
11-Oct	0.05	0.00	0.00	0.14	0.00		3.29	0.00		0.0
12-Oct					0.00					
13-Oct					0.00					
14-Oct					0.00					
15-Oct					0.00					