

2012 Year End Review

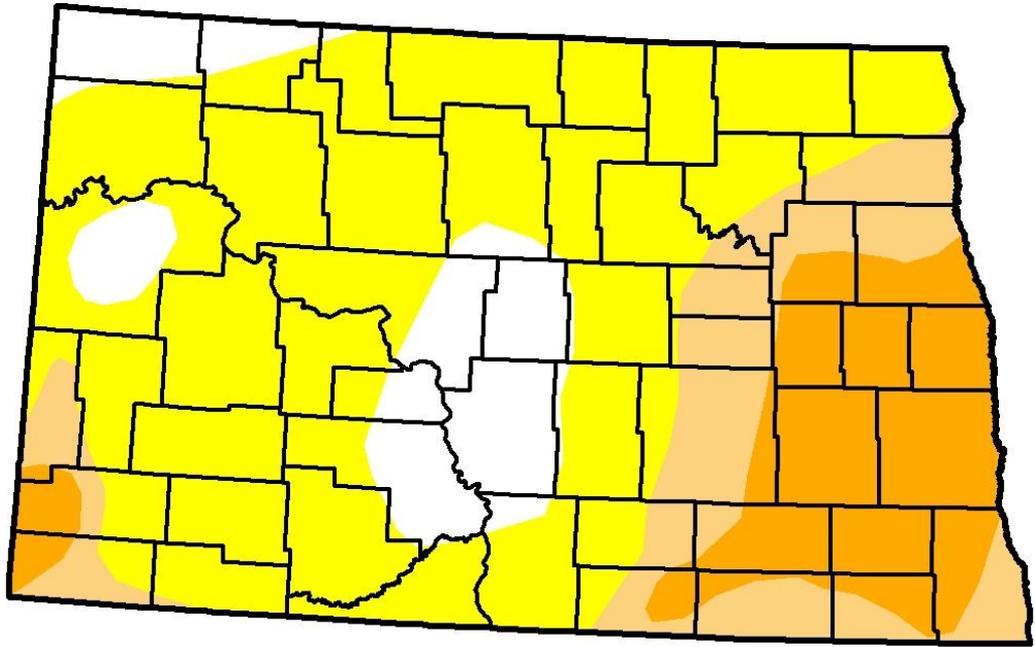
Vector Control Board Meeting
Tuesday, November 27th 2012
9:30 am

Cass County Highway Department
 1201 Main Ave. West
 West Fargo, ND 58078

Note: Meeting will be conducted by Cass County Vector Control Board, but all persons/organizations involved in area mosquito abatement efforts are encouraged to attend.

Agenda	
Call to Order	
2012 Cass Vector Control Season Review	Prather
FCPH – WNV	Bachmeier/Berglund
2013 Contracts- Fargo & West Fargo	Prather
Discussion, Questions, & Comments	All
Adjourn	

Drought Dominates Weather Pattern – July 24th National Drought Monitor Map For North Dakota



Drought Severity



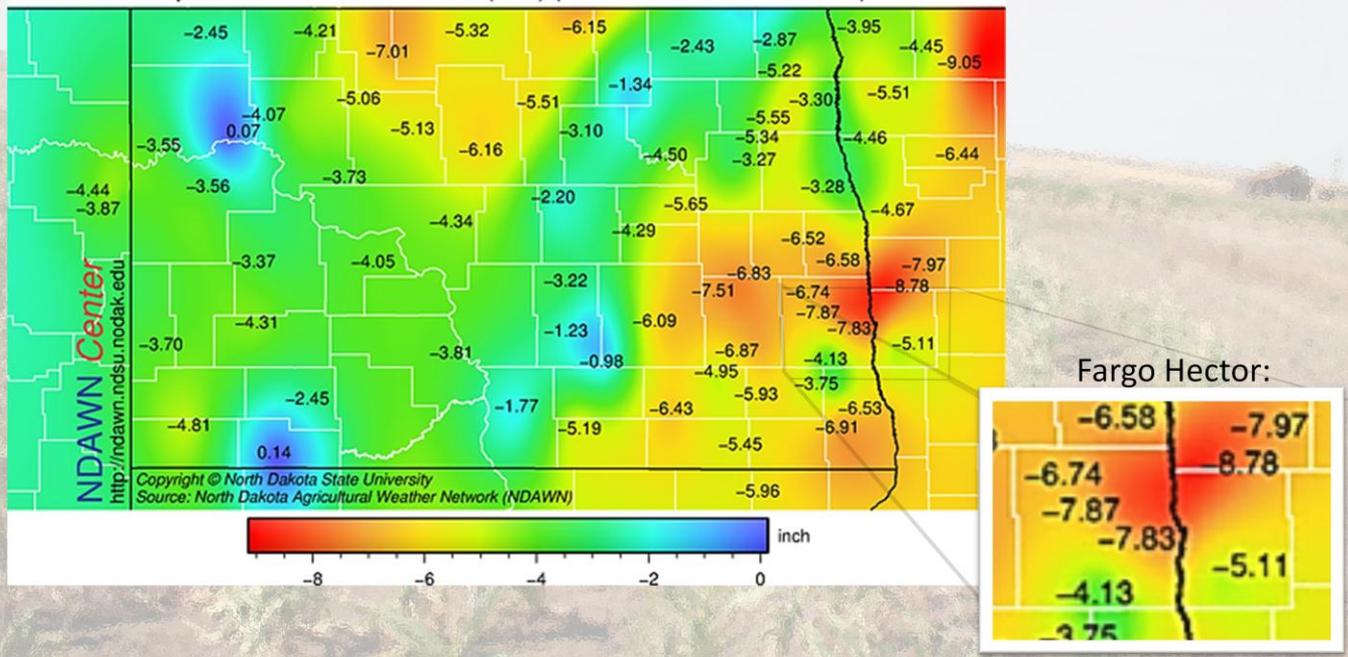
Drought conditions were found throughout the United States this growing season. North Dakota and the region was spared from some of the severest conditions but remained significantly below standard precipitation for the “water year”.

The map above illustrates one week period from July 17th to the 24th at which Fargo was already 3.5 inches under normal precipitation for the year.

More information about drought monitoring can be found at:
<http://droughtmonitor.unl.edu/>

Weather Conditions

Rainfall May 1st to October 2nd



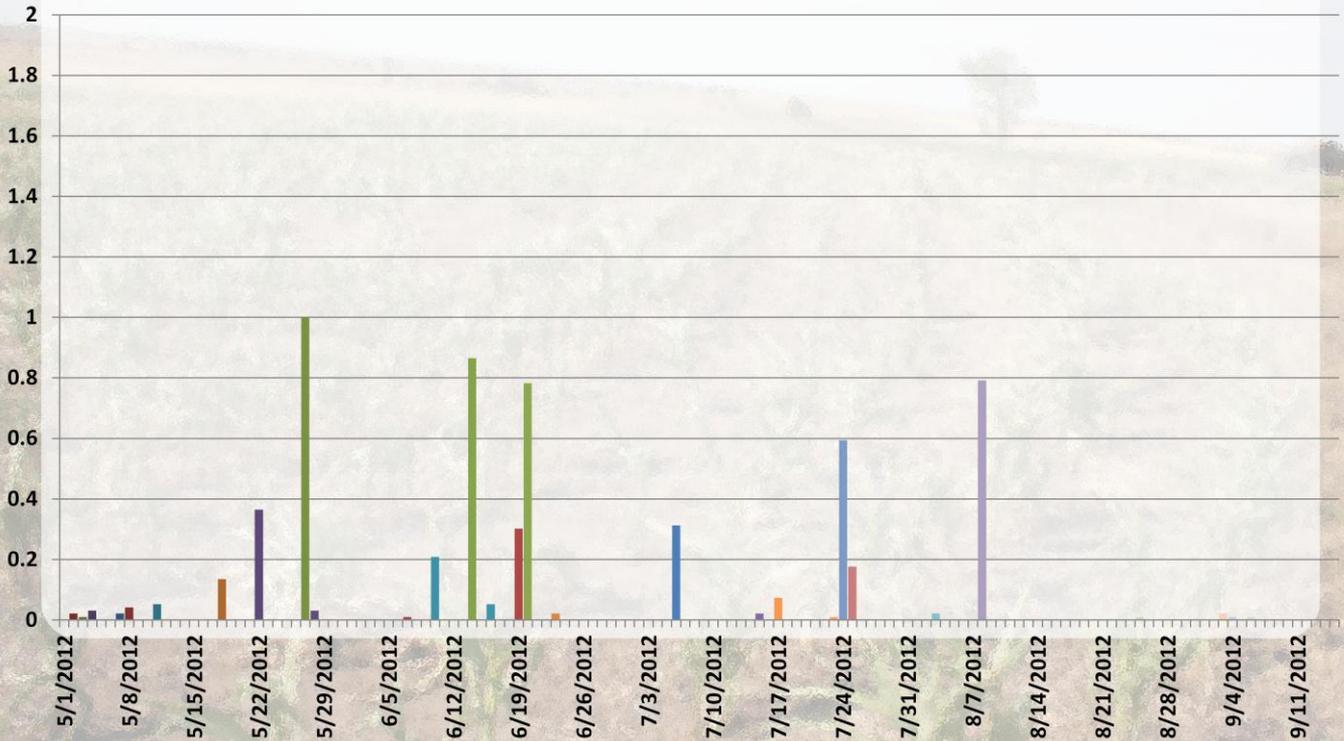
From Spring 2011 to Fall of 2012, areas of Cass County saw a incredible shift from very wet (>5 inches of above normal rainfall) to severe drought (a rainfall deficit of over 7.5 inches in some areas).

Rain events occurred sparingly, were consistently short duration, and poorly performing. For the period show above, the gage at Hector International only saw 43% of average rainfall. This factor had great effect on Vector Control operations for the season.

Concurrently, temperatures averaged 2-4 degrees above normal thusly making the Summer of 2012 one of the hottest and driest in recent memory.

Rain Events: Incidence and Severity

Rainfall at the Hector Gage



The graph above documents rain gage measurements at the Hector Field weather station from May 1st to Sept 15th.

Overall rain events were very unsubstantial throughout the area and season. In particular this gaging station only registered 5 events over ½ an inch and no events of more than one inch.

Clearly the lack of rainfall easily dominated the weather pattern and mosquito breeding trends in 2012.

Materials:

Material Usage In Standing Water:

- Significantly lower than previous seasons.
- Material totals were determined from inventory numbers and previous Vector Control Director year end reports.
- The following numbers represent material usage from the prior years.

Actual material applied:

2012: 13,386 Lbs. – 1880 acres treated

2011: 76,885.35 lbs –8275 acres

2010: 55,421.8 Lbs.

2009: 23,888.6 Lbs.

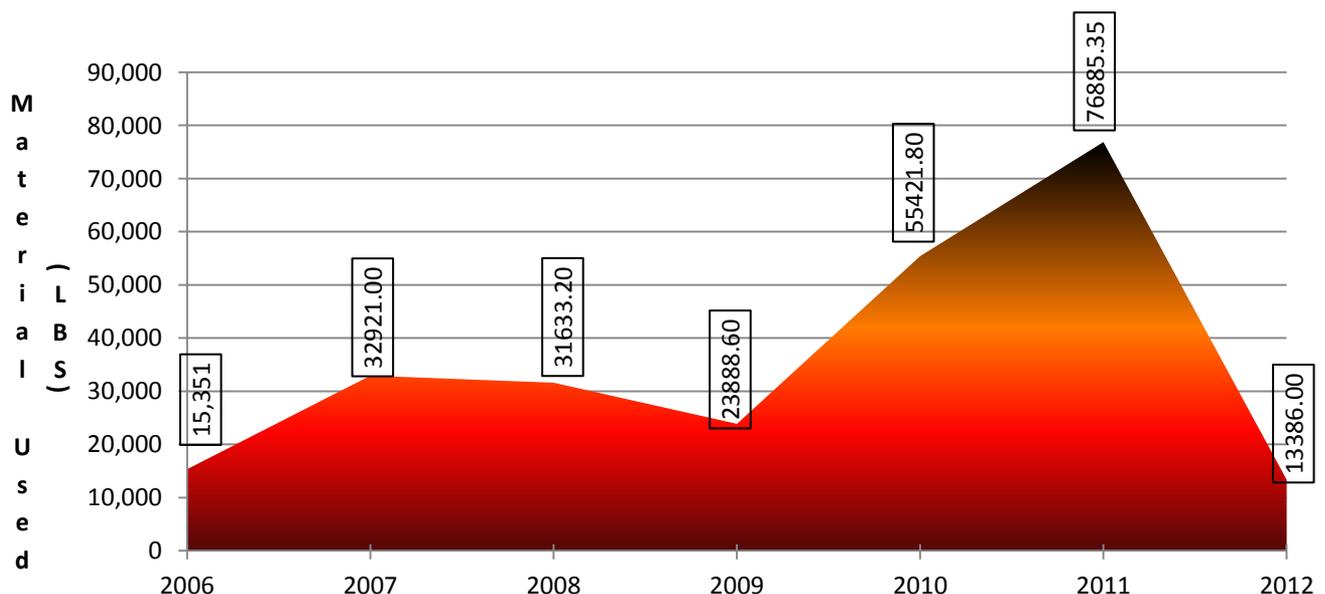
2008: 31,633.2 Lbs.

2007: 32,921 Lbs.

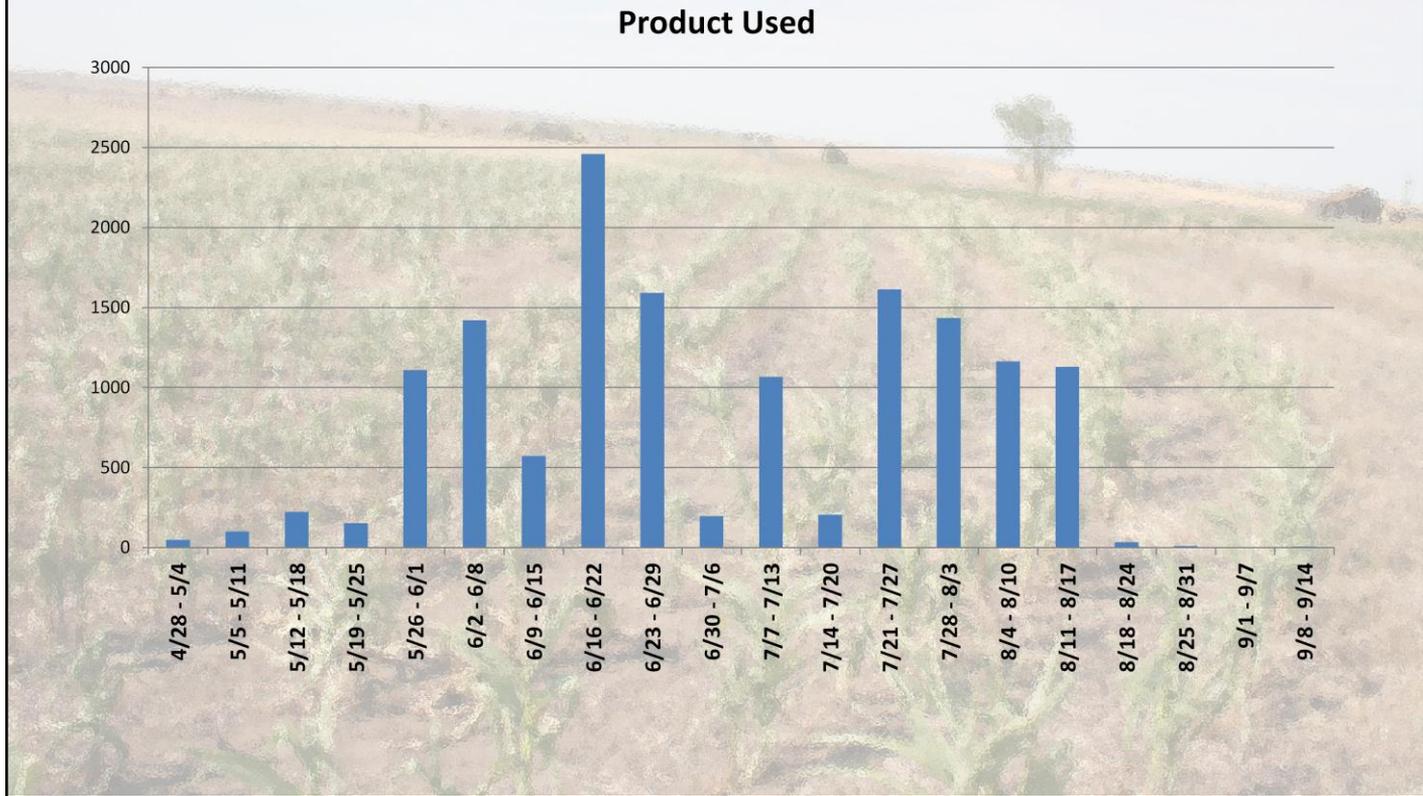
2006: 15,351 Lbs.

The lack of rainfall led to a significant reduction in pesticide applications to standing water. Cass County Vector Control used less than 25% of the total product used in 2011. Overall, inspections and treatments were similar to 2009 and 2006 when similarly dry conditions persisted.

The 2012 season still saw over 24,000 total inspections to standing water sites resulting in 3729 aquatic pesticide applications.



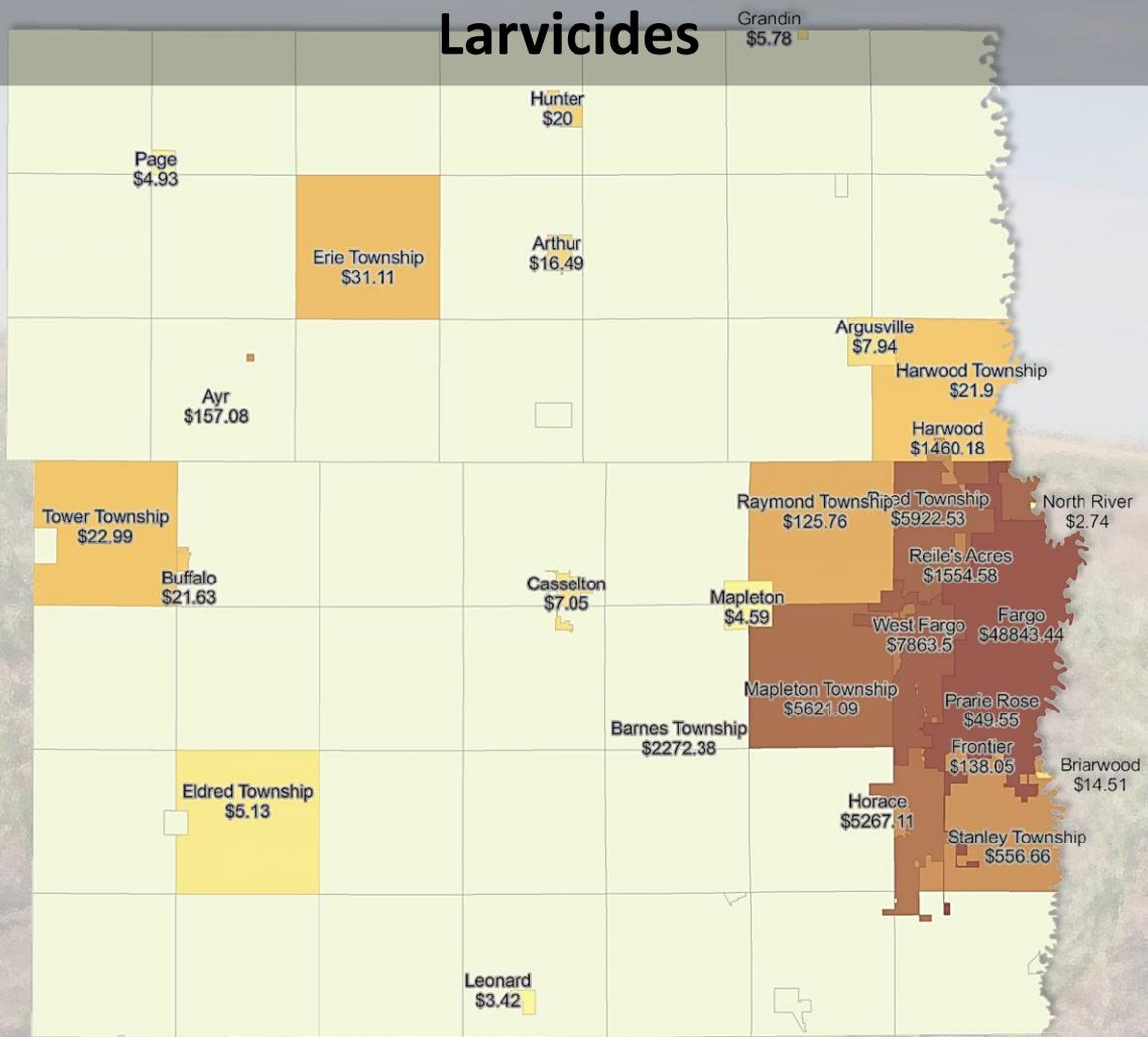
Weekly Product Usage



As the rain goes; so does the pesticide usage. In this case little measurable precipitation lead to “baseline” levels of pesticide applications. Throughout the season site treatments do still occur on a approximate 7-10 day intervals to combat potential for standing water/WNV mosquito production. This usage pattern is illustrated in the graphic above.

The 2012 figures should represent the bottom or low end of expectations for budget purposes. The contrast to 2011 is striking; in which we saw the all time weekly high pesticide usage of approximately 10,000lbs during a particularly rainy week.

Larvicides



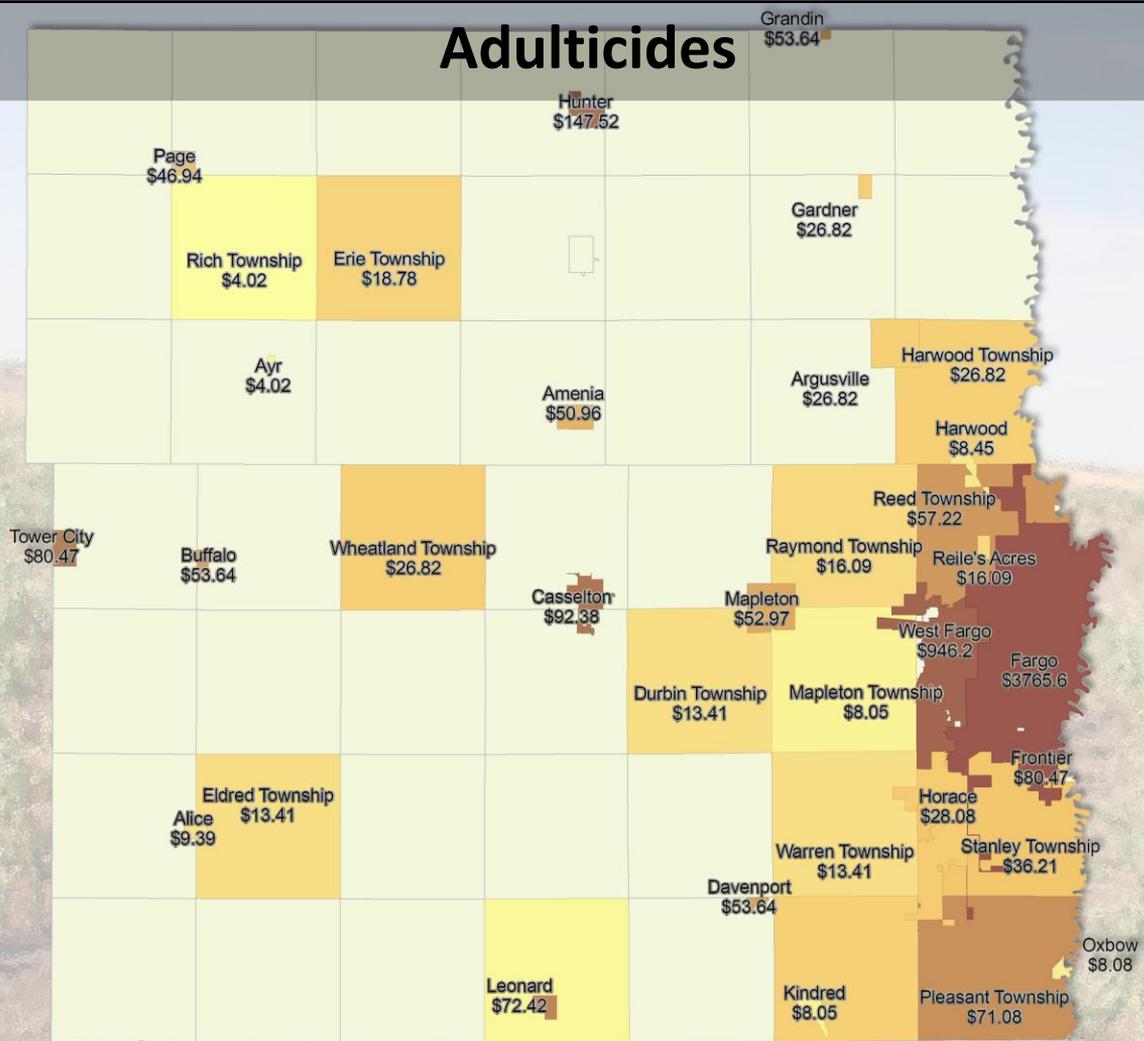
The map above is a geographic representation of the cash value of materials that were applied to standing water.

Generally, the limited rainfall that was experienced in 2012 only created runoff and pooling near and around impervious surfaces most common in urban city settings.

Most cities that did not receive larval control materials received applications of adult control barrier sprays at some point.

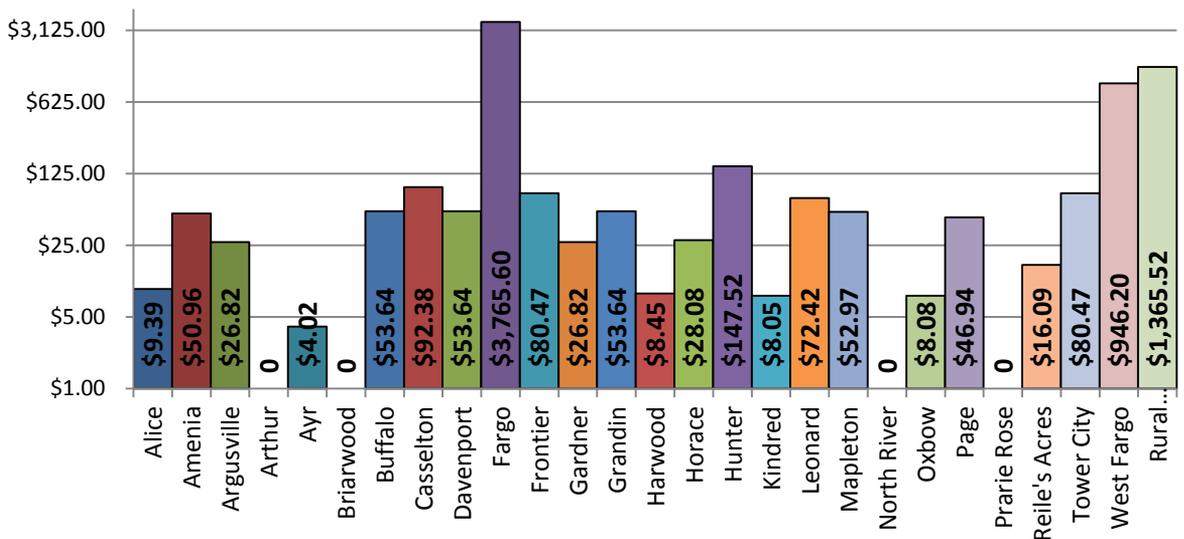
Barrier spray applications tend to produce greater results than sparse larviciding for rural and small city scenarios given the limited capacity for visits. These figures are shown on the next page.

Adulticides



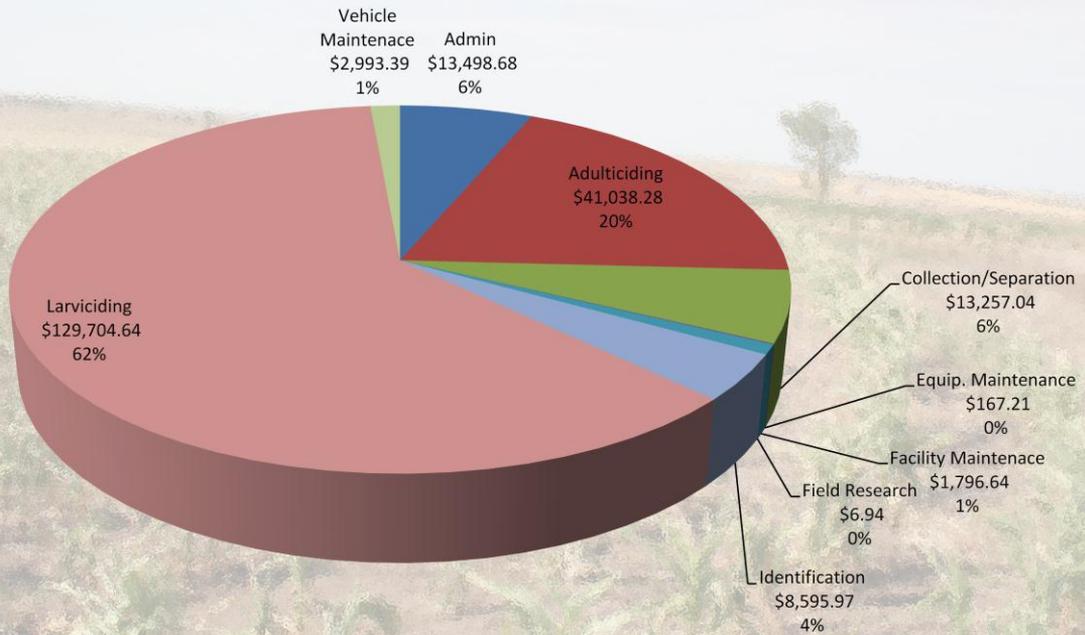
Cass County Vector visited many areas throughout the county during the 2012 season. Focus for adulticiding in rural areas was based on 3 criteria: 1. scheduled or contracted applications 2. reduction of West Nile vector species in human population centers 3. nuisance mosquito biting pressures in population centers.

The chart below represents cash value of adulticiding materials applied to Cities and Townships. *Please note these figure do not include truck mounted ULV pesticides but do represent both contracted applications as well as "non-contract" or mill funded applications. Barrier applications account for a small portion of the overall budget but their affect on nuisance and disease can be significant.



Labor:

Job Description

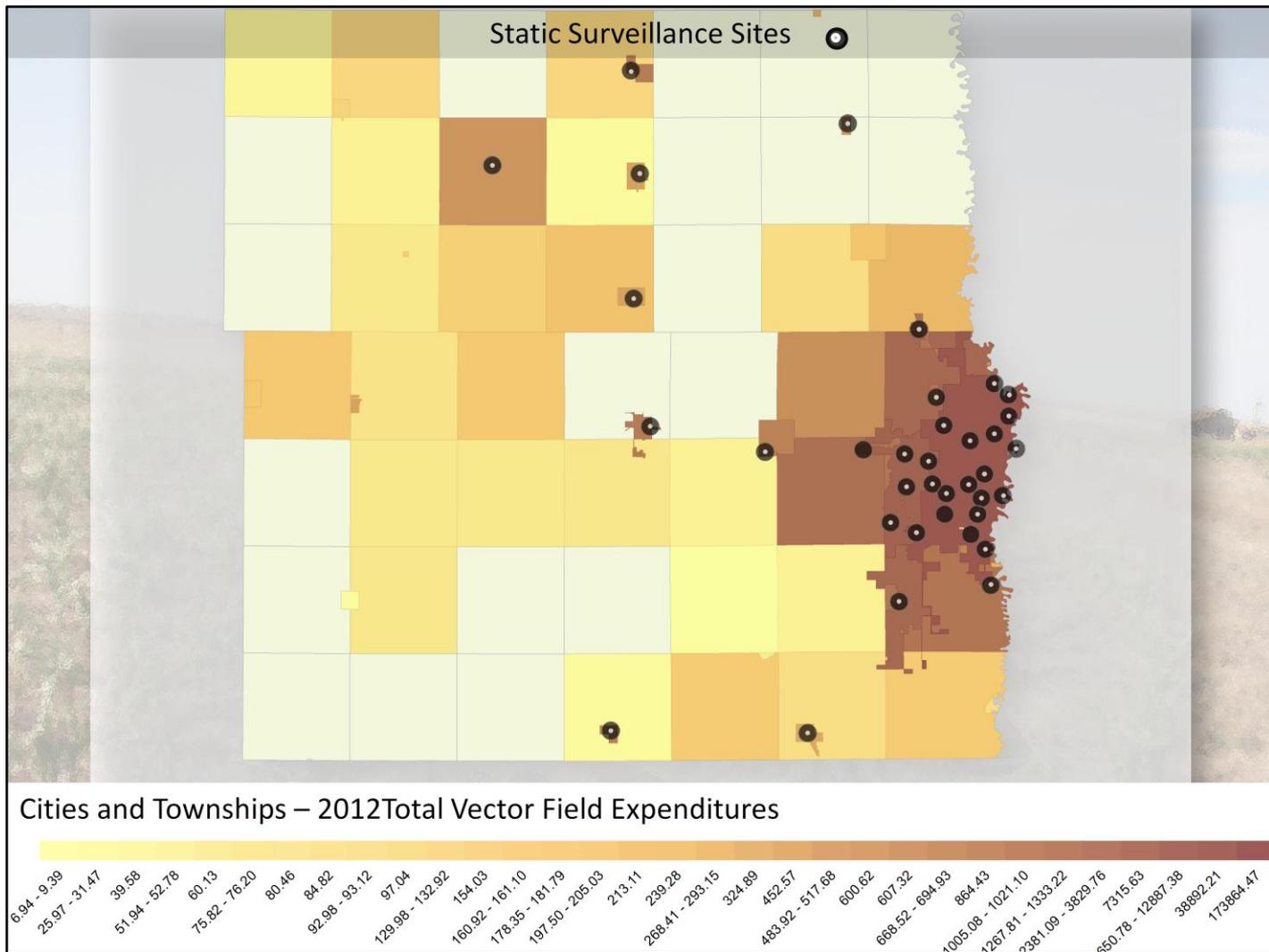


When looking at seasonal labor split across core operations; a majority of labor hours was spent treating and inspecting standing water this season. This figure falls in line to other years' larviciding efforts.

Adulticiding was the second largest expense and accounted for a slightly larger proportion than in other years. This increase was largely due to the West Nile threat. "Adulticiding" or adult mosquito control total includes contracted labor such as truck mounted fogging and back pack spraying in both the urban and rural cities for flying mosquitoes.

*Note this does not include full time employees.

This season, field operations contributed over 90% of labor costs. Overall, seasonal labor costs were down significantly in 2012 due to the dry conditions and reduced assignments. One additional example: overtime was approximately 1/3 of previous years. .



The image above displays static New Jersey Light Trap adult mosquito sampling locations throughout Cass County during the 2012 season.

Cass County maintains one of the most detailed and exhaustive adult mosquito trapping programs in the Midwest and perhaps the country.

Our efforts with 37 nightly New Jersey Light traps, 7 weekly CDC CO₂ baited live traps, as well as supplemental ovitraps and gravid traps is unmatched in the state and region.

Plans in 2013 are to maintain and continue to develop this resource to best serve communities in Cass County. Early focus in 2013 will be early detection of *Cx. tarsalis* populations.

West Nile Virus Reemerges

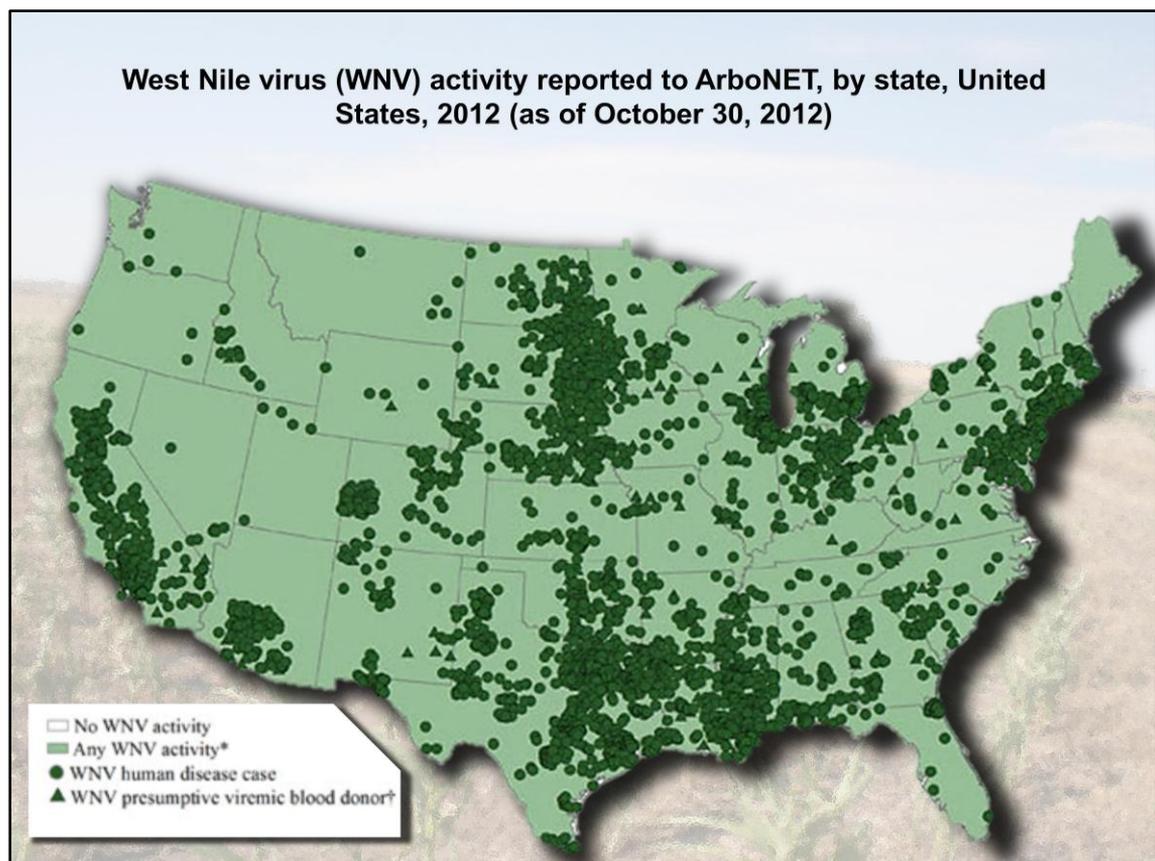
After years of dormancy, West Nile saw its largest epidemic year since 2003. As of October 30th, Nation-wide reported WNV cases tallied 4,891 human cases – 51% of which were classified as neuroinvasive meningitis or encephalitis. Unfortunately, 223 Americans died from mosquito bites resulting in West Nile transmission as of this writing.

Texas, and in particular the areas around Dallas County, was most affected by this recent outbreak. Texas accounted for over 1600 cases thus far this year.

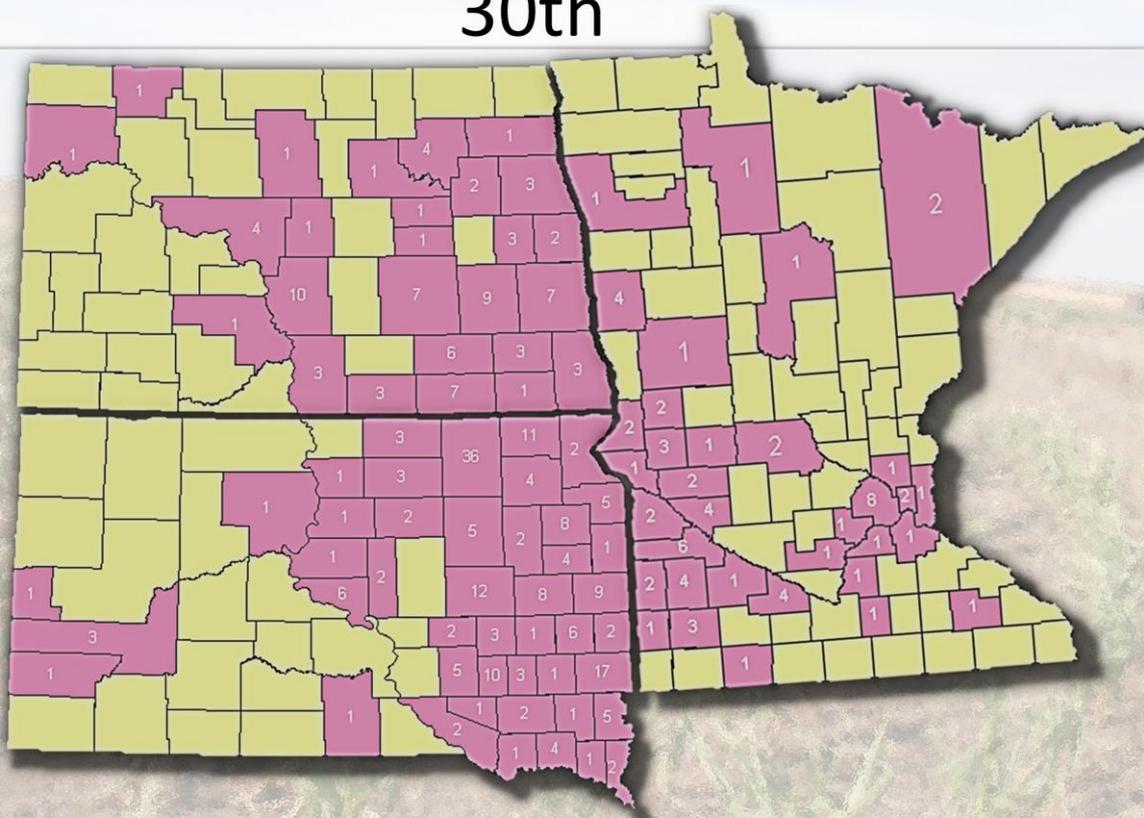
More regionally, South Dakota and in particular Brown County (Aberdeen) saw its largest outbreak of WNV in recent years. Again this year, South Dakota and North Dakota rank 1 & 2 nationally for the highest rates of infection per 100,000 residents.

Given the extreme prevalence of WNV in the US this season, Cass County residents benefited from drought conditions. Under normal precipitation the rate of infection could have been more severe.

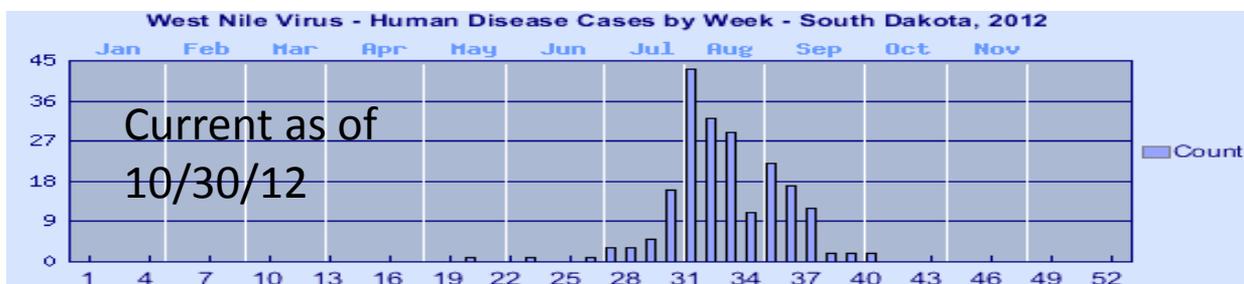
Inspection and sampling for WNV will be early, frequent, and extensive in 2013.



Regional WNV Cases 2012 – CDC Oct. 30th

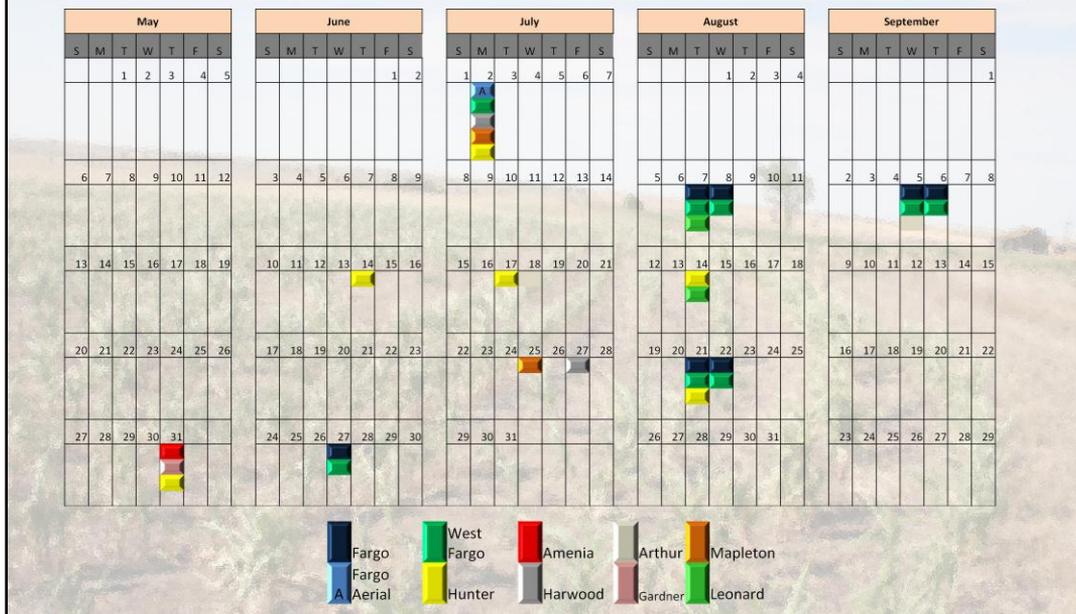


Locally, North Dakota had fewer overall diagnosed cases (86) than South Dakota (202) but more than Minnesota (70). Of the 86 cases confirmed in North Dakota 48 were considered neuroinvasive. There were also 17 ND residents who tested positive for the virus while donating blood or plasma but did not show illness; these are not included in the above case count. To date, Cass County has 7 cases confirmed per the CDC. The State Department of Health lists cases count as 8. As of this writing, we are still working with local and state officials to confirm these numbers and clear up the discrepancy.



Above shows a CDC graph illustrating the presumed dates of infection within North Dakota. The historical pattern of late July to early Sept. infections is clearly illustrated. Several cases were diagnosed after any corrective actions could take place. We are currently working with the state and local health departments to work out this year's timeline.

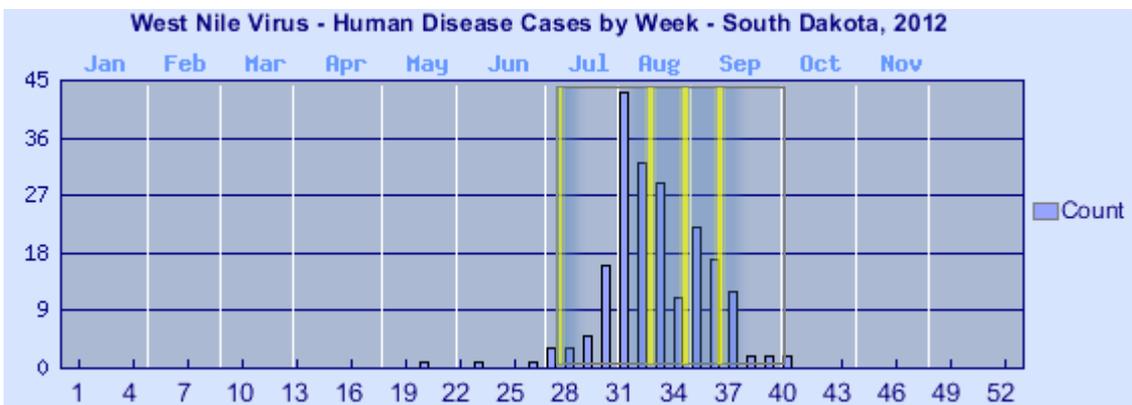
Completed ULV Applications 2012



Evening fogging operations were less frequent than previous years but no less important. Triggers to spray this year were focused on disease monitoring efforts and less on nuisance as was the case in recent seasons.

As we entered late July, it was apparent that the nation was entering conditions that were ripe for severe outbreaks of WNV.

Cass County's approach to the heightened WNV threat was multifaceted. Some measures included: heightened surveillance interval and methodology, widespread residual adulticiding, continued focused larval control efforts, and lastly; deliberate and thorough truck mounted fogging operations.



Above: Graphic illustration of urban ULV applications (Vertical Yellow Bars) layered on top of suspected dates of WNV infection of humans in ND 2012. If similar conditions occur in 2013, expect similar if not heightened ULV adulticiding response in July, August, and September.

RAMP - WNV Testing

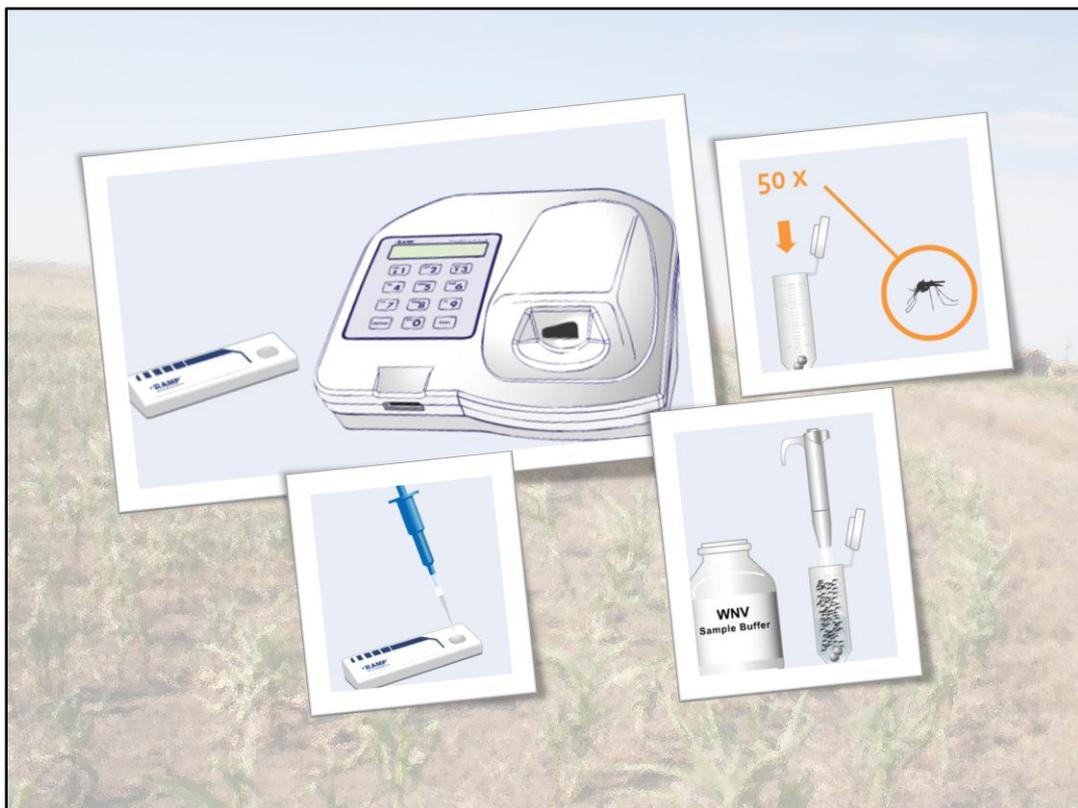
New equipment was utilized by Cass County Vector in 2012 to detect WNV in pools (collections) of live mosquitoes and deceased birds.

Our new RAMP equipment is faster, more effective, and provides quantitative results in assessing samples versus other methods. RAMP testing is shown to correlate 80-90% to more costly molecular testing such as PCR and Elisa. RAMP testing has been validated by the Centers for Disease Control and Prevention and is the preferred method of early detection in many states and organizations.

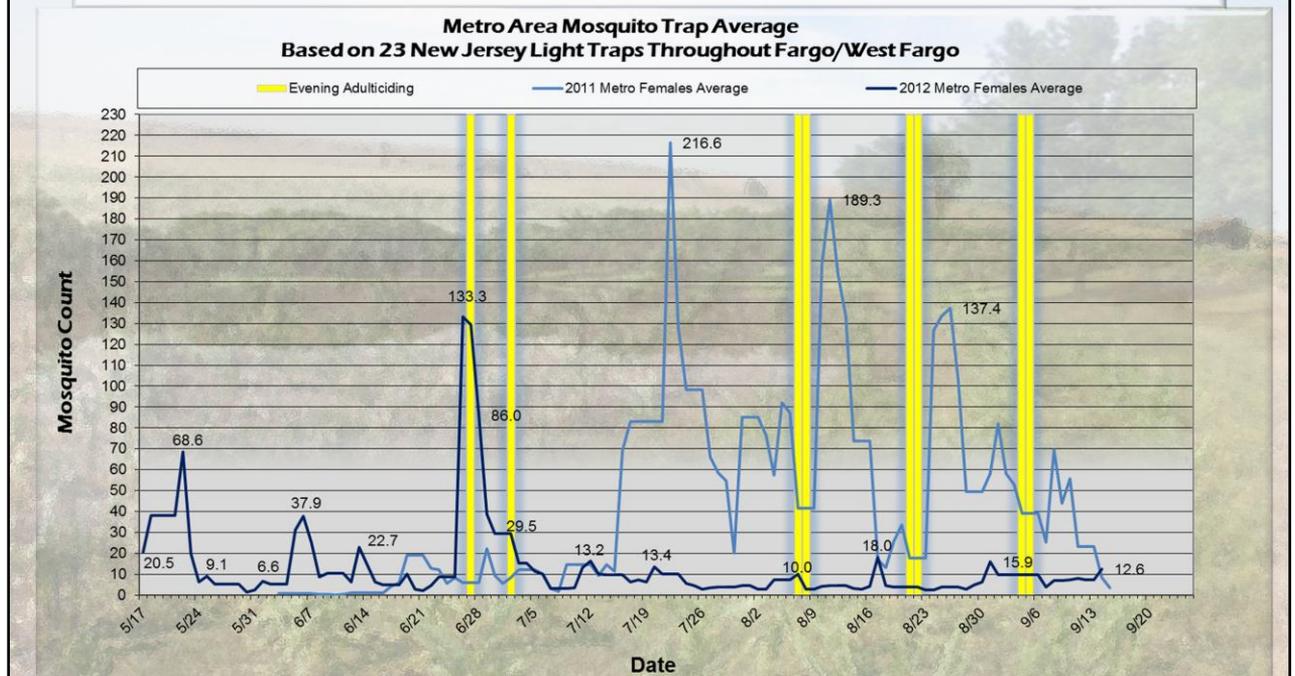
This new data; in conjunction with human cases reported to the CDC as well as our ability to identify “hot spots” with our standard and auxiliary trapping surveillance, advances our abilities to detect WNV and potentially will enable us to better identify areas of concern in the coming years.

Our 2012 results were slightly less than expected with only 2 unique samples reading positive out of over 30 mosquito samples and 1 bird sample analyzed.

Future efforts will maximize these capabilities with the intention of better interfacing with State Health Department officials.



Traps and ULV Sprays- 2012



The graph above depicts 3 correlating sets of data. The dark blue line is the average adult female mosquito trap collection in the communities of Fargo and West Fargo in 2012. This “average trap count” is used to determine the threshold for adult mosquito spraying via truck mounted fogging or aircraft. For comparison, the light blue line shows average collection for our trap network in 2011. Counts in 2012 were dramatically lower throughout the season than in the past.

The third item to be noted is the yellow vertical bars on the graph; the vertical lines depict adult control applications in the metro city limits. This data includes both aerial and truck mounted applications to kill adult mosquitoes.

In summary, execution of adult spraying in the metro area was timely in regards to nuisance and strategic and organized in response to WNV potential. Direct correlation of reduced mosquito population can be seen as a result of the nuisance control sprays in June and July. The late season sprays hopefully disrupted the cycle of WNV transmission regardless of statistically low trap counts.

This graph only illustrates a part of our surveillance efforts, the other components being CO2 baited CDC light traps, gravid traps, WNV case reports, RAMP testing results, and human baited sweep and landing counts. All of these efforts combine to determine when correction of adult mosquitoes should take place.

New Data Collection Tools

Use of existing web service technology and free smart phones(excluding data fees) were utilized for larviciding records data collections for the first time in 2012. These cost effective tools allow for instant progress updates, real time inventory tracking, expedited invoicing, as well as several other enhanced performance metrics previously not available- all for minimal cost and no recurring software licensing fee.

Future optimizations will occur and inclusion of most adult control treatments are planned for roll out in 2013. Additionally, future plans are to utilize these capabilities to provide real time data to the public about pesticide applications so that casual observers can better understand “what’s happening in my backyard / neighborhood / city”.

Some of the other enhancements included GPS site mapping and navigation using ArcGIS Explorer, route tracking via Nokia Drive, and convenient group messaging. These services continue to improve and will aide in future program performance.



Seasonal Payroll Trends



2012 saw the first appreciable wage increase since the 2008/2009 budget year transition. Starting wage (first year employees) grew 2.1% (\$0.25/hr) year over year and overall average pay grew slightly less at 1.0%(\$0.13/hr) largely through attrition.

We continue to monitor wage growth to ensure maximum value to our community and our partners. Fargo and West Fargo will not see increases to contractual language for 2013 labor costs.

Overall, the hourly payroll account was under budget by nearly 15%.

The graph above demonstrates 2 items per respective year:
 The average hourly wage in multi-colored bars
 Starting hourly wage shaded light blue - "in front".

Efforts to maintain a competitive wage consistent with competing factors and contractual partnerships has been paramount to decisions regarding payroll.

West Nile Virus – 2013 and beyond



West Nile Virus could be the main story for the Red River Valley in terms of mosquito control in coming seasons. Several points of focus present themselves for Vector Control in 2013 : early detection, a extensive sampling, and aggressive integrated mosquito management.

Plans in that effort are a multifaceted approach that include:

- Continued identification of vector species in the environment
- Frequent testing for WNV in mosquitoes and birds
- Prescribed treatments to combat any potential outbreak
- Continued work with the North Dakota Health Department to gain information from and help prevent human infections
- Maintain or increase public education based on conditions

Thank you for your time and attention.