Calculating Adulticide Acreage

As of October 31st 2011, mosquito control programs are required to submit a Notice of Intent (NOI) to the North Carolina Division of Water Quality (NCDWQ) if the mosquito program exceeds the acreage threshold recently established by the NCDWQ National Pollution Discharge Permit (NPDES) permit. When a program applies adulticides to more than 15,000 acres annually, an NPDES permit is required by the State of North Carolina.

One quick method for calculating your programs total acreage is to use the total amount of finished spray applied last year. For the calculation several variables will have to be identified. Let's get started with, the total amount of finished spray used last year in gallons and the rate of application per hour in gallons.

For example, if the total adulticide applied in by a program in 2011 was 150 gallon of finished spray, and the application rate for the mosquito sprayer is 6 ounces per minute. How many acres will the 150 gallons of finished spray treat?

If we know the flow rate of the machine in ounces per minute we will have to determine hoe many ounces of finished spray the sprayer is using per hour. If the machine is putting out 6 ounces of product per minute then we are putting out 360 ounces in 1 hour or 2.8125 gallons an hour. This is derived by dividing 128 ounces (the number of ounces in 1 gallon) into the total ounces used in an hour by the machine in this case 360 ounces.

So if we are putting out 2.8125 gallons of product per hour. How many hours of spraying can we get from the 150 gallons of adulticide we purchased? To calculate this simply divide the 2.8125 gallon of product used in an hour into the 150 gallons of product purchased. After completing the calculation we find that we sprayed a total of 53.33 hours last year.

Next we need to figure out how far in miles we can spray in 53.33 hours of spraying. The most common vehicle speed when applying adulticide is 10 miles per hour (mph). So if we are traveling at 10mph we need to multiply that number by the total hours we could spray, (10mph X 53.33) which comes out to 533.33 linear miles.

Once we know the total miles we can treat we have to convert that number to acres. To do this we need to use a few more variables. They are the number of feet in a mile (5,280), the swath width of the sprayer (300feet) and the number of square feet in an acre (43,560).

We know we can treat 53.33 linear miles we need to convert that to feet to calculate acreage. To do this we multiply 53.33 miles by 5,280 feet in a mile. The product of that calculation is 2,816,000 feet.

Next we need to multiply by the swath width of the machine. The industry standard for a mosquito sprayer's swath width is 300 feet. When we multiply these two numbers together the solution is in square feet. Or 2,816,000ft X 300ft = 844,800,000 square feet.

Next we need to convert that number to acres. To this all we have to do is divide 844,800,000sf by 43,560sf (the number of square feet in an acre). The result for this calculation is 19,394 acres.

Under the new NPDES permit guidelines for mosquito control an NOI must be filed if your program exceeds the treatment threshold of 15,000 acres annually. Since we treated 19,394 acres last year we will need to submit an NOI to:

Mail this original and <u>one</u> copy, along with a check payable to NC DENR for $100.00, to:

Mr. Charles H. Weaver
NC DENR / DWQ / NPDES
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

A link to the Notice of intent form can be found on the NCMVCA website at http://www.ncmvca.org. Just click on the tab that says NPDES information for more about the North Carolina NPDES permit process for mosquito control.