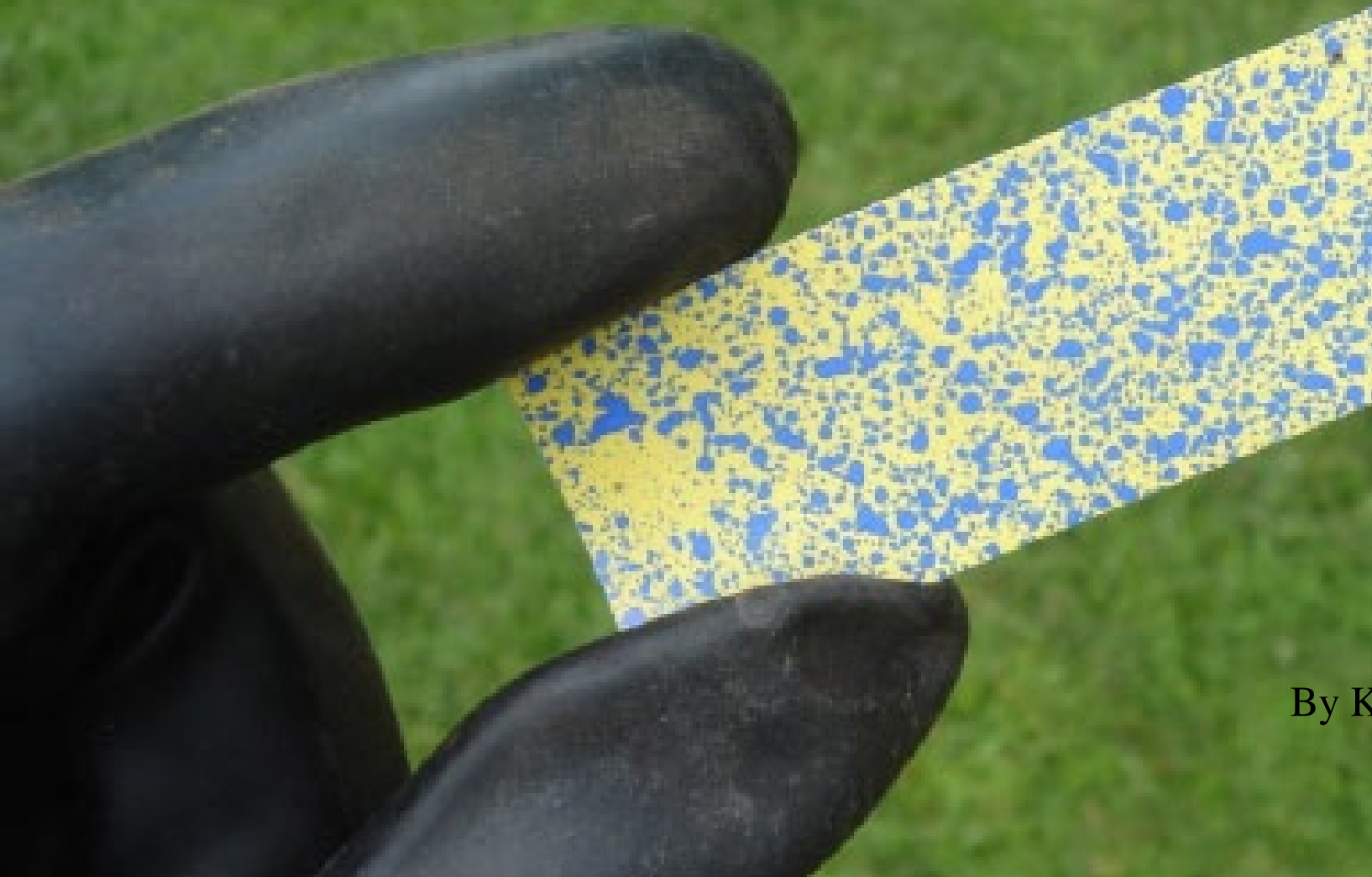


Effective Spay Patterns, Are You R

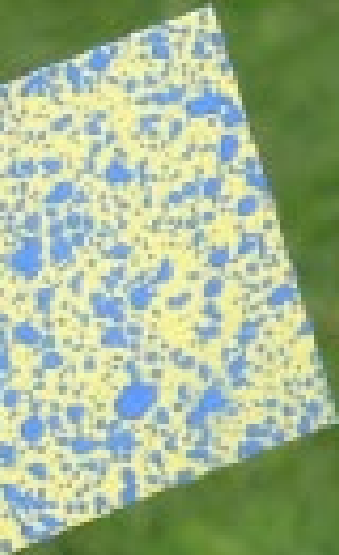


By K

Having the answer may not be a difficult as you think. Universities, chemical companies and spray nozzle manufacturers use laser or doppler equipment to analyze droplet size from different nozzles in a controlled laboratory environment. The information gathered from this equipment is

detailed, accurate and critical to the development of new technologies. However, outside the laboratory where we live, there is a big world with lots of variables and a more practical method of spray coverage measurement is necessary. This is where water sensitive paper (WSP) comes in handy.

Really Covered?



Ken Rost, Frost Services

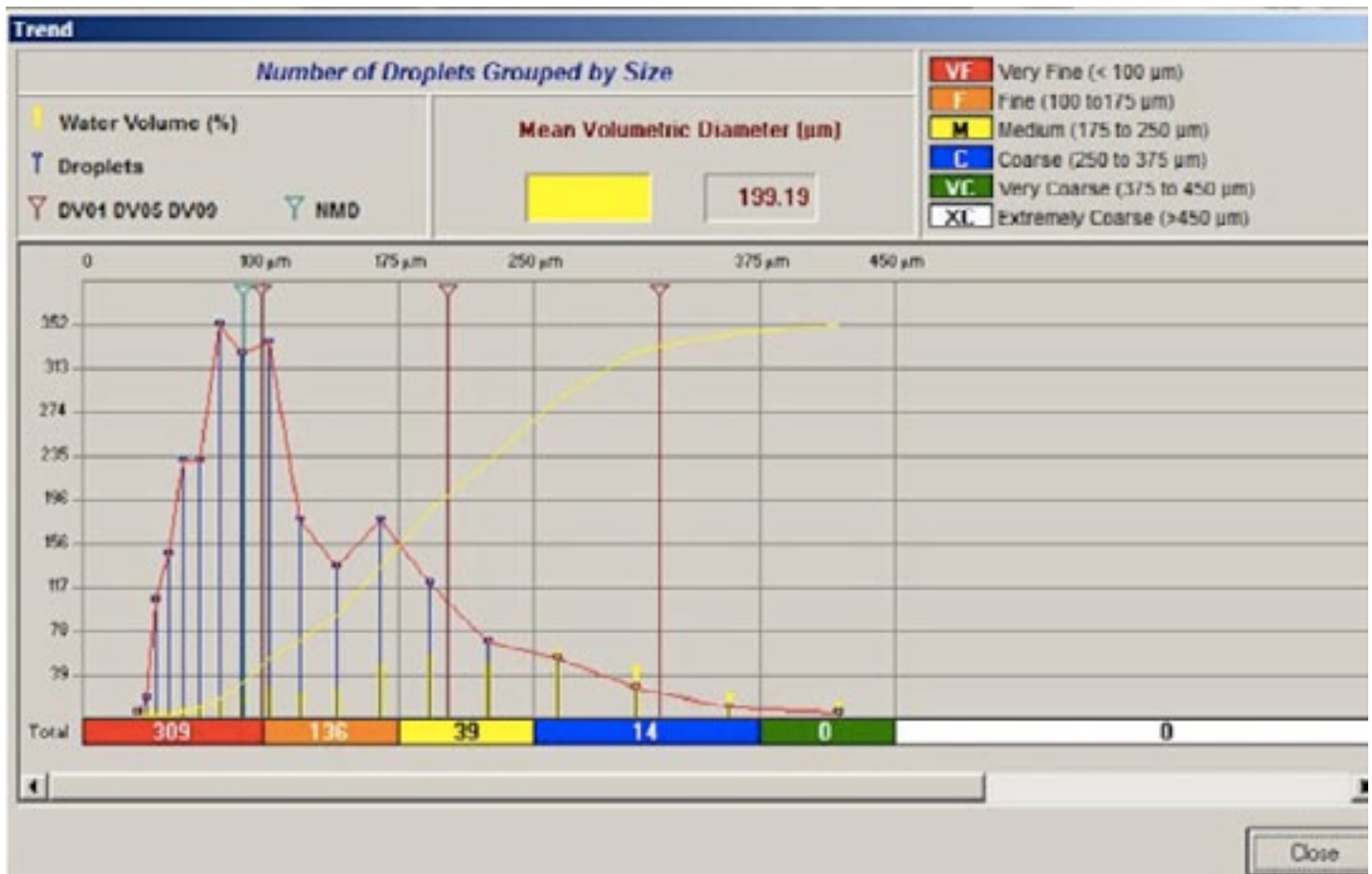
WSP is a special paper with a yellow film on one side that turns to blue color when it gets wet. It was developed by Syngenta over 30 years ago and it is widely available through spray parts suppliers. When droplets hit WSP they form a blue dot relative to the size of each droplet. This gives us an indication

of the droplet sizes that are coming out of the nozzles. The number of drops and the total blue area on the paper gives us an indication of the volume of liquid applied over a specified area. We can compare this applied volume to the rate of application from the sprayer and see how efficient the application was. We can also use WSP just to indicate the presence of droplets. An example is to check if drift is occurring in a no-spray area. Here are a few ways that WSP can be used:

Checking Droplet Size – Labels on spray products include a recommendation of droplet size. To maximize the efficacy of the product, we need to be within the range of their recommendations. We can check this by positioning the WSP flat on the ground and simply spraying over the paper with the spray boom. After the droplets dry on the paper we can look at the size of the blue dots to determine the relative droplet sizes. There is a ‘spread factor’ for the size of the blue dots that corresponds to what liquid is used. Water has a known spread factor but a full tank mix of spray product may have

another unknown spread factor. I recommend doing these tests with just water. There are two methods of determining the relative droplet sizes from the WSP. The first is to simply compare the size of the blue dots to a known standard of measured droplets. These comparison samples are usually supplied with the WSP. The second method is to scan the card and use specialized software to analyze the droplet sizes. Not everyone needs to have this software, but a professional spray consultant ([Frost Inc.](#)) should have it and be able to analyze your WSP samples.

Checking Volume Applied – The methods for checking the actual volume applied are the same as above, except that there is no comparison method and we need to use the software to analyze the volume. We also need to add the speed of the sprayer into the equation. If we know the sprayer applied rate, we can compare it to the measured applied rate on the WSP to find out how efficient the application was. Variables such as mid-air evaporation and drift prevent us from ever achieving 100% efficiency, but a good indication of relative efficiency can



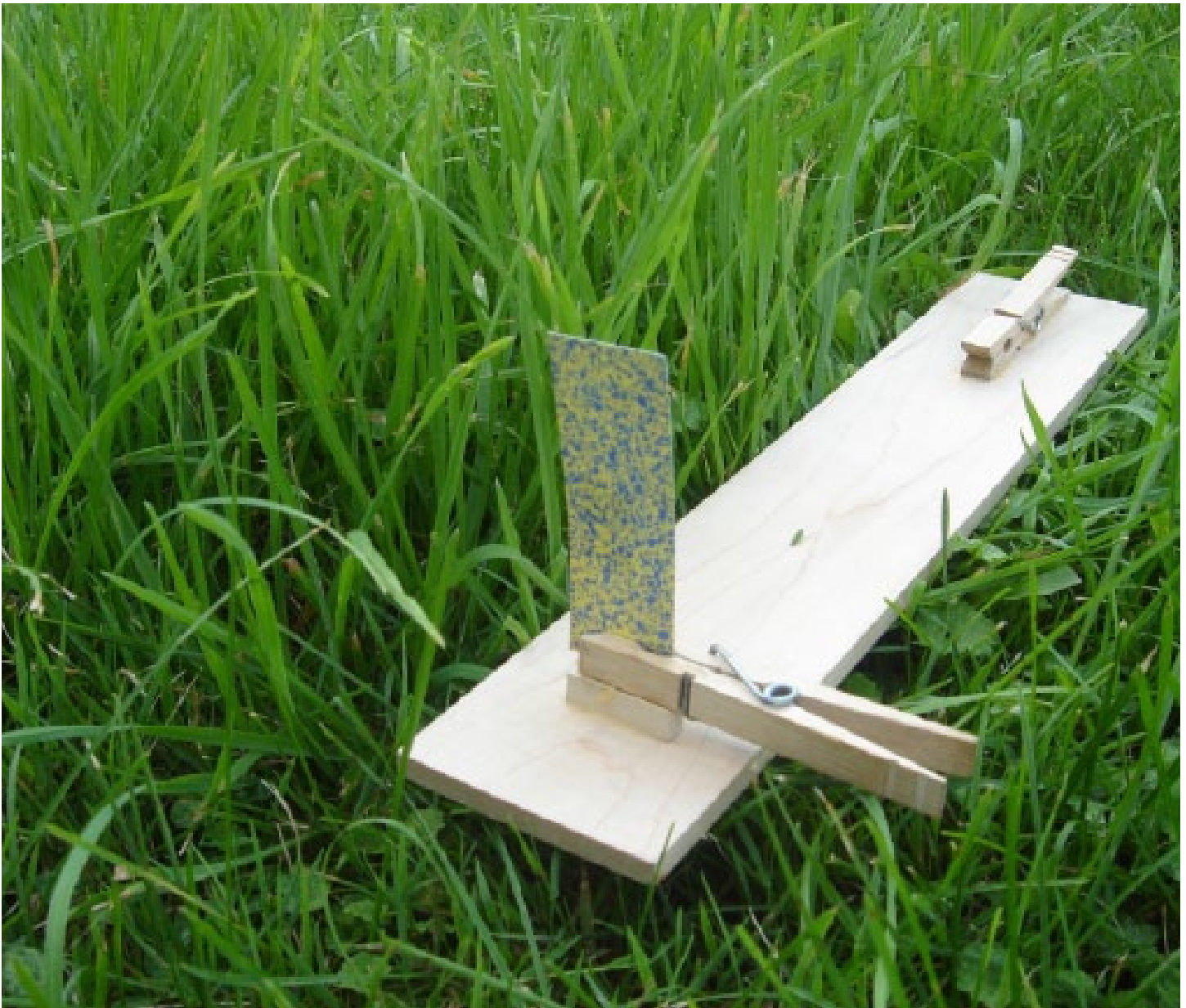
be learned from this exercise.

Checking for Drift – Everyone has neighbors and they are usually concerned about what you are spraying and if it could possibly be drifting onto their property. Besides neighbors, every spray application is completely surrounded with a no-spray zone. We need to be sure that the products we are spraying are only going on the intended spray area. We all should know this and don't need to be lectured again on all the reasons why. WSP is a great tool to test and verify that we are only applying on the intended spray area. Simply placing a WSP in a holder about 1 foot off the ground and every 10 feet along a border will indicate if any spray droplets have drifted off the intended spray area. If you are dealing with a concerned neighbor and you have controlled your drift, showing them the evidence on the WSP may put their mind at ease.

Checking for Coverage – When we talk about coverage we are referring to the ability to get as many droplets all over our intended target. The more droplets we get



on all sides of the target, the more effective the spray products are to do their work, specifically if they are contact type spray products. When we were checking for droplet size and volume, we placed the WSP flat on the ground, but in a three dimensional world, our spray targets are rarely flat on the ground. If we orient the WSP to mimic the structure of a turf grass blade, we can get a better picture of how well we are doing with our spray jobs and try different things to increase coverage. This thinking has led to multiple angled nozzles to spray forward and back as the spray boom moves over the target and it's easy



to demonstrate with WSP. Simply clip two WSP's taped back-to-back to a base and orient them vertically like a blade of grass. Align the WSP perpendicular to the direction of travel. Spray over them with a flat fan nozzle and compare the coverage on the front WSP to the back. Repeat the test using a twin-fan nozzle and you should note more coverage on the back WSP

side.

You may already feel that you have a good handle on your spray coverage and/or where your drift risks are. However if you want to gain a little more confidence and learn more about where your sprays are going, water sensitive paper is a good tool to use.

[Hypro WSP tech sheet](#)

Ken Rost – [Frost Inc.](#)