



Mid-Columbia Small Farms & Acreage Newsletter

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Volume 4, Issue 5

September—October 2004

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Dear Small Farmer and Landowner;

Welcome to the September/October Issue of the Small Farms and Acreage Newsletter. In this issue we have two very good articles that address concerns that have been the news lately. The first article is one that I authored concerning the use of Outdoor Automated Misting Systems to Control Mosquitoes and the West Nile Virus. This is of particular importance with the recent reports of the discovery of West Nile Virus in the State. The concept of automated control systems on the surface would seem to all to be a great idea but their use can have some serious drawbacks and risks to the user.

A second article by Dr. Jed Coquhoun, OSU Extension Weed Specialist, which explores practical methods to control spray drift is an excellent resource for both commercial and non-commercial operators. This article is the first of two articles on spray drift designed to help growers understand how drift happens and inexpensive ways to manage drift and improve sprayer efficiency.

Also as you review this issue you will see we are planning two local workshops that focus on small-scale poultry production and green house management. If you should have any questions about either of these workshops please contact the Wasco County Extension Office.

As you review this issue, if you should have any questions about any of the information found in the newsletter or questions about small farming, please give us a call. You can contact your local county extension office at the numbers found on the top of this page. Again, please let us know how we can be of help to you.

Also as a reminder, if you receive this newsletter electronically, please make sure you let us know whenever you change your e-mail address so we can make sure you remain on the mailing list.

Sincerely,

Brian V. Tuck
Mid-Columbia Extension Agent
Oregon State University
Wasco County



Calendar of Events

2004 September



- 10 Water Rights in Oregon: How to Get Them, How to Use Them, How to Keep Them, 9 a.m. to 3 p.m., Holiday Inn, Wilsonville. Registration fee is \$35 for OAA members and \$55 for nonmembers and includes materials, lunch and refreshments. To register, call (971) 230-0374. Space is limited.
- 10-11 Pacific Northwest Christmas Tree Association Tree Fair and Trade Show, Holiday Inn, Portland Airport, Portland. Information: (503) 364-2942.
- 11 Grazing Workshop, Sar-Ben Farms Inc., 23231 River Road N.E., St. Paul, 10 a.m.-2 p.m. Sponsored by Marion Soil and Water Conservation District. Workshop includes presentations, handouts, a barbecue lunch and tour of Sar-Ben Farms. Registration, information: (503) 391-9927.
- 12-14 "Creating a Sustainable Agriculture Workplace", McMenamins Edgefield Lodge, Troutdale, OR. Conference will address how occupational health and safety can be integrated into sustainable agriculture practices and how research and outreach can contribute to that effort. Details and conference information available at <http://depts.washington.edu/pnash/conf04/index.htm>
- 18 Low-Tech, Low-Cost Hydroponic Workshop, Salem, 8 a.m.-3 p.m. Sponsored by USDA Risk Management Agency. \$35 includes handouts and starter kit. Information: (503) 868-7679 or www.MicrofarmSustainable.org or call .
- 18 Estate Planning and Intergenerational Issues, 8:30 am until noon, Clackamas Community College, Gregory Forum. Cost \$10 per person. Information: Clackamas County Extension Office 503-655-8631
- 18 Sustainable Forestry Tours, Choice of 9:30 am or 1:00 pm, Hopkins Memorial Tree Farm, Beaver Creek OR, Open to the public. Free but reservations requested: call 503-632-2150 or <http://extension.oregonstate.edu/clackamas/forestry/calendar.php>
- 20 WSU Small Farms Program Field Day, WSU Puyallup Research and Extension Center - featuring pastured poultry, potatoes, winter squash, cover crops, organic systems.
- 22 Annual Oregon Sweet Cherry Research Review, Columbia Gorge Discovery Center, The Dalles, OR, 8 am 3 pm. For more information please contact the Columbia Basin Agriculture Research Center at 541-386-2030 or see their website at: <http://oregonstate.edu/dept/mcarec/> and see the Coming Events section of this newsletter for additional information
- 22-23 Christmas Tree IPM Workshop sponsored by Washington State University. Information: Gary Chastagner, (253) 445-4528. Space limited.

October



- 4-8 Oregon State University College of Forestry class, The Basics of Accurate Forest Land Appraisal — Precisely!, Richardson Hall, OSU campus, Corvallis. Information: <http://outreach.cof.orst.edu/>.
- 9 Poultry Production Class, Discovery Center, The Dalles, from 8:30 am to 12:30 pm. There is no charge for the class. Contact the OSU Wasco County Extension Office for more details at 541-296-5494 and see the **Coming Events** section of this newsletter for a more detailed description.
- 9 Green House Management Class, Discovery Center, The Dalles, from 1:30 pm to 5 pm. There is no charge for this class. Contact the OSU Wasco County Extension Office for more details at 541-296-5494 or see the **Coming Events** section of this newsletter
- 16-17 All About Fruit Show, Clackamas County Fairgrounds, Canby, OR. Admission: Adults \$3, Family \$5, under 6 free. The largest display of fruit in the U.S.! Taste hundreds (over 500 in 2003) of apples, pears, and other fruits.
- 18-21 Oregon State University College of Forestry class, Ponderosa Pine: Management, Issues and Trends, Shilo Inn, Klamath Falls. Information: <http://outreach.cof.orst.edu/>.
- 23-24 Pacific Northwest Hydroponic Conference, 8—5,

Calendar...continued

McMinnville, OR. Fee \$75 per person or \$140 per couple; includes handouts, snacks and lunch. Information: (503) 868-7679 or visit www.MicrofarmSustainable.org. Sponsored by USDA Risk Management Agency.

November

12 Getting the Bugs to Work for You: Biological Control in Organic Agriculture, DoubleTree Hotel, Portland, OR.
For more information see website at: csanr.wsu.edu/Organic/BugsWorkForYou2004.htm or call 360-576-6030 or 509-335-3724

12-14 Tilth 80th Anniversary Conference, Columbia River DoubleTree Inn Portland. Keynote speakers Jim Hightower and Vandana Shiva. Full program and registration details available in late August.

Preliminary information:
www.tilthproducers.org/t30.htm or call (206) 442-7620.

13-14 Wind Power Project Siting: Emerging Issues and Technologies Workshop, Embassy Suites, Downtown Portland, OR.

For more information see website at: www.awea.org/seminars or call (202) 383-2540.

18 Food Business 101 - Starting A Food Business. Entrepreneurs who want to start or expand a food related business can learn about special issues that affect food sector enterprises at the upcoming Portland Oregon Food Innovation Center (FIC)'s Food Business 101 ShortCourses. Cost of the workshop is \$50/person. For more information contact teri.hague@oregonstate.edu or call 503-872-6680

Coming Events

ANNUAL OREGON SWEET CHERRY RESEARCH REVIEW

Presented by Oregon State University Mid-Columbia Agricultural Research and Extension Center & Oregon Sweet Cherry Commission at the Columbia Gorge Discovery Center Auditorium, The Dalles, Oregon

September 22, 2004 at 8:00 a.m. - 3:00 p.m.

This year's Sweet Cherry Review is a chance for growers and others interested in and involved with the cherry business to partake in a day of insight into the world of sweet cherry research, conducted by the faculty and staff of the Mid-Columbia Agricultural Research and Extension Center (MCAREC). Varying from topics addressing consumer desires for late-season cherry varieties to the intricate details of the scourge powdery mildew, this year's event encompasses the vast scope of the growth, care, production, and marketing of cherries in Oregon, and thusly throughout the world. Also featured are subjects relating to new methods of using fresh-cut cherries, water man agreement, edible fruit coatings to prolong freshness, and the cherry fruit fly.

Cherries are a fast-growing and integral part of the state's agriculture, particularly because Oregon is home to the largest concentration of cherry acreage in the United States. It is clear that extensive research into the industry is necessary to keep up with the demanding

regional, national, and global markets, new pest and disease challenges and advancing technologies. We invite you to come join us in The Dalles for a valuable and informative day spent with our researchers discussing our findings and your concerns.

Columbia River Bank, Farm Credit Services and Oregon Cherry Growers will gladly provide lunch, and UAP West, The Dalles, will be providing the morning's coffee and pastries. Please visit the MCAREC website at: <http://oregonstate.edu/dept/mcarec/> for further information.

Got Chickens?



Just starting out with poultry? Want to know how to improve your flock's production? Curious about whether a backyard flock is for you? Anyone interested in small scale poultry production should flock to The Discovery Center in The Dalles, OR on October 9 for a free workshop on this sustainable agriculture production topic.

Registration will begin at 8:30 AM and the program will run from 9 AM to 12:30 PM. The presenter will be Jim Hermes, former OSU Poultry Specialist and current Extension Chair of Lincoln County. He will present

Coming Events...continued

information about bird selection, behavior, housing, egg production, nutrition, health and other topics. Handouts and other resources will be available.

This workshop is co-sponsored by OSU-Wasco County Extension, WSU-Klickitat County Extension and a grant from the USDA's Sustainable Agriculture Research and Education program. This educational program will be free and open to the public. A small fee may be required to offset the cost of refreshments.

For more information and to pre-register, contact Brian Tuck, Wasco County Extension at 541-296-5494 or Brian.Tuck@oregonstate.edu, or Susan Kerr, Klickitat County Extension at 509-773-5817 or kerrs@wsu.edu. Please pre-register by Oct. 6.

Extension programs and policies are consistent with federal and state laws and regulations on non-discrimination regarding race, color, gender, national origin, religion, age, disability and sexual orientation. Evidence of noncompliance may be reported through your local Extension office. Persons with a disability requiring special accommodation while participating in Extension programs may call their county Extension office in advance of the program. If accommodation is not requested in advance, we cannot guarantee the availability of accommodation on-site.

SARE Sponsors Local Greenhouse Workshop

If you are interested in small scale greenhouse management, an upcoming workshop is being prepared with you in mind. Join others interested in this small scale agriculture production topic at The Discovery Center in The Dalles, OR, on October 9.

Registration will begin at 1 PM and the program will run from 1:30 PM to 5 PM. The presenter will be Richard Regan of the OSU North Willamette Research & Extension Center. He will discuss greenhouse design, materials, heating, crops and other topics. Educational materials will be available.

This workshop is co-sponsored by OSU-Wasco County Extension, WSU-Klickitat County Extension and a grant from the USDA's Sustainable Agriculture Research and

Education program. This educational program will be free and open to the public. A small fee may be required to offset the cost of refreshments.

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"Organic Livestock: Principles, Practices, and Prospects"

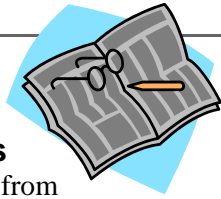
Washington State University, in cooperation with the National Center for Appropriate Technology, Western SARE, Oregon State University, and Oregon Tilth, is offering a satellite broadcast examining the basics of organic livestock production and the opportunities it presents. The broadcast is intended to help agricultural professionals (Extension, consultants, suppliers, veterinarians, producers, etc.) become familiar with this growing sector of agriculture and to better answer questions and find resources on the topic.

The program will take place on Friday, October 29, from 10a.m. to 12:30p.m. A 5-person panel representing various aspects of organic livestock will share their knowledge and experience, and viewers will be given an opportunity to have their questions answered during the broadcast. For program details and registration information, go to: <http://ext.wsu.edu/noas/>



Resources

Publications



OSU Extension Publications

The following are new publications from Oregon State University. Please see the OSU Web Site for more information on these and other publications at: <http://eesc.oregonstate.edu>

PNW 572, Management Strategies for Preventing Herbicide-Resistant Grass Weeds in Clearfield Wheat Systems; New, May 2004, 8 pages, \$2.00
<http://info.ag.uidaho.edu/pdf/PNW/PNW0572.pdf>

EM 8846-E, Energy Pricing and Irrigated Agriculture in the Upper Klamath Basin (Water Allocation in the Klamath Reclamation Project, 2001, Brief #3)
New, July 2004, 11 pages, no charge
<http://eesc.oregonstate.edu/agcomwebfile/edmat/EM8846-E.pdf>

EM 8874, Common Weeds in Oregon Container Crops, New, June 2004, 24 pages, \$6.00 (preview only online)
<http://eesc.oregonstate.edu/agcomwebfile/edmat/EM8874.pdf>

SR 1052, Range Field Day Report 2004: Current Forage and Livestock Production Research (available online and from EOARC, 541-573-8900)
New, June 2004, 64 pages, no charge
<http://eesc.oregonstate.edu/agcomwebfile/EdMat/html/SR/sr1052/sr1052.html>

SR 1053, Central Oregon Agricultural Research Center 2003 Annual Report (available online and from COARC, 541-475-7107)
New, June 2004, 164 pages, no charge
<http://eesc.oregonstate.edu/agcomwebfile/EdMat/html/SR/sr1053/sr1053.html>

SR 1054, 2004 Columbia Basin Agricultural Research Center Annual Report in Cooperation with USDA/ Agricultural Research Service (available online and from CBARC, 541-278-4186)
New, June 2004, 140 pages, no charge
<http://eesc.oregonstate.edu/agcomwebfile/EdMat/html/SR/sr1054/sr1054.html>

SR 1055, Malheur Experiment Station Annual Report 2003 (available online and from MES, 541-889-2174)
New, June 2004, 278 pages, no charge
<http://www.cropinfo.net/AnnualReports/2003/index.html>

EM 8778, Navigating the Resource Maze, new February 2002, preview and order form (<http://eesc.oregonstate.edu/agcomwebfile/edmat/em8778.pdf>)

EC 1559, Identification and Control of Knapweed Species in Central and Eastern Oregon
New, February 2003, html version now online (<http://eesc.oregonstate.edu/agcomwebfile/edmat/html/ec/ec1559/ec1559.html>)

Other OSU Publications of Interest that are available through OSU Extension Office.

EM 8835, The Organic Farmer's Guide to OSU, Revised June 2004; \$2.50.

EC 1546, Water-Efficient Landscaping Plants, November 2001; \$3.00.

EC 1563, PNW's Least Wanted List: Invasive Weed Identification & Management, June 2003; \$5.00

PNW0005, Trees Against the Wind, February 2003; \$8.00

EM 8644, Irrigation Management Practices: Checklist for Oregon; \$2.25

Publications from other sources

Timber Sale Planning and Forest Products Marketing. This 25-page booklet is free of charge from Montana State University and can be downloaded from <http://www.montana.edu/wwwpb/pubs/4479.pdf>.

Orchard Monitoring Manual for Pests. Natural Enemies and Diseases of Apple, Pear and Cherry: An Illustrated Guide for Washington State. The manual is available in Spanish or English, from: <http://www.agcenter.org/progpest.html>

Newsletters

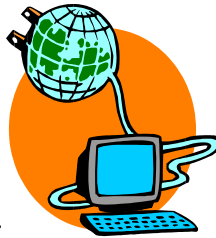
The most current issue of Woodland Notes is available now on the Clackamas County Website at: <http://extension.oregonstate.edu/clackamas>. Then click on Forestry/Christmas Trees. This is an excellent website for information concerning woodland management in the area.

Resources....continued

Web Pages

WeedMapper is a web-based spatially referenced database of noxious weeds that anyone may query and helps visitors easily locate weeds that are proximate to their land.

The database includes locations of noxious weeds throughout Oregon as collected by responsible federal, state, and local agencies. Electronic maps are viewable at the state, county, township, or section (square mile) level. The website can be found at: <http://www.weedmapper.org>



West Nile Website. The Oregon Department of Human Services has established a web site for the most current information on West Nile Virus. The website address is as follows: <http://www.dhs.state.or.us/publichealth/acd/w Nile/index.cfm>

Wildfire in Oregon Website. The Oregon State University Extension Service has developed a new website, "Wildfire in Oregon," to provide up-to-date information about wildfire prevention, news about current fires, and suggestions for recovery after fire. The website can be found at: <http://extension.oregonstate.edu/emergency/wildfire.php>

Farm Participatory Research list-serve is a new list-serve established for North America. To subscribe, please select one of these two links:

- North American Farming Systems Association
<http://www.misa.umn.edu/Other/northamericafarming.html>
- International Farming Systems Association
http://www.fao.org/farmingsystems/ifsa_en.htm

Articles of Interest to Small Farmers from WSU Small Farm Connection website.

- **The Specialty Specialist:** Experimentation and a loyal customer base are a winning combination for an Enumclaw niche-marketer
<http://smallfarms.wsu.edu/marketing/RockridgeOrchards.html>
- **Woodlot Owners:** Money can grow on trees, and under them, too: Turn your woodlot into a profitable side business <http://smallfarms.wsu.edu/crops/specialtyForestProducts.html>

The Small Farm Connection

(<http://smallfarms.wsu.edu>) is brought to you by Washington State University's Small Farms Team. Our team works with communities to foster profitably family farms, land and water stewardship, and access to healthy food.

New PNW 2004 editions of the on-line Insect and Weed Management Handbooks have been released at their web sites, <http://pnwpest.org/pnw/insects>
<http://pnwpest.org/pnw/weeds>.

Grants

Wasco County Soil and Water Conservation District Grants - \$\$ Available



Wasco County Soil and Water Conservation District continues to have funds available for grants of up to **\$10,000** for conservation projects that save soil or water or improve wildlife habitat. Cost-share rates vary from 50% to 75%, depending on the amount requested. Grants are competitive and are considered by a local panel every month and require a minimal of paper work for the applicator. Interested parties should contact Jennifer Clark at Wasco County SWCD, (541) 296-6178 x119.

Keeping in Touch

Farm Services Agency NAP SALES CLOSING DATES



Sales closing dates for eligible crops in Wasco & Hood River counties. If you have a crop not listed, contact us to obtain the sales closing date and crop information. For other counties check your local FSA Office.

October 1, 2004

Hay crops, Chestnuts, Garlic, Herbs, Mixed Forage and Native Grazing (Range land)

November 22, 2004

Young Fruit Trees, Blueberries, Grapes

February 4, 2005

Spring Onions

March 15, 2005

Mustard and Triticale

Feature Articles

Mosquito Control Using Outdoor Automated Misting Systems and The West Nile Virus

By Brian Tuck,
OSU Wasco County Extension Agent

With the recent announcements that West Nile Virus has been discovered in Oregon, there has been discussion concerning ways to control mosquitoes. One such system that has been developed is to use outdoor automated misting systems that disperse synergized formulations of natural pyrethrins (type of insecticide) at predetermined intervals by the user to control mosquitoes.

Though the use of outdoor automated misting systems might seem on the surface to be a very good control system to use for the homeowner or business, there are some serious concerns for the user. Of particular concern is that these systems do not consider the need to monitor mosquito populations. Pesticides should only be used when mosquito populations are present at levels that could present a possible health hazard.

Such outdoor automated systems also can potentially target beneficial populations of insects and other non-target organisms through uncontrolled off-site pesticide drift.

The indiscriminate application of pyrethrin insecticides will continually select for resistance to the whole pyrethroid class of insecticides that we presently use to control mosquitoes. In time this will result in the development of resistant strains of mosquitoes, which will result in the loss of this important class of insecticides.

There is also concern over continued exposure by people to pesticide sprays. Pyrethrins, though relatively safe compounds bear the signal word "Caution" on the label, and the precautionary

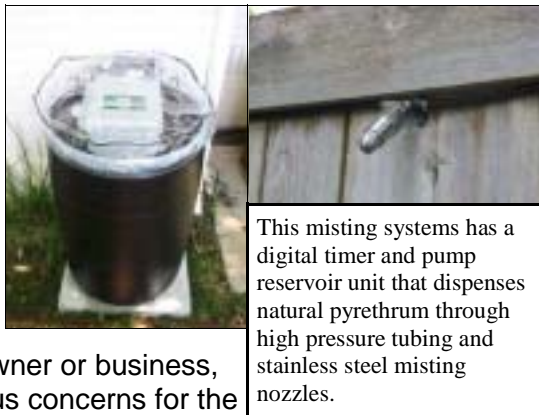
statements indicate that they may be harmful if inhaled. Labels also advise that pets and birds be removed and aquaria covered before spraying. To avoid problems with the use of pyrethrin based compounds or any other pesticides used in this manner will require homeowners and businesses to be diligent and follow the pesticide label very carefully.

The homeowner should not forget that there are other means to help manage mosquitoes, which include reducing or eliminating aquatic habitats and can significantly reduce mosquito populations. Eliminating all mosquito habitats in an area like the Mid-Columbia would not be practical. Efforts should be focused on eliminating non-natural habitats that may serve as breeding sites. These include any site or object that collect and provide standing water for even a few days at a time. Examples are used tires, metal or plastic containers, clogged roof gutters, bird baths, wheelbarrows, wading pools, etc.

In addition to using pesticides as aerosols or mists to control the adult mosquitoes. Use of pesticides to treat mosquito larvae requires treating their aquatic habitats.

There are several types of materials available for treating these. Achieving mosquito control without harming other aquatic organisms can be accomplished with microbial larvicides, which are selective for mosquito larvae and considered non-toxic to other aquatic organisms and humans. The most common of these are products that contain a bacterium known as *Bacillus thuringiensis israeliensis* (Bti).

Fish provide a form of biological control by consuming mosquito larvae and adults. Precautions must be taken to prevent the escape of exotic fish into natural waterways including creeks, streams, sloughs, ponds, and ditches if connected to natural waterways. For information on permitted stocking of exotic fish such as mosquito fish in Oregon, contact the Oregon Department of Fish and Wildlife at 800-720-6339, or visit their website: <http://www.dfw.state.or.us/>. In Washington, contact the Washington Department of Fish and Wildlife at 360-902-2936.



This misting systems has a digital timer and pump reservoir unit that dispenses natural pyrethrum through high pressure tubing and stainless steel misting nozzles.

Feature Articles ... continued

Avoiding mosquitoes entails exclusion of mosquitoes from homes and other structures with tight fitting window and door screens, wearing clothing that mosquitoes cannot bite through, and using mosquito repellents. When applying insect repellents, be sure to follow label instructions, paying particular attention to those when applying these products to children.

Monitoring the spread of West Nile Virus in Oregon and Washington is a coordinated effort of state and county agencies. Both states have telephone information lines and websites with extensive links to provide information on many aspects of the virus: Oregon Department of Human Services 866-703-4636, <http://www.dhs.state.or.us/publichealth/acd/w Nile/index.cfm>; Washington State Department of Health: 1.866.788-4787, <http://www.doh.wa.gov/ehp/ts/Zoo/WNV/WNV.html>.

DRIFT MANAGEMENT: PRACTICAL METHODS TO INCREASE SPRAY PARTICLE SIZE

Jed Colquhoun, Extension Weed Specialist

INTRODUCTION

Herbicide spray drift is the movement of herbicide from the target area to areas where the herbicide application was not intended. Herbicide drift is caused by the movement of spray droplets.

Several factors contribute to the potential for the drift of herbicide spray droplets. Drift management strategies often focus on weather conditions as the primary culprit in herbicide movement. However, the influence of weather conditions, such as wind, temperature, and humidity, is based on spray droplet size. The larger the spray droplet, the lower the risk of herbicide drift.

HOW DOES SPRAY PARTICLE SIZE RELATE TO DRIFT RISK?

Spray particle size is measured in microns (mm). One micron is 1/25,000 inch. In more relative terms, a toothbrush bristle diameter is about 300 microns.

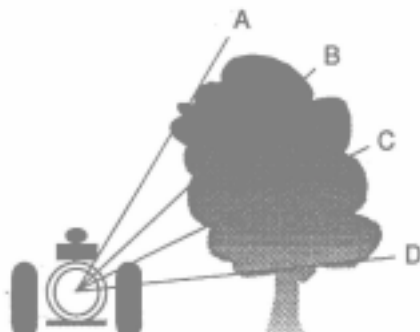


Table 1. Droplet sizes relative to common items.

Droplet Size	
850µm	Paper clip
420µm	Staple
300µm	Toothbrush bristle
150µm	Sewing thread
100µm	Human hair

The goal is to include spray particles that are small enough to result in adequate coverage and good pest control, but large enough that the risk of drift is reduced. Small particles have less mass than large particles, and therefore are more prone to travel long distances (Table 2).

Table 2. Lateral particle movement relative to spray droplet size.

Droplet Size		Time required to fall 10 feet	Lateral movement in 3 mph winds
5µm	Fog	66 minutes	3 miles
20µm	Very Fine	4.2 minutes	1,100 feet
240µm	Medium	6 seconds	28 feet
400µm	Coarse	2 seconds	8.5 feet
1,000µm	Very Coarse	1 second	4.7 feet

Source: Akesson and Yates, 1964.

Drift Management: Practical Methods to Increase Spray Particle Size.....continued

WHAT SIZE DROPLET DO I WANT TO SPRAY?

Pesticide type

The desired spray droplet size is dependent on the type of pesticide (Table 3). In general, insecticides and fungicides require thorough coverage for maximum effectiveness, and therefore require fine or very fine droplets. Soil-applied preemergence herbicides are often dispersed in soil by mechanical incorporation or precipitation, so coarse droplets (greater than 450 microns) can reduce drift risk while insuring uniform control. Spray droplet size has the greatest influence on the control effectiveness of postemergence herbicides.

Table 3. Droplet size classification.

Classification	Size (mm)	Application
Very fine	< 119	Insecticide +
Fine	119-126	Fungicide
Medium	217-353	Contact herbicides
Coarse	354-464	Translocated herbicides
Very Coarse	>464	Soil-applied herbicides

Contact vs. translocated postemergence herbicides

Translocated herbicides that are readily moved throughout the plant can be applied with larger droplet size, around 350-450 microns. Examples of such herbicides include Roundup, 2,4-D, Stinger, and Tordon. The contact herbicides, however, are not translocated well through the plant and require thorough coverage for effective control. Examples include Gramoxone Extra, Buctril, and Rely. Droplet size for contact herbicides should range from 200-350 microns.

As a general rule for herbicides, spray droplet size should be greater than 200 microns.

HOW CAN I CHANGE PARTICLE SIZE?

Spray application pressure

Spray particle size increases as spray pressure decreases. The spray solution emerges from the nozzle in a sheet, and droplets form at the edge of the sheet. As spray pressure increases, the sheet becomes thinner, and breaks into smaller droplets than from a sheet produced at lower pressure. Recommended spray pressures vary by nozzle type. Use of a nozzle outside of the recommended range can distort the pattern, resulting in poor coverage and pest control.

Spray nozzle orifice size

Larger orifice nozzles with high delivery rates produce a thicker sheet of spray solution and larger droplets than smaller nozzles.

Drift reduction additives

Several drift reduction additives have hit the market in recent years, such as Target and Border Xtra. However, minimal research has been conducted to validate their potential to reduce drift.

Nozzle type

Several new nozzle types are now available that can increase spray particle size, and thus reduce the risk of pesticide drift. These nozzles include:

- **Air induction nozzles (Figure 1)**

Air induction nozzles use a pre-orifice chamber that mixes air with spray solution. When discharged from the nozzle tip, the air expands and creates a larger spray droplet. Droplet size is about twice that of standard flat fan nozzles.

Surfactants, carriers, and other additives can affect the amount of air that is mixed with spray solution and droplet size.

- **Turbulence chamber nozzles (Figure 1)**

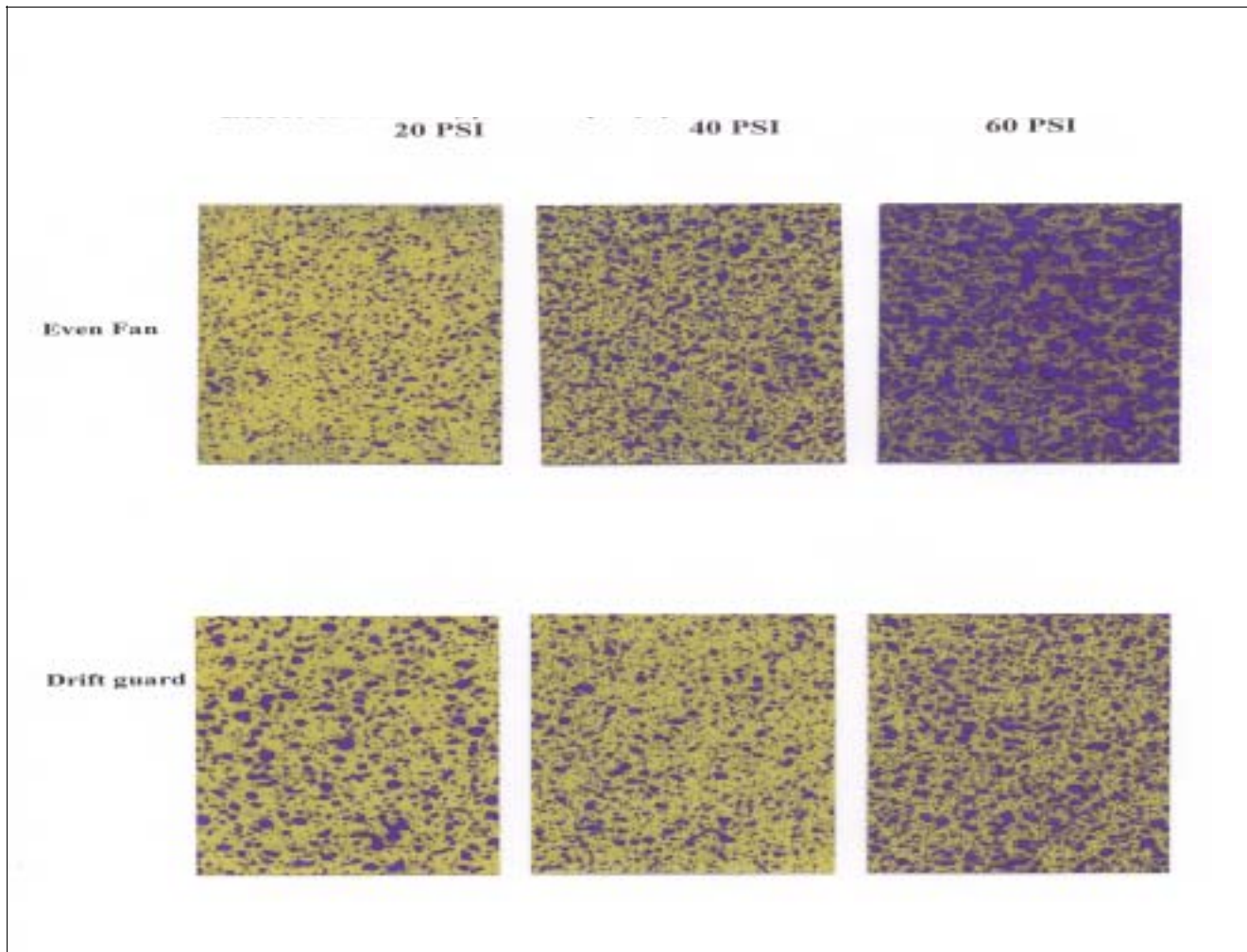
Examples include Turbo Teejet and Turbo Floodjet nozzles. A turbulence chamber within the nozzle absorbs excess energy prior to spray droplet discharge, thus increasing droplet size. Spray droplet size and spray pattern are maintained over a wide pressure range.

- **Pre-orifice nozzles (Figure 1)**

Examples include DriftGuard and Lo-drift nozzles. Nozzles have a pre-orifice prior to the discharge orifice that reduces spray pressure. Popular with soil-applied herbicides.

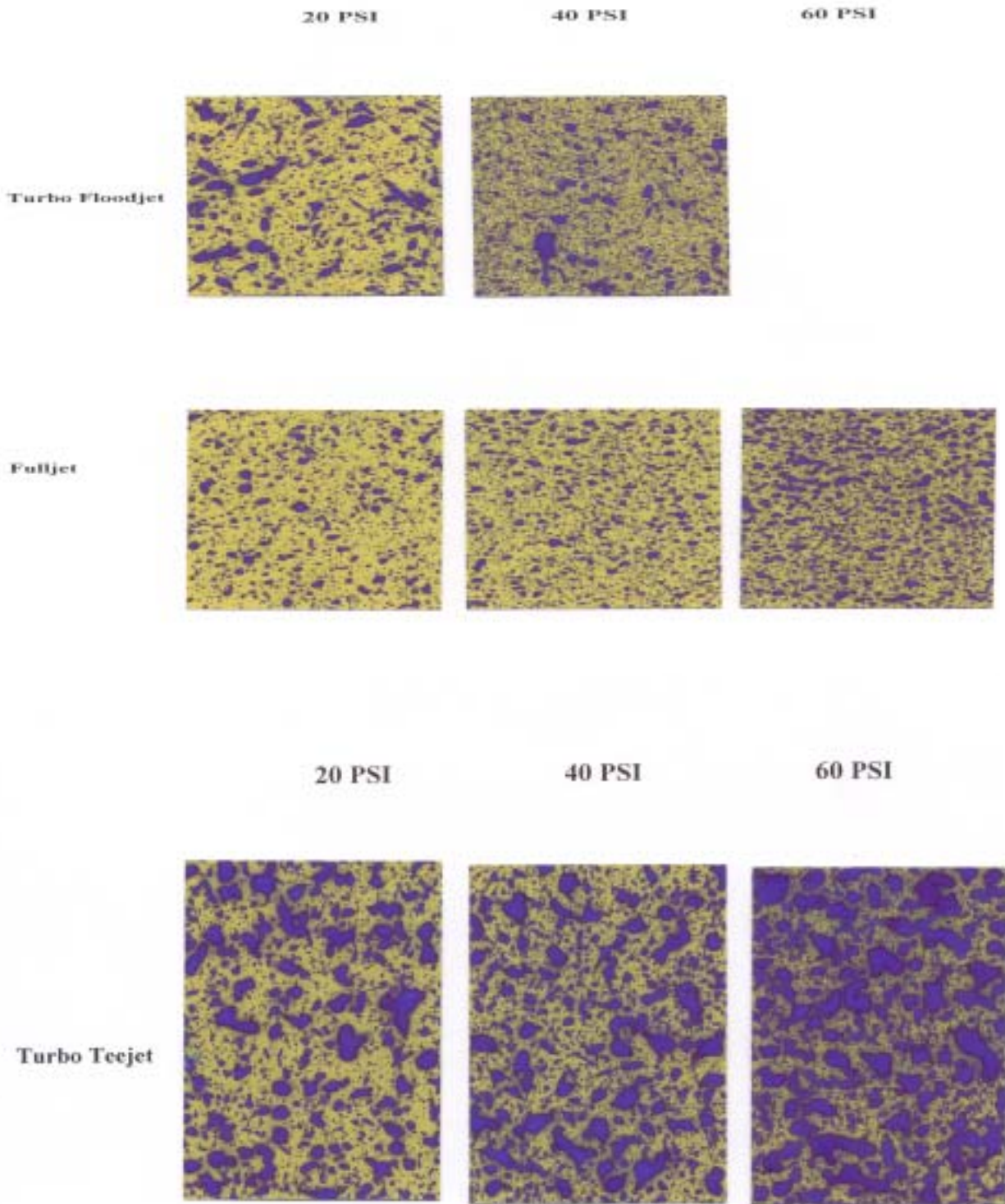
Drift Management: Practical Methods to Increase Spray Particle Size.....continued

Figure 1. Effect of nozzle type and spray pressure on droplet size.



Drift Management: Practical Methods to Increase Spray Particle Size.....continued

Figure 1. continued.... Effect of nozzle type and spray pressure on droplet size.





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