The Vegetable and Small Fruit Gazette

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Horticulture Department
The Pennsylvania State University

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Comments from the Editor

Elsa Sánchez, Department of Horticulture

Season, and look forward to Scott Guiser's article for the July issue. Also included in this issue is an article submitted by Shelby Fleischer written by Brian A. Nault and Alan G. Taylor on new insecticide seed treatments for snap bean, dry bean and sweet corn. I want to thank everyone who contributed articles to this issue and I want to encourage others to join us in upcoming issues. As always, the Vegetable & Small Fruit Gazette Team encourages your feedback so that we can better serve your needs and address your concerns.

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Quote for Thought from Pete Ferretti

Pete Ferretti, Department of Horticulture

Why is it that it only takes one careless match to start a forest fire,
and yet a whole box of matches to start a campfire?

-The Lion
May 2005

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Schedule for Agent Articles

Elsa Sánchez, Department of Horticulture

July– Scott Guiser	August– Tom Butzler
September– Lee Young	October– Cheryl Bjornson
November– John Esslinger	December– Andy Muza

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Temperature and Moisture Critical for Successful Season

Jeff Mizer, Extension Educator, Central Region

The more experience one has with plant growing, the more amazing it is that we ever have any successful crops. Whether you grow plants on your window sill, a high tunnel, a greenhouse, or the field, you need to keep in mind how complex plants are. Whenever you see a sick plant, do you usually start to think about the possible pest or nutrient problems? Often, the problem is associated with moisture or temperature inconsistencies.

During this past cool spring, for instance, many greenhouse and high tunnel problems were caused by plants being chilled. We get the mistaken impression that if a plant can tolerate temperatures in the 30's in the autumn that we can permit the night temperatures to dip to those same temperatures in spring. Countless plastic structures drop into the 40's (or lower) at a time when the babies are in the nursery. Even though ice crystals never form, this chilling often causes irreversible damage-- especially if root rots set in or fungus gnat larvae get a jump on the plants. Then, too, certain plants are very susceptible to chilling injury. For instance, peppers are nearly unfit for field transplanting if they have been stunted as young plants. Cauliflower that is chilled at the early growth stage will produce nothing but "buttons." At the very least, cold soil temperatures will result in early phosphorus deficiencies in almost any plant. In this era of high fuel prices, we must set our minds on maintaining proper temperatures regardless of the cost. The only alternative is to come up with ingenious heating systems such as bench or floor heating, radiant heating, or burning waste as fuel.

Let us talk briefly of moisture. In late winter and early spring, growers are tempted to withhold water from their plants. In the late winter, the purpose is to reduce damping off, root rot, and fungus gnat problems. In the spring, the purpose is to delay maturity and prevent botrytis. Regardless, growers end up with desiccation which is often confused with pest or nutrient problems. The tissue death is worse near locations where desiccation is greatest-- stoves or heaters, bench edges, and in the draft of circulation fans and vents. Diligently strive to reduce excessive transpiration from plants by minimizing hot and moving air.

In the field, plant problems caused by temperature and moisture fluctuations are common. The earlier the plants are set in the field, the greater the chance of problems. Row covers tend to further increase the risk, since temperatures beneath the covers often get too high. In general, temperatures above 90 oF are detrimental to plants. Also, be careful about laying transplants over on their sides in the field; they can be sunscalded very easily.

So, the next time your plants aren't doing so well, consider simple explanations like temperature and moisture relations, before you blame it on pest or nutrient problems.

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Triazine-Resistant Lambsquarters Control in Sweet Corn

David H. Johnson, Associate Professor, Penn State Southeast Research and Extension Center, Lancaster County
Timothy Elkner, Horticulture Extension Agent, Lancaster County

This article was originally printed in the May 2005 issue of the Vegetable & Small Fruit Gazette. Since that time, Callisto has been registered for sweet corn. The article appears in this issue to reflect that change.

Weed control in sweet corn can be challenging to the grower, especially with the loss of Bladex and the presence in Pennsylvania of triazine-resistant weeds such as common lambsquarters and smooth pigweed. Several new products have been registered for field corn in the past few years, and some are now registered for sweet corn or may be in the near future. These new herbicides include Callisto, Lumax, Option, and Permit. Permit had been labeled for sweet corn for a number of years and Callisto just received registration for the 2005 season. Lumax and Option are NOT labeled for sweet corn. Sweet corn has also been added to the Stinger and Aim labels. Based on their use in field corn, several of these products will provide excellent weed control options for sweet corn producers, including control of triazine-resistant weeds. These products will also be useful for those growers who do not have triazine-resistant weeds, but want to rely less on atrazine-based programs.

In a project funded by the Pennsylvania Vegetable Marketing Board, we studied triazine-resistant lambsquarters control in sweet corn at the Penn State research farm in Lancaster County. The site has a natural population of common lambsquarters (some of which is triazine resistant) and several other weeds. Sweet corn (cv. ‘Argent’) was planted on May 15, 2004, and herbicides were applied on May 18 (preemergence) and June 13 (postemergence). Sweet corn had three collars and was 8-10 inches tall and weeds were 1 to 4 inches tall at the time of the postemergence applications.

Due to the wet weather experienced in the summer of 2004, good activation of the preemergence herbicides occurred, resulting in excellent early season weed control. Few weeds were present at the time of postemergence sprays. 2,4-D amine caused some sweet corn injury, mostly in the form of leaning or twisted plants. Callisto caused bleaching injury as high as 18% at 14 days after treatment (DAT), and Option caused stunting injury at this time. By 27 DAT there was no indication of injury.

Common lambsquarters (mostly triazine resistant) control was good from Bicep II Magnum, which contains Dual II Magnum and atrazine (Table 1). This was surprising, but it is likely that the Dual II Magnum portion gave most of the control. Lumax, which is similar to Bicep II Magnum but also contains mesotrione (the active ingredient in Callisto), gave 100% season-long control. Control was also 100% season long when Callisto was used following Dual II Magnum. Laddok S-12, when used after Dual II Magnum, also gave surprisingly high lambsquarters control. Although not statistically significant, control by 2,4-D and Option were slightly less, mainly due to the escape of a few plants in each plot. Aim gave lower control, but it is known to be weak on lambsquarters.

With the exception of Dual II Magnum followed by 2,4-D amine, all products gave excellent redroot pigweed control. Similar results were found for velvetleaf, giant foxtail, prickly sida, and eastern black nightshade (data not shown). The early season injury noted for 2,4-D, Callisto, and Option resulted in some yield reduction compared to Laddok S-12. However, all treatments except the 2,4-D amine treatment yielded better than the weedy check.

In a separate study, we evaluated tolerance of 16 sweet corn varieties to Callisto, Lumax, Option, Permit, Aim, and Stinger. All herbicides were applied at 2X rates to simulate overlap situations. The sweet corn varieties were white, yellow, or bicolor, and represented se, sh-2, and triplesweet genetics. Most varieties showed good tolerance to the herbicides. For Option, there was more injury potential on the shorter-season varieties, such as Exstacy II, Temptation, Frosty, Luscious TSW, and Silver Princess (data not shown). Aim caused slight burning injury, with all varieties similarly affected. However, most were able to outgrow the injury. Permit and Stinger did not cause any injury.

In summary, the new herbicides Lumax, Callisto, and Option provided excellent triazine-resistant common lambsquarters control. Callisto was just registered by EPA for sweet corn, but Lumax and Option are NOT yet registered for sweet corn use. Some injury with Callisto, Option, and Aim was observed, but the sweet corn recovered quickly. Aim was weaker on common lambsquarters but gave excellent redroot pigweed control.

Table 1: Weed Control in sweet cornwith herbicides, Landisville, PA, 2004

		Crop Injury			Common lambsquarters		Redroot pigweed		Yield
Treatment[1]	Rate	6 DAT	14 DAT	27 DAT	14 DAT	50 DAT	14 DAT	50 DAT	
		----	% injury	----	---------------------% injury-----------------				
Weedy check		0	0	0	0	0	0	0	4.8
Bicep II Magnum	2.1 qt/a	0	0	0	92	90	100	100	6.6
Dual II Magnum, pre fb Laddok S-12 + COC, post	1.5 pt/a fb 1.67 qt/a + 1%	0	0	0	100	99	100	100	7.2
Dual II Magnum, pre fb 2,4-D amine, post	1.5 pt/a fb 1 pt/a	11	12	0	100	94	89	99	5.1
Lumax, pre	2.5 qt/a	0	0	0	100	100	100	100	6.3
Dual II Magnum, pre fb Callisto + atrazine +	1.5 pt/a fb 3 oz/a + 0.5 pt/a	8	18	0	100	100	100	100	6.0

COC + UAN, post	+ 1% + 2.5%								
Dual II Magnum, pre fb Option + MSO + UAN, post	1.5 pt/a fb 1.5 oz/a + 1% + 1%	0	16	0	100	92	100	100	5.8
Dual II Magnum, pre fb Aim + NIS, post	1.5 pt/a fb 0.5 oz/a + 0.25%	0	0	0	100	88	100	100	6.4
LSD (0.05)		4	6	--	8	10	4	1	0.9

[1]Abbreviations: fb = followed by, COC = crop oil concentrate, UAN = 28% liquid fertilizer, MSO = methylated seed oil, NIS = nonionic surfactant, DAT = days after treatment, LSD = least significant difference.

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Critical Periods for Irrigation of Vegetables, Small Fruits and Tree Fruits

Bill Lamont, Department of Horticulture

Proper irrigation is important throughout the entire cropping cycle but there are certain periods during the growth of a crop that it is critical to ensure that the crop is supplied with sufficient water for optimum growth and development. If water is not supplied in adequate amounts during this period there can be dramatic reductions in yield and/or quality of the crop.

Vegetable Crops	**Critical Period**
Asparagus	Adequate for spear growth, most critical is fern growth
Broccoli	Transplant, flower bud production
Cabbage	Transplant, head development
Carrot	Root enlargement
Cauliflower	Transplant, curd development
Cucumber	Pollination, fruit enlargement
Eggplant	Transplant, flowering and fruit development
Lettuce	Throughout growth

Lima Bean	Blossom and pod enlargement
Muskmelon	Pollination, fruit enlargement
Onion	At planting, bulb enlargement
Pea	Pod development
Pepper	Fruit development
Potato	Tuber development
Rhubarb	Petiole formation for harvest
Snap Bean	Blossom and pod enlargement
Spinach	Throughout growth
Sweet corn	Silking and tasseling, ear development
Sweet potato	When slips are set in the field
Tomato	Transplant, early flowering, fruit set and enlargement
Turnip	Root enlargement
Watermelon	Pollination, fruit enlargement
Fruit Crops	Critical Period

Tree Crops

Apple Pears Peaches Plums Nectarines Cherries	For the following tree fruits the critical period for irrigation is early fruit set, during flower formation and during final fruit swell.

Small Fruits

Blueberries	Blueberries Berry swell to end of harvest and at formation of fruit buds for the next year’s crop which occurs in late July and August
Raspberries	Bloom and as berries are sizing prior to 1st Picking

Blackberries	Same as above
Strawberries	Strawberries At planting, during runner formation, during flower bud formation before harvest begins and at renovation

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Expected Performance of New Insecticide Seed Treatments on Snap Bean

Bill Lamont, Department of Horticulture

Brian A. Nault, Department of Entomology, Cornell, NYSAES, Geneva, NY 14456
Alan G. Taylor, Department of Horticultural Sciences, Cornell, NYSAES, Geneva, NY 14456

Many snap bean, dry bean and sweet corn fields will be planted with new insecticide seed treatments this season. For snap bean and dry bean, Cruiser 5FS (thiamethoxam) will be used primarily to protect the crop from seedcorn maggot and potato leafhopper damage, while either Cruiser 5FS or Poncho 600 (clothianidin) will be used for seedcorn maggot and corn flea beetle control in sweet corn. These seed treatments are available only from the seed companies.

Over the past several years in western New York, we have examined the performance of these seed treatments for controlling the major insect pests of these crops. Based on our current knowledge, we have expectations about how these seed treatments should perform. Below is a summary of what to expect.

Snap bean
Most of the early processing snap bean acreage will be treated with both the standard rate of Lorsban (chlorpyrifos) and Cruiser at a rate of 1.28 fl oz/ 100 lb of seed. The rationale for this approach is to minimize the risk of damage by seedcorn maggot. In some of our field trials where seedcorn maggot pressure has been extremely high, control has been slightly better using a combination of Lorsban and Cruiser than using Cruiser alone. In our trials, we purposely created a “worse-case scenario” to encourage high maggot infestations so that the new seed treatments could be stringently evaluated. To do this we planted in May and incorporated a cover crop before planting and placed a band of bone and meat meal over the row after planting. Seedcorn maggots are highly attracted to decaying organic matter (=dying cover crop and meat meal) and thrive under these conditions. Also, the cool and wet conditions that often occur in May delay germination and seedling emergence allowing seedcorn maggots more time to attack the crop while it is vulnerable. After the crop emerges, maggots cause little threat to the crop. Under typical growing conditions from late June through late July, Cruiser alone should sufficiently control seed maggot infestations.

Cruiser at the labeled rate of 1.28 fl oz/ 100 lb of seed should protect the crop from potato leafhopper for most of the season (approximately 50 days after planting). In our field trials, Cruiser prevented economically damaging levels of potato leafhopper from occurring through the late bloom to early pin stages. In some trials, potato leafhoppers were observed between the pin stage and harvest, but densities were well below a level that would cause yield loss. For this reason, there is no need to spray for leafhoppers if seed was treated with Cruiser.

Cruiser will not protect the crop against European corn borer. So, if conditions are favorable for a European corn borer infestation, a foliar spray of an insecticide is suggested at late bloom to early pin.

Dry bean
Cruiser received a label for use on dry beans in late December 2004. The rate is the same as that for snap bean, 1.28 fl oz/ 100 lb of seed. Based on results from our field trial last year, Cruiser controlled potato leafhopper for up to 50 days after planting and controlled seedcorn maggot. Because dry bean is a longer season crop than snap bean, an application of a foliar-applied insecticide to control potato leafhopper may be needed between 50 days after planting and near harvest to ensure protection of the crop. If European corn borer is also a threat, select a product that has activity against both corn borer and potato leafhopper.

Sweet corn
The susceptibility of sweet corn to Stewart's wilt, which is the disease caused by a bacterium transmitted by the corn flea beetle, is highly dependent on variety. For example, 'Bonus' and 'Dynamo' are resistant to Stewart's wilt. For varieties not resistant to this disease, an insecticide should be used when the risk for this disease to occur is moderate to high. According to the 2005 predictions about the risk for Stewart's wilt (see Stevens-Boewe model in http://www.nrcc.cornell.edu/grass/stewart_maps.html), the risk is zero in most places in western New York. Consequently, the early-season insect pests that should be of greatest concern to the 2005 sweet corn crop include the seedcorn maggot in most fields and the corn rootworm in localized areas. The remaining discussion focuses on these pests.

Cruiser is labeled for control of seedcorn maggot on sweet corn (0.125 mg to 0.8 mg thiamethoxam per kernel), but it is not labeled for corn rootworm control (it is labeled at a 1.25 mg per kernal rate on field corn only). So, if corn rootworm is expected to be a problem, another insecticide will be needed in addition to Cruiser. In our field trials over the past two years, Cruiser has provided excellent protection against seedcorn maggot at a rate of 0.25 mg thiamethoxam per kernel.

Poncho 600 is labeled for seedcorn maggot control (0.25 mg clothianidin per kernel) as well as corn rootworm control, but at a higher rate (1.25 mg clothianidin per kernel). In our field trials, Poncho 600 has provided excellent control of seedcorn maggot. We have not had experience managing corn rootworms with seed treatments. There are some plant-back restrictions for Poncho that should be noted. Fields planted with treated seed can be replanted immediately with corn, rapeseed and canola. The areas also may be replanted 30 days later with cereal grains, grasses, non-grass animal feeds, soybean and dry beans. These areas can not be replanted with other crops until 1 year after treated seeds are planted. Labels on replant restrictions can change, so make sure that you are current on this information.

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The Organic Way- In Search of Sustainable Botrytis Management

Elsa Sánchez, Kathy Demchak & Graham Sanders, Department of Horticulture

Last year we started a research study to examine the effectiveness of several biorational products and cultural strategies for Botrytis management for raspberries. This study is being funded by the State Horticultural Association of Pennsylvania, NE Sustainable Agriculture Research and Education Program, North American Bramble Growers Association and IR-4. In May of 2004 we planted 'Nova' and 'Prelude' red raspberries at the Russell E. Larson Research Farm, Rock Springs, PA. This year we have been working with researchers from the University of Massachusetts and the USDA and an advisory board of growers in PA and MA to select different products to trial.

The products which will be included in the trial are:

Milstop – The active ingredient of Milstop is potassium bicarbonate. Milstop is approved for certified organic production.

Endorse – Endorse is not currently labeled for raspberry production. It is a biorational fungicide used in turf.

Stor-Ox – The active ingredient of Stor-Ox is hydrogen dioxide. It is a broad spectrum fungicide and bactericide approved for certified organic production.

Lime Sulfur – Lime Sulfur will be used as a 1% solution during the growing season instead of the 5 – 10% solution used during dormancy.

Vigor-Cal-Phos and Stor-Ox (applied separately) – Vigor-Cal-Phos is a foliar nutritional supplement containing 13% phosphate, 3% calcium and 0.25% copper.

Phostrol – The active ingredients of Phostrol are mono- and dibasic sodium, potassium and ammonium phosphates. It is a biorational fungicide.

Additionally, we'll compare V-trellis with I-trellis (supported hedgerow) for differences in the environment within the raspberry hedgerow and Botrytis incidence and severity. Finally, we're going to examine cane thinning at two times during the growing season to determine how it will affect Botrytis incidence and severity.

The products will be applied to the raspberries beginning in May when the plants flower. The trellis systems are being installed and we'll begin the cane thinning treatment later in the growing season. As we gain more information, we'll keep you posted on the study.

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Spraying Strawberries

Dr. Andrew Landers, Cornell University, NYSAES, Barton Lab., Geneva, NY 14456
(http://www.nysaes.cornell.edu/ent/faculty/landers/pestapp)
Source: New York Berry News, Vol. 4., No. 5, May 13, 2005.

Comment from K. Demchak - Dr. Landers presented the following information at the Mid-Atlantic Fruit and Vegetable Convention in Hershey this past winter. Those who were present in the audience were treated to a wonderful presentation. For those of you who missed it, or would like a review, here's an article he wrote that covers the information that was in his talk. Much of the information applies to other crops as well.

There are many new developments in spray technology that will help reduce the costs involved in applying pesticides. The main costs associated with pesticide application are the cost of pesticides, which continue to rise in many cases. Any technology that reduces the amount of product necessary to control a weed, insect, or disease, or improve its effectiveness, is welcome. The other major costs to consider are those of labor and timeliness.

Timeliness is crucial if pesticides are to control disease or insects. Applying the spray mix too early may act in a prophylactic way if the product is designed to do that. Many sprays must be applied to the target at a specific growth stage of the weed, insect, or disease. Failure to apply products on time will lead to increased disease levels or insect activity.

Coverage is essential. Poor spray coverage is a major factor contributing to poor disease control. Better coverage leads to better control, and a thorough application of an effective material is required. Uneven coverage increases the amount of fungicide that must be applied in order to provide adequate control on poorly covered areas and the number of sprays required if it allows a disease to become established.

Whilst canopy size and shape will affect application volume, there are equally dangers in not applying enough spray and in applying too much spray. There is an optimum quantity required for a thorough coverage of the target. The old adage that you should spray until the leaves drip is misplaced; likewise lowering spray rates to below the minimum which offers control is also misguided advice. A number of growers have reduced application volumes to extremely low levels and are observing poor control due to inadequate coverage. Interestingly, research around the world confirms similar results and indicates that there is an optimum volume to provide thorough coverage and control.

A number of pesticide manufacturers are adopting the ASAE/BCPC nozzle selection system and stating on the pesticide label the spray classification needed for their product. Reference nozzles, tested in a laboratory using a laser analyzer, are then classified according to the characteristics of the spray produced. Fine, medium, and coarse are the categories of agricultural sprays. The label recommendation makes nozzle selection far easier for the sprayer operator. A general guideline is:

•Fine classification for contact fungicides and insecticides
•Medium classification for herbicides
•Coarse classification for pre-emergent sprays

Growers may find these spray classifications in the latest nozzle catalogues and should cross-reference the selected nozzle type, based upon flow rate, with the spray classification. Growers have to consider good coverage and penetration into the canopy, so traditional fine sprays may not penetrate, so when the traditional compromise takes place, a medium spray quality should be chosen. On no account should large droplets or coarse spray quality be used, as the droplets run-off the target. Large droplets can also be created from worn or damaged nozzles, remember to change nozzle tips when their output is greater than 10% of the manufacturers recommended flow rate.

However, weather conditions, particularly wind and its effect upon drift, must be taken into consideration. If the label or supplier makes no recommendation concerning nozzles or spray quality, then a reasoned choice of spray quality must be made, based upon the target, the product, and the risk of drift

Spray drift of pesticides is an important and costly problem facing pesticide applicators. Drift can result in damage to susceptible off target crops, environmental contamination to watercourses and a lower than intended rate to the target crop, thus reducing the effectiveness of the pesticide. Pesticide drift also affects neighboring properties, often leading to concern and debate. There are two types of drift, airborne drift, often very noticeable and vapor drift. The amount of vapor drift will depend upon atmospheric conditions such as humidity, temperature and the product being applied and can occur days after an application is made. Drift is influenced by many inter-related factors including droplet size, nozzle type and size, sprayer design, weather conditions and last but not least the operator.

Directing the spray to the target is the key to successful penetration and deposition. Whilst many modern nozzles can control drift successfully, e.g. drift-guard and air induction nozzles, there is still much to be done on positioning those nozzles in relation to the crop target. Multi-nozzle assemblies surrounding the target often help.

Air assistance certainly helps but usually when there is a good canopy to intercept the spray plume and capture the droplets. In early season spraying, when little foliage exists, then air assistance can cause more drift. There is a need to consider adjusting the airflow to match the canopy development.

There is very little work published specifically for strawberry spraying. Nils Bjugstad, a colleague at the University of Norway has conducted a five-year trial on improving spraying equipment. Bjugstad and Sonsteby (2004) observed the main issue is to obtain approximately the same spray and pesticide coverage and amount on the leaf surface on the outer and inner leaves as well as the upper and underside of the leaves (mainly spraying against grey mould in Norway).

Because the plant canopy increases considerably during the growing season, they concluded that they had to adapt the volume rate according to this change of mass. As shown in their papers, they recommend to use three nozzles in the start of the season; two from each side and one from the top, and for larger plants five nozzles per single row; one from the top and two from each of the sides, and in this way adjust the volume rate to 12.5, 19.0 and 25 pints per 109 yards row length (converted from the metric system) (Note: *this would convert to 52, 79, and 104 gpa assuming single rows 4' apart - KD*.).

015 nozzles seem to be too small and increase the risk of drift (drift will be measured next year) and lower the capacity (rows per hour). 02 and 03 nozzles seemed therefore to be more suited. They did not use cone nozzles in this study, only flat fan nozzles. Top angle 65 and 80 degrees should be used to maintain good penetration into the plant (but a good overlap has to be ensured). Best results were at 75 psi with the nozzles 4-8 inches above the target.

They also tested Air induction (AI) and Drift guard (DG) nozzles, but they did not prove to be better- mostly they gave poorer results. They tried them out in combination with conventional nozzles, using AI and DG on the top. This will be interesting to study in the forthcoming drift experiments. They use mostly front mounted equipment in Norway to ensure a good overview and control, but operator exposure has to be taken into account, and therefore the nozzles making larger drops may be interesting in some occasions, but always combined with conventional nozzles to ensure a good coverage.

Conventional crop sprayers as well as air assisted boom sprayers are not in use in strawberries in Norway, because the inter-row is sprayed and penetration is poor, especially down to the inner leaves and to the lower sides. Normally they use front mounted equipment that cover three single or double rows. For good conditions this equipment may be built out for five rows.

Finally, labor, their skill, and attitude toward spraying will assist greatly in getting good spray coverage. Training of operators is a must if the product is to be work successfully.

References:
Bjugstad N. and Sonsteby A. (2004) Improved spraying equipment for strawberries. In: Aspects of Applied Biology 71, International advances in pesticide application. Pp.335-342.

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Upcoming Meetings

Elsa Sánchez, Department of Horticulture

Local

October 14-15, 2005. Passive Solar Greenhouse Workshop, 1522 Lefever Lane, Spring Grove, PA 17362. Contact: Steve and Carol Moore (717) 225-2489 or sandcmoore@juno.com.

Regional

January 31 – February 2, 2006. Mid-Atlantic Fruit and Vegetable Convention. For more information contact the Pennsylvania Vegetable Growers Association at pvga@pvga.org or visit http://www.pvga.org/

National

August 17 – 19, 2005. North American Strawberry Growers Association Eighth Annual Summer Tour, “Farming on the Urban Fringe”. An exploration of farming operations and farm markets in the Lower Hudson area of New York State; Based at the Courtyard by Marriott, Fishkill, NY. For more information contact Georgene Thompson, 717-243-1349 or georgenethompson@comcast.net or visit http://www.nasga.org.

January 4 – 6, 2006. North American Berry Conference; Being held in conjunction with the Southeast Regional Fruit and Vegetable Conference at the Savannah International Trade and Convention Center, Savannah, GA, Hotel to be Determined. For more information contact Georgene Thompson, 717-243-1349 or georgenethompson@comcast.net or visit http://www.nasga.org.

International

September 5-9, 2005. Potato 2005. Emmeloord, the Netherlands. Contact: www.potato2005.com.