http://ipm.osu.edu/fruit/index.html

The Ohio State University Newsletter Extension

Fruit ICM News

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Calendar

Nov. 12-13: Berry Symposium at The Ohio State University, at University Plaza Hotel and Conference Center, Olentangy River Road, Columbus. Speakers from numerous universities and USDA branches will address four areas: Berry Production and Plant Breeding, Berry Composition, Health Effects, and Marketing and Product Development. The main emphasis will be on the health effects of berries and the recent research that has been done utilizing berries for chemoprevention and other health benefits. Registration for the conference is $50 per day. For more information e-mail Sandy Kuhn at kuhn.37@osu.edu or Melissa Fitzpatrick at fitzpatrick.73@osu.edu or call the OSU South Centers at 800-297-2072.

Jan. 15-17, 2003: Ohio Fruit & Vegetable Growers Congress & Ohio Roadside Marketing Conference, Toledo SeaGate Convention Centre and Radisson Hotel. Contact Jennifer Hungerford at 614-249-2424 for more information.

Jan. 27-29, 2003: Indiana Horticultural Congress; Planning is currently underway for next year's Hort Congress, which will be held January 27-29, 2003 at the Adams Mark Hotel in Indianapolis.

Feb. 7-8, 2003: North American Bramble Growers' Association will meet in Leesburg Virginia. The meeting will be held at the Holiday Inn at the Historic Carradoc Hall. Contact Jason Murray, Commercial Horticulture Agent, for further information, at jamurray@vt.edu or 703-737-8978. You can view the program at http://www.ento.vt.edu/Fruitfiles/NABGAProgram03.pdf

USDA National Organic Standards

Source: http://www.ams.usda.gov/nop *via*

Jerry Iles, Watershed Management Agent, OSU Extension

Agriculture Secretary Ann M. Veneman, on October 21, launched the implementation of USDA's national organic standards for agricultural products providing consistent labeling on products coast to coast. "Today, when consumers see the USDA national organic seal on products, they will know that the products labeled organic will be consistent across the country," said Veneman. "Organic agriculture is increasing and organic farmers across the country have been looking forward to the release of these regulations with anticipation they will create consumer confidence in their products."

Developed from extensive industry input and hundreds of thousands of public comments, the standards went into effect October 21. As of that date, any organic agricultural product must meet USDA standards in order to be sold as "organic." Along with the national organic standards, USDA developed strict labeling rules to help consumers know the exact organic content of the food they buy. Consumers can tell organically produced food from conventionally produced food by looking at package labels and watching for signs in the supermarket.

"We're very pleased with the work that USDA employees and the Organic Standards Board have done over the years to finalize these regulations," said Veneman. The USDA Organic Seal tells consumers that a product is at least 95 percent organic. Products with 70-95 percent organic ingredients can say so on the label (made with organic fruit, for example), but they can't display the seal.

"The focus on consumer awareness is just beginning," said A.J. Yates, administrator of the USDA Agricultural Marketing Program. "To coincide with implementation of the standards, we have updated our website to make it more user friendly and provide consumer information through a variety of avenues." Consumers can access the information at http://www.ams.usda.gov/nop. In addition, USDA's Foreign Agricultural Service has also upgraded its organic website, http://www.fas.usda.gov/agx/organics/organics, which provides information and resources to organic food and beverage exporters.

Other USDA efforts in the organic arena include an Economic Research Service report released last month, *Recent Growth Patterns in the U.S. Organic Foods Market*, that indicates that U.S. organic farmland has increased from approximately 1.4 to 2.4 million acres. The report can be accessed at http://www.ers.usda.gov.

USDA is administering a $5 million national cost share program to help defray the costs of certification incurred by organic producers and handlers in all 50 states, the U.S. territories, the District of Columbia, and Puerto Rico. This program expands the original cost share program that covered only producers and included only 15 states. USDA will also set aside $3 million per year for fiscal years 2003 to 2007 to administer competitive research grants, largely through the Cooperative State Research, Education, and Extension Service.

The research will focus on determining desirable traits for organic commodities; identifying marketing and policy constraints on the expansion of organic agriculture; and conducting advanced research on organic farms, including production, marketing and socioeconomic research. The organic industry is growing between 20 and 25 percent annually, and has been for the last several years. U.S. retail sales of organic foods reached approximately $7.8 billion in 2000, with global sales topping $17.5 billion.

Effect of Fumigation and Composted Yard Waste on Strawberry Yield, Plant, and Root Quality

Source: Richard C. Funt, Department of Horticulture & Crop Science; Michael A. Ellis, Department of Plant Pathology; and Joseph C. Scheerens, Department of Horticulture & Crop Science, The Ohio State University

Abstract: Dormant 'Earliglow' strawberry plants (*Fragaria x ananassa* Duch) were established in a replicated split plot factorial design in 1994. Main plots were fumigated or non-fumigated. The four subplots consisted of pre-plant applications of composted yard waste (CYW) applied to the row and incorporated (subsurface), surface-applied (surface), incorporated plus surface applied (subsurface + surface) and a control. Berries were harvested in 1995 through 1997 and analyzed for total weight (yield) and percent of culls. Plants were excavated in 1997 and analyzed for plant weight and percent black roots. Yields and percent culls varied among years. In 1995, fumigated plots had more yield than non-fumigated plots. Fumigated subsurface CYW alone had lower fresh and dry plant weight than the fumigated control.

Cumulative yields for CYW plots had 9 to 17% more total weight for fumigated and 6 to 15% for non-fumigated than the controls. Fumigation and surface applied CYW increased the percent of black roots.

Introduction: Pre-plant soil fumigation of strawberries has been used by growers in the United States to improve yields and reduce weeds and pests, particularly when replanted after strawberries. Fumigation can affect beneficial soil organisms and can be expensive. Yields may not be sufficient to justify the costs of treatment.

Composted organic wastes have been evaluated for their ability to suppress weed seed germination and nematode damage. Also, the addition of compost to soils can increase pH, organic matter content, cation exchange capacity (CEC) and nutrient content. It can decrease bulk density and water holding capacity. These physical and chemical soil improvements may be of benefit in areas of Ohio, where soils are typically low in pH and organic matter and high in bulk density.

Previously, the effects of CYW on growth and nutrient uptake by strawberries grown under greenhouse conditions and the effects of CYW on soil characteristics (i.e., bulk density, pore space, water infiltration rates, respiration rates) in strawberry field plots were reported. The objectives of this report were to investigate CYW as an alternative to fumigation and to determine the impact of CYW and fumigation on yield, plant growth, and black root rot.

Materials and Methods: In 1994, dormant 'Earliglow' strawberry plants were planted at The Ohio State University's Waterman Center (Columbus, OH) in a Crosley silt loam soil previously planted (1991-1993) in strawberries. Plots were arranged in a completely random split-plot design in six replications. Main plots were either fumigated with methyl bromide-chloropicrin (362 kg/ha) or non-fumigated. Subplots received CYW (Earth Blend; Kurtz Brothers, Independence, OH) at a rate of 6.9 m^3 (9.1 m long x 30.5 cm wide x 2.5 cm deep) or at 61.8 t/ha. Subplot treatments were: a) control; b) subsurface applied once and incorporated into the top 10 cm of soil using a garden tiller; c) surface compost applied (once) to the soil surface; and d) subsurface + surface compost applied to the soil surface incorporated, and then reapplied to the soil surface. There were 48 plots. Cultural practices, pest control, and irrigation as recommended for a matted row system of production were followed.

Fruit was harvested in 1995, 1996, and in 1997 by the Franklin County (Ohio) Master Gardeners. The fruit was weighed with the total weight recorded. The culls (fruit rot, insect damage or malformed fruit);

were weighed and quantity of marketable fruit was calculated by subtracting cull weight from total weight. Plants from each plot were removed in 1997, using a mechanical nursery spade having a soil core approximately 1 m in diameter and 0.75 m deep, counted, weighed for fresh weight, dried for dry weight. Sub-samples were placed in plastic bags and refrigerated and sent to the Ohio Agricultural Research and Development Center (OARDC) for black root rot analysis. Percentage root area that was black and dead was visually estimated for each plant using the Horsfall-Barratt scale for disease assessment.

Soil samples and fruit samples were collected and reported in regards to soil and fruit elemental content, organic matter, bulk density, fruit quality, and for number of nematodes. These are not reported in this paper, but may present a more in-depth knowledge of the treatments.

Statistical analyses (ANOVA) were performed with SAS Procedures and software (SAS, 1990) suitable for split-plot designs.

Results:

Effect of fumigation and CYW on yield: In 1995, fruit weight was significantly greater for fumigated plots than the non-fumigated plots (Table 1). Subsurface CYW tended to be higher than surface applied plots. In 1997, there was a significant fumigation x surface yield interaction. Non-fumigated surface CYW plots were higher in yield than fumigated surface CYW plots. In 1998, fumigated plot yields were higher than non-fumigated plots. Also, subsurface CYW were higher in yield than surface CYW plots. For years 1995 to 1997, there were no significant differences between fumigated and non-fumigated plots. However, CYW treatments increased yields from 9 to 17% in fumigated soils and 6 to 15% in non-fumigated soils for all years as compared to the control, respectively. Subsurface or subsurface + surface applied CYW treatments were higher than surface applied CYW in 1997, the last year of recorded yields.

Effect of fumigation and CYW on plant fresh and dry weight: Strawberry plants from non-fumigated, subsurface treatments had higher fresh weight than fumigated subsurface plants (Table 2). However, there were no differences among subsurface fumigation treatments for dry weight. There was a three-way interaction for both fresh and dry weight. Dry and fresh weight for fumigated subsurface CYW plants was higher as compared to other CYW treatments, either fumigated or non-fumigated.

Effect of fumigation and CYW on percent black root rot: Non-fumigated plots had a significantly higher percentage of black roots (Table 2), while surface applied CYW had a lower percentage of black roots than other compost treatments. A fumigation x surface interaction indicates that fumigation and surface applied CYW had a lower number of black roots. There was a trend for subsurface CYW to have fewer black roots than the control.

Other soil and plant factors: The results of a soil nematode test indicated that there was no measurable amount of parasitic nematodes in any main or subplot (data not shown). The number of plants per plot was significantly higher in the fumigation treated soil (data not shown). There was no significant difference among treatments for multiple crowns. However, there was a trend for surface CYW treatments to have a greater number of multiple crowns (data not shown).

Discussion

The root system of the strawberry plant is generally within 15 to 30 cm of the soil surface. New roots are generated near the soil surface. The fumigation used in this experiment was injected into the upper 20 cm of soil surface and can affect soil-borne pathogens such as nematodes and fungi. The subsurface CYW treatments were incorporated into the top 10 cm soil. This experiment was established in silt loam soil, which was previously planted to strawberries. This soil has a bulk density of 1.3 mg/m^3 and this soil type produces a shallow root system.

Yield of strawberries may be increased by soil fumigation, but increases may not be sufficient to overcome the cost of the material and/or application costs. In this test, fumigation had a very low impact on yield for the three years of the study. It appears fumigation had its greatest affect on yield in the first year in the life of the planting. Fumigation resulted in more plants per plot. However, fumigated subsurface CYW alone had lower fresh and dry plant weights than the control; and fumigation plots had fewer black roots than non-fumigated soil at the end of the four-year experiment. Fumigation had no effect on the percentage of culls or marketable fruit.

Soil water holding capacity and the rate of water infiltration were increased by the surface and subsurface CYW treatments as reported earlier. Surface plus subsurface applied CYW increased water-holding capacity by 36 to 40% and the rate of infiltration for the first 2.5 cm of water from 7 to 21 times faster for surface plus subsurface treatment than the control. Compost can allow a large amount of water to infiltrate at a rapid rate and increase soil water holding capacity during dry weather. Rapid heavy downpours of rainfall are common in Ohio during the hot summer months after harvest and can benefit from rapid infiltration of water.

Accumulative strawberry yields were 9 to 17% greater in fumigated CYW plots and 6 to 15% greater in non-fumigated plots than the control. Compost treatments appeared to be most influential in the latter years of the study. This may be partially explained by the number of black roots, particularly in the non-fumigated treatment, which had a greater amount of black roots. In 1995 Wing et al., studied black root rot (BRR), which is associated with poor growth and yield and found Earliglow most resistant to BRR in western New York. However, causes of BRR are more strongly correlated to location, and cultivar selection is of no value unless the organism is known. Surface applied CYW could have had an effect on new root formation because of increased rainfall infiltration, water holding capacity and porosity. Also, surface and subsurface CYW could have influenced the number of branched crowns. This could be due to a decrease in bulk density, rainfall infiltration, and increased water-holding capacity after harvest.

Conclusions

Strawberry yields were improved by 6 to 17% when composted yard waste (CYW) was either incorporated or surface applied to the soil. Fumigation appeared to improve strawberries in the first harvest but CYW provided the highest yield in the latter two harvests. Soil quality was improved and the percentage of black roots was influenced by both fumigation and CYW.

Soil quality can be improved by applying CYW, either incorporated into the upper 10 cm of soil or applied to the surface or by a subsurface plus surface CYW application. Improving soil quality creates an improved soil/water/porosity relationship that improves roots and plant growth over the life of a strawberry planting.

Table 1. Interactive means for strawberry fruit weight following sequential fumigation and composted yard waste (CYW) treatments, 1995 to 1997, Columbus, Ohio, USA.

	----------- Fruit Weight (g) ----------				%	%
Fumigated amended soil	**1995**	**1996**	**1997**	**All Years**	**Difference[2]**	**Culls[3]**
Fumigated						
Control (no CYW)	10062	3121	7986	21168	0	9.6
Subsurface11583	3527	9120	23453	10	9.7	

Surface	10202	3790	8343	23113	9	9.4
Subsurface + surface	11057	4465	9921	25443	17	9.5
Non Fumigated						
Control (no CYW)	9266	3394	8017	20677	0	11.0
Subsurface	10347	3630	9896	21901	6	10.4
Surface	9780	3889	8490	24132	15	11.3
Subsurface + surface	9300	4935	9650	23884	14	10.1
Significance[1]						
Fumigation	*	NS	*	NS	---	NS
Surface NS	**	NS	NS	---	NS	
Fumigation x surface	NS	**	NS	NS	---	NS
Subsurface	NS	NS	*	*	---	NS
Fumigation x subsurface	NS	NS	NS	NS	---	NS
Subsurface x surface	NS	NS	NS	NS	---	NS
Fumigation x subsurface x surface	NS	NS	NS	NS	---	NS
Year	---	---	---	**	---	**

[1] *, ** Non-significant or significant trends at P < 0.05 or 0.01, respectively.
[2] Expressed as a percentage above control.
[3] Average % of culls for 1995, 1996 and 1997. Culls were fruit rot, insect feeding or frost damage.

Our congratulations go to these 3 researchers for this and a paper titled "Antioxidants in Ohio Berries" reviewed and accepted for publication in 2003.

Table 2. Interactive means for strawberry plant fresh and dry weight, and percentage black roots following sequential fumigation and composted yard waste (CYW) treatments, Columbus, Ohio, USA, 1997.

	Plant weight (g)		Roots %
Treatment	Fresh	Dry[1]	Black
Fumigated			
Control (no CYW)	125.0	43.7	50.8
Subsurface	74.8	28.8	49.2
Surface	95.5	33.0	45.8
Subsurface + surface	104.8	38.0	46.7
Non Fumigated			
Control (no CYW)	89.0	32.5	72.5
Subsurface	105.3	35.0	67.5
Surface	93.5	37.5	55.8
Subsurface + surface	102.2	35.4	54.2
Significance[2]			

Fumigation	NS	NS	**	
Surface		NS	NS	**
Fumigation x surface	NS	NS	**	
Subsurface	NS	NS	+	
Fumigation x subsurface	+	NS	NS	
Subsurface x surface	NS	NS	NS	
Fumigation x subsurface x surface	+	+	NS	

[1] Weight in grams of five plants dried at 57C for four hours.
[2] +, *, **, NS significance at P > 0.10, 0.05, 0.01, and non-significant, respectively.

Apricot, Peach, and Nectarine Cultivars

Source: Leslie Huffman, Ontario Ministry of Agriculture and Food

What's new in tender fruit cultivars? Read the new fact sheets on *Peach And Nectarine Cultivars* at http://www.gov.on.ca/OMAFRA/english/crops/facts/02-033.htm and *Apricot Cultivars* at http://www.gov.on.ca/OMAFRA/english/crops/facts/02-035.htm.

NC-140 Cherry Rootstocks Trials

Source: Hilltop Nurseries

For Montmorency cherries:

- Mahaleb seedling, mahaleb clone SL 274, and MxM 39 were consistently most productive.
- The largest trees were on SL 275, Colt, and MxM series stocks.
- The most efficient trees were on GI 173/9.
- The smallest trees were on GM 9 and GM 79.
- Canopies on Gisela stocks had a tendency to produce a large amount of blind wood, caused by the influence of precocious buds on one-year-old wood.
- Gembloux and certain Gisela stocks generally had poor survival, especially at sites where PNRS and PD virus were detected.

Terminal Market Wholesale Fruit Prices October 24, 2001

The intent of listing terminal market prices is to provide information available in the public domain. It is not intended for price setting, only to assist growers in evaluating the value of their crops. Producers need to remember that the prices listed are gross, and consideration must be given to marketing costs, including commission, handling charge, gate fees, and possible lumper fees.

Source: Chicago http://www.ams.usda.gov/mnreports/HX_FV010.txt
Detroit http://www.ams.usda.gov/mnreports/DU_FV010.txt
Pittsburgh http://www.ams.usda.gov/mnreports/PS_FV010.txt

	Chicago	Detroit	Pittsburgh
Apples, ctns trypk, U.S. ExFcy			
Gala Golden Delicious			**PA** 100s 16-20.00 **WV** 100s 17.50
McIntosh Fancy Cortland	**WI** 64s, 72s, 80s 25-26 **WI** 72s 16.00		
Apples, ctns trypk, Comb U.S. ExFcy-U.S. Fancy G. Delicious Red Delicious		:	**WV** 125s 14.75 138s 11.50 **WV** 138s 11.50
Apples, ctns celpk, U.S. ExFcy			
Empire		**NY** 100s 25-26.00 120s 21.00	
McIntosh	**NY** 80s 26.00	**NY** 100s 25-26.00 120s 20-21.00	
U.S. Fancy McIntosh	**NY** 80s 16.50-17.00 96s 26.00 100s 16.50-17.00		**NY** 80s 19-20.00 100s 18.50 120s 15.50
Apples, ctns celpk, Comb U.S.ExFcy-U.S. Fancy McIntosh		**MI** 96s 23.50-24.00	:
Apples, cartons, 12 3-lb filmbags U.S. ExFcy Empire Golden Delicious Jonamac Jonathan McIntosh Red Delicious		**MI** 2½" min 13-13.50 **MI** 2½" min 15-15.50 **MI** 2½" min 14-14.50 **MI** 2½"min 16-16.50 **MI** 2½" min 15-15.00 **MI** 2½" min 15-15.50	:
Apples, cartons, 12 3-lb filmbags			
U.S. Fancy - Empire		**MI** 2½" min 12.00	
Gala	**MI** 2½" up 16-16.50	**MI** 2½" up 15.75-16.25	**PA** 2½" up 14-15.00

	2¼" min 15.00	**MI** 2¼" min 12.25-12.75	
Golden Delicious	**MI** 2½" up 15.00 **MI** 2¼" min 12.50	**MI** 2½" min 12.00 2¼" min 11.25-11.75	**WV** 2¼" min 10.50
Idared		**MI** 2½" min 12.00	
Jonathan	**IL** 2½" min 15-16.00 **MI** 2¼" min 15.00	**MI** 2¼" min 11.25-11.75	
McIntosh		**MI** 2½" min 12.00 2¼" min 12.25-12.75	**MI** 2½" min 12.50
Red Delicious	**IL** 2¼" up 15-15.50 **MI** 2 ¼" min 12.50	**MI** 2½" min 12.00 2 ¼" min 11.25-11.75	**WV** 2¼" min 10.50
Red Rome		**MI** 2½" min 12.00	**WV** 2¼" min 10.50
Apples, bu cartons, loose	No Grade Marks	U.S. Fancy	U.S. Extra Fancy
Cortland			**PA** 3" min 10-12.50
Crispin		:	**PA** 3" min 10-12.50
Empire		**MI** 2¾" up 14-15.00 **MI** 2½" up 12.00	**PA** 3" min 10-12.50
Gala	**MI** 2½"min 16.00 2¼" min 13.00		**PA** 3" min 10-12.50
Golden Delicious	**IL** 2¼" up 14-16.00 **MI** 2¼" min 12.00	**MI** 2¾" up 14-15.00 2½" up 12.00	**PA** 3" min 9-10.00
Idared		**MI** 3"min 15.00	
Jonagold		**MI** 2¾" up 14-15.00	**PA** 3" min 10-12.50
Jonathan	**IL** 2¼" up 14.00	**MI** 2½" up 12.00	
McIntosh		**MI** 2¾" up 14-15.00	

Northern Spy		**MI** 2¾" up 20.00 2½" up 15.00	
Red Delicious	**MI** 2½" up 15.00 2¼" up 12.00	**MI** 2¾" up 14-15.00 2½" up 12.00	**PA** 3" min 10-12.50
Rome		**MI** 3"min 15.00	
Apples, bins loose Empire, Golden Delicious, Red Delicious Gala	:	:	 **WV** $190 (each variety) **WV** $210

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