SPRING 2003

BERRY COMMISSIONS NEWS

A grower newsletter for the
Oregon Raspberry & Blackberry Commission
and the Oregon Strawberry Commission

INSIDE

INSIDE

Microbial Safety of Northwest Berry and Berry Products

- By Yanyun Zhao and Mark Daeschel, OSU -

Juices and purees are the typical value-added products from the Northwest berry crop. These products have generally been considered safe from pathogenic bacteria because of their high acid content. However, recent outbreaks of *Escherichia coli* O157:H7 and *Salmonella* spp. in apple and orange juices have challenged the belief that high acid foods cannot harbor viable pathogenic bacteria. Due to the acidic similarity of berry juice (pH 3.0-4.5), apple juice (pH 3.0-4.0), and orange juice (pH 3.0-4.0), there is concern that berry juice could also act as a vector for foodborne illness. Contamination of fresh fruits with potentially life-threatening pathogens is a major food safety problem. Currently, there is an urgent need for determining the modes of contamination, developing intervention strategies to destroy pathogens in fresh and processed fruits, and delivering relevant information to farmers and processors. Faculty at the Department of Food Science and Technology (Dr. Yanyun Zhao, Dr. Mark Daeschel, Dr. Cindy Bower, and Dr. John Henry Wells), Oregon State University have recently received an award from the USDA Integrated Research, Extension, and Education program to ensure the microbial safety of Northwest berry and berry products.

The goal of this three-year integrated research, education and Extension project is to enhance and ensure the safety of Northwest fresh and processed berries. Four specific objectives include:

1. To determine the modes of contamination of Northwest fresh berries with specific examination of *E. coli* O157:H7 and *Salmonella* spp. at the point of harvest, and to evaluate the survival of *E. coli* O157:H7 and *Salmonella* spp. in unpasteurized berry juice and puree.

2. To develop and validate effective disinfection methods, individually and in combination, for decontaminating berries harboring human pathogens.

3. To develop and validate intervention treatments based on the hurdle principle that results in 5-$\log_{10}$-unit reduction in the number of *E. coli*

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Nitrogen Fertilization of Berry Crops

- By Bernadine Strik, Professor, Extension Berry Crops, Berry Research Leader, OSU & Gil Buller, Research Assistant -

We have been studying uptake and use of fertilizer nitrogen in blackberry, red raspberry, strawberry, and are presently looking at blueberry. I will report here on N fertilizer uptake and needs of all but blueberry, because we are not yet done with the blueberry work. Thanks to professor Tim Righetti at OSU, students Paula Mohadjer and Hannah Gascho Rempel, and Research Assistant, Gil Buller, for assistance in these projects. We appreciate the support of the Oregon Strawberry Commission, the Oregon Raspberry and Blackberry Commission, the Agricultural Research Foundation, and the NCSFR. If you would like more information on any of the following please contact Bernadine at strikb@science.oregonstate.edu or 541-737-5434.

Blackberry:
We studied AY 'Kotata', but feel that 'Marion' would respond similarly. Also, we gleaned some information that is helpful for EY production. Plants were treated with 50 lb N/a in March.

- Off-year plants produced 2-5 times the primocane growth, in dry weight, of on-year plants.
- Primocane growth occurred throughout the growing season with about 50% of the growth occurring after berry harvest; we've observed this before in 'Marion'.

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Microbial Safety of Northwest Berry and Berry Products

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O157:H7 and *Salmonella* spp. in unpasteurized berry juices and puree.

4. To develop and deliver a new university course on food safety and sanitation which will be web based and available to other educational institutions. The food safety issues of fresh and processed berry products will receive particular attention.

5. To develop and implement training and educational workshops for a targeted audience of berry growers, handlers, processors, distributors, inspectors, and regulators to reduce the hazards associated with fresh and processed berry products. HACCP training will be the main focus with the integration of GAP, GMPs, and SSOPs for the production of fresh berries and processing of berry products.

We are now focusing on the objectives 1 and 2 to determine the modes of contamination in fresh berries and animal manures used for berry crop and develop effective disinfection methods on fresh berries. Meanwhile, we are developing training materials that will be used for the workshops in Fall, 2003. In addition, a new 3-credit "Food Safety and Sanitation" course has been developed and will be taught by Professor Mark Daeschel this Spring term at OSU.

It's Not Too Late!

- By Janice A. Goodwin,State Statistician
Oregon Agricultural Statistics Service -

Caneberry growers—be counted! If you have not yet returned your completed 2002 Census of Agriculture questionnaire—there is still time! Sending in your completed form will help ensure that caneberries are accurately represented in the Census results to be released early next year. The farm census, taken only once every 5 years, is the only source providing a detailed, down-to-the-county-level picture of Oregon agriculture. Having accurate facts is critical for decisions affecting the agricultural sector in these increasingly complex and financially challenging times. Send in your form and make sure agriculture is counted! If you need assistance with completing your Census form, call the national toll-free Help Line at 1-888-424-7828, or call the Oregon Agricultural Statistics office directly at 1-800-338-2157. Thank you for your help.

Fowl Weather Housing

(FWA) is a wildlife conservation organization that crafts wildlife habitat unit kits for grade school in-class nature study programs, donated to the Portland Audubon Society, Oregon Wildlife Commission, the Wetlands Association, the Boy & Girl Scouts, and the USDA's Crop Pest Control Naturopathic Program in southwest Polk County. FWH has provided over 5,000 specifically crafted wildlife habitat units.

FWH invites berry growers to take part in area and regional youth, wildlife and civic events as activists at booths assisting kids and their parent assemble bird-house kits to take home for backyards or farm fields. The newly invited birds will devower bugs, requiring the use of less pesticide.

Don Baarstad
#541-736-0706

Steve Boyce
#541-926-6770

Small Fruit Update

- By Tom Peerbolt, Peerbolt Crop Management -

In February 2000, Tom Peerbolt, of Peerbolt Crop Management, decided to write up a weekly, one-page "reminders" list for his grower-clients during the growing season. It was called Peerbolt Crop Management News & Opinions and covered field activities, chemical information, and meeting announcements.

Within a couple of months, others began to request it also. By the end of the first year the email list had grown to 40 names. During the second year Tom added more information about disease and insect monitoring and, Anna Peerbolt, who is the webmaster for their web site, added an archive of the information sheet to the news area of the site and also put in a form so people could easily request that their names be added to the email list. By the end of that year, the email list was over 100 names and it was obvious that a number of those people were sending it on to others they thought might find it useful.

In 2002, with the sponsorship of the Washington Red Raspberry Commission, the name was changed to Small Fruit Update. More links to disease and insect photos and meeting/workshop agendas were added. However, Tom tries to keep it short, one or one and a quarter hard-copy pages. By the end of the year the email list had doubled.

Recently, the ORBC decided to be a sponsor of the Update. It is easy to get your name added to the list. Just go to http://www.peerbolt.com click on the news & calendar link. There is a link for signing up under the picture.

If you have any questions regarding this Update, please feel free to contact Tom Peerbolt at:

Peerbolt Crop Management
5261 North Princeton St.
Portland OR 97203
#503-289-7287

OREGON RASPBERRY AND BLACKBERRY COMMISSION

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is published by Pacific Northwest Administration, Inc.
4845 B SW Dresden Ave., Corvallis, OR 97333
Phone: (541) 758-4043 Fax: (541) 758-4553
ORBC E-mail: berries@oregon-berries.com
OSC E-Mail: reachus@oregon-strawberries.org

OREGON STRAWBERRY COMMISSION

Raspberry & Blackberry News

ORBC takes New York by Storm

- By Cat McKenzie, Berry Works, Inc. -

Arriving in New York on the heels of the snow storm of the decade, ORBC Marketing Director Jan Schroeder, Public Relations Director Cat McKenzie and well known Oregon cookbook author Janie Hibler created an atmospheric buzz of their own with health and wellness editors in the Big Apple. Even though the weather was frigid, the reception was warm for the latest news on the health benefits of Oregon raspberries and blackberries.

Desk side visits to several magazines allowed the Oregon berry health message to be delivered to a number of major publications. Schroeder and team were able to visit directly with both the health and wellness editor and the general editor of Martha Stewart Living's latest magazine Everyday Food, the food editor of Food and Wine magazine and the assistant health editor of Fitness magazine. At each stop they presented editors with the message that Oregon berries are loaded with health giving nutraceuticals and are delicious and easy to use. In addition to a gift bag of Oregon berry goodies, editors received a press kit loaded with facts and background information.

On the second day of the visit the ORBC hosted a luncheon at Aquavit restaurant for editors featuring a presentation by Gary Stoner of Ohio State University who was able to join the team for the occasion. The four-course luncheon consisted of original recipes created by well-known chef Marcus Samuelsson each using an Oregon berry. The gourmet results made all present sit up and take notice of Oregon berries as an exceptional ingredient.

Editors attending the event included representatives from Newsweek, Marie Claire, Nutraceuticals World, Prevention, Self, Woman's Day, Food and Wine as well as

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Notice of Public Meeting

Oregon Raspberry & Blackberry Commission Proposed Budget

The Proposed Budget is Published on Page 7

As required by ORS 576.425, the Oregon Raspberry & Blackberry Commission (ORBC) will hold a public meeting for the purpose of receiving comments on the Commission's proposed budget for the next fiscal year.

Date: Tuesday, April 29, 2003

Time: 5:00 p.m.

Location: NWREC, 15210 N.E. Miley Rd., Aurora

Copies of the proposed budget are available for public inspection at each County Extension office.

At the meeting, any producer of the commodity for which this commission was created may comment on the proposed budget.

The meeting location is accessible to persons with disabilities. A request for an interpreter for the hearing impaired or for other accommodations for person with disabilities should be made at least 48 hours before the meeting to #541-758-4043, TTY 503-986-4762.

OREGON RASPBERRY AND BLACKBERRY COMMISSION

ORBC Takes New York by Storm

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freelance journalists representing Cooking Light and the NY Times. The informal atmosphere allowed the ORBC team to visit with each of the editors at length about all Oregon berries and their effect on human health.

Jan Schroeder gave an overview to the audience on the Oregon berry industry, the health benefits of berries and the ORBC and its role. Dr. Gary Stoner spoke to the assembled editors on his work with berries and cancer prevention. He also discussed his latest work on the human clinical trials into the effect of black raspberries on colon and esophageal cancers

At the conclusion of the luncheon several editors commented that this was the most informative and interesting press event that they had been to in quite a while; hopefully word of the high quality of this presentation will encourage editors to attend two other events that the ORBC has planned for next year.

We will look forward to some great articles by these editors in the coming months.

ORBC & OSC Meeting Mailing List Updates

Both the Oregon Raspberry & Blackberry Commission (ORBC) and the Oregon Strawberry Commission (OSC) have a database of names that their meeting announcements are sent to. Currently, the ORBC and OSC are updating those mailing lists and would like to take this opportunity to ask if you would like to be added to the list.

If you would like to be added to the ORBC and/or OSC meeting mailing list, please contact Rachel at #541-758-4043 or e-mail rachel@oregon-berries.com . Don't forget to give your current mailing address and state which list you would like to be added to.

Nutraceutical Market Overview

- By Cat McKenzie, Berry Works, Inc. -

Nutraceutical Products are the number one growth sector in the natural products industry. Today's natural products industry is comprised of four sectors, natural/ organic foods, functional foods (sometimes referred to as nutraceuticals), supplements and personal care products. Functional foods bring in the most revenue with consumers spending a whopping 16 billion dollars annually. Supplements are a close second bringing in 15.4 billion dollars a year, followed by natural/ organic foods at $9.4 billion and personal care products at $3.6 billion.

Functional foods and beverages showed a 9% annual growth rate in 1999 compared with only a 3% growth rate for mainstream food brands. This illustrates the changing taste of consumers who are more interested today in products that will improve their health and well being rather than just providing them with food.

One of the fastest growing sectors of all nutraceuticals is the natural/functional beverage market with sales of $8 billion annually. This wide ranging market includes juices such as orange juice with calcium or juice with Echinacea added, as well as sports/ energy drinks such as

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ORBC Proposed Promotion Budget

Media Relations
1. Newspaper
2. Magazine - New York
3. Oregon Berry Camp

Marionberry Campaign
1. Research
2. Web Update
3. Partnership Program

Promotional Relations & Account Management

Marionberry Support Materials

ESHA Food Processor Plus Programs and Bacon's Media Update

Berry Bank

Total Promotion Budget	$200,000

2002-2003 ORBC Committee List

Budget Committee
Julie Schedeen, Chair
Tony Wurdinger
George Crispin
Don Sturm

Legislative/Labor/Education Committee
Tony Wurdinger, Chair
George Crispin
Don Sturm
Bob Underwood

Promotion Committee
George Crispin, Chair
King Bredenkamp
Scott Miller
Julie Schedeen

Research Committee
Don Sturm, Chair
Jim Steele
Jerry Stratton
Julie Schedeen

OREGON RASPBERRY & BLACKBERRY COMMISSION

	ACTUAL BUDGET 2001-02	APPROVED BUDGET 2002-03	ESTIMATED EXPENSES 2002-03	PROPOSED BUDGET 2003-04
SUMMARY OF REVENUES				
Assessments	$261,300.38	$271,000	$266,000	$313,800
Interest income	2,540.49	4,000	2,000	3,000
Other Income	7,118.50	2,000	500	2,000
Grant Income	48,500.00	0	0	0
TOTAL REVENUE	319,459.37	277,000	268,500	318,800
Carryover/Begin. Cash Balance	165,301.21	143,000	147,335	160,000
Available for Fiscal Year	484,760.58	420,000	415,835	478,800
Expenditures	484,760.58	420,000	415,835	478,800
Ending Cash Balance	$0.00	$0	$0	$0
SUMMARY OF EXPENDITURES				
Materials & Services	$105,438.42	$75,400	$70,900	$81,200
Special Payments	226,432.66	188,300	180,032	253,460
Capital Outlay	0.00	0	0	0
Emergency Fund	147,334.50	150,600	160,287	136,640
ODA Oversight	5,555.00	5,700	4,616	7,500
Total Budget	$484,760.58	$420,000	$415,835	$478,800
MATERIALS & SERVICES				
Materials & Supplies	$7,535.26	$8,000	$6,000	$6,000
Communications	5,183.13	4,500	4,000	4,000
Travel & Admin. Travel	4,291.56	1,500	1,500	1,500
Meals & lodging	3,410.40	3,000	3,000	3,000
Freight & postage	6,413.96	5,500	4,000	4,500
Insurance & Bonds	136.00	200	200	200
Auditing fees	1,182.20	0	0	2,000
Auditing fund	0.00	0	0	0
Legal fees	2,928.76	4,000	4,000	4,000
Other Purchased Services	0.00	1,500	1,000	1,000
Administrative Services	74,357.15	47,200	47,200	55,000
Total Materials & Services	$105,438.42	$75,400	$70,900	$81,200
SPECIAL PAYMENTS				
Promotion	$196,075.81	$168,300	$146,250	$200,000
Newsletter/World Stats	3,999.96	0	0	0
Research	23,445.00	20,000	20,375	35,360
Education	871.16	0	0	5,000
Legislative Education	2,000.00	0	13,100	13,100
Assessment Refund	40.73	0	307	0
Total Special Payments	$226,432.66	$188,300	$180,032	$253,460
CAPITAL OUTLAY	$0.00	$0	$0	$0
ODA MGMT. FEE	$5,555.00	$5,700	$4,616	$7,500
EMERGENCY FUND	$147,334.50	$150,600	$160,287	$136,640
GRAND TOTAL BUDGETED	$484,760.58	$420,000	$415,835	$478,800

Stinger Herbicide Registration Granted

- Joe DeFrancesco, Oregon State University -

The registration of Stinger herbicide (clopyralid) for use in strawberries was recently approved by US-EPA. Dow AgroSciences is in the final stages of developing a Special Local Needs (SLN) label for use in Oregon strawberries; the label should be available in the next few days.

Stinger is a postemergence herbicide that controls a wide range of broadleaf weeds, especially hard-to-control weeds, such as Canada thistle, dandelion, and clover. Its registration has been much anticipated. The registration of Stinger, however, comes with several restrictions on the label that must be followed. Also, the use of Stinger is being allowed only if the grower/user is willing to sign a Waiver of Liability.

While Stinger is very effective in controlling weeds, it is known that, especially after a spring application, the strawberry plant may exhibit some twisting and leaf cupping. However, research has shown that yield, berry size, and plant vigor in subsequent years, are not negatively affected even when the plant exhibits these symptoms. Dow AgroSciences wants growers/users to be aware of the potential effect that Stinger has on the strawberry plant and be willing to accept the risk. Therefore, they are requiring growers/users to sign a Waiver of Liability, which exonerates Dow AgroSciences from any negative effects that may occur with the use of Stinger. A copy of the Waiver of Liability is included with this newsletter.

Here's how the Waiver of Liability will work: The Waiver must be signed and dated by the grower/user before making an application in strawberries. The Waiver that is included in this newsletter can be used or, when purchasing Stinger for use in strawberries, dealers/distributors will have them on hand to be filled out and signed. Dealers/distributors will work with Dow AgroSciences representatives to maintain a record of all signed Waivers. Signing a new Waiver may be required each field season. The Stinger SLN strawberry label will be available at points of purchase and, of course, must be in hand when making an application.

The restrictions listed on the SLN label must be read and adhered to carefully. Accurate sprayer calibration is imperative to ensure proper delivery rate. No more than two thirds of a pint of product will be allowed per crop season. Two thirds of a pint can be applied in the fall or a split application can be made, with one third of a pint in the fall followed by one third of a pint in the spring. Best results for hard-to-control weeds occur from a split application. Spring application must occur prior to first bloom and no sooner than 30 days before harvest. Stinger is not to be used on newly planted strawberries; plants should be in the ground for at least four months before using Stinger. Ground applications only, are allowed. Broadcast applications of Stinger are allowed but growers may chose to make spot applications. Directions for spot applications can be found on the main Stinger label, in the section dealing with Hand-Held Sprayers. Growers should be fully aware of restrictions in crop rotation intervals, which are also explained on the main Stinger label.

Even with the many restrictions listed on the label, and the necessity of signing a Waiver of Liability, with careful use, Stinger will be a valuable and useful tool for effective control of many broadleaf weeds found in strawberry fields.

ORBC Proposed Research Budget

1. Caneberry Pesticide Registration and Tracking
   $8,000
2. Evaluation of New Herbicides for Use in Newly Planted Blackberries
   $2,664
3. Production Research in Blackberries
   $3,406
4. Gray Mold Fruit Rot (Botrytis cinerea): Field Evaluation of New Fungicides and the Effect of Fungicides on Mite Populations in Red Raspberry
   $3,790
5. Development of New Raspberry Cultivars for the Pacific Northwest
   $7,000
6. Expansion of a Weekly E-Mail IPM Newsletter for Small Fruit Growers
   $1,000
7. Determine the Feasibility of Controlling the Raspberry Crown Borer
   $2,000
8. NWREC Berry Extension Position Augmentation
   $7,500

Total: **$35,360**

OSC Proposed Promotion Budget

Media Relations

1. Regional Partnership Program

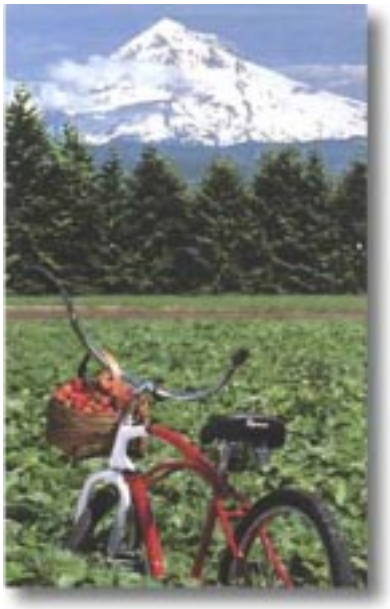
2. Strawberry Promotion & Education Program

Total Promotion Budget
$56,200

OSC Proposed Research Budget

1. Strawberry Pesticide Registration and Tracking
   $6,000
2. Evaluation of Surround Particle Film as a Tool for Integrated Control of Pests in Strawberries
   $8,364
3. Evaluation of Promising New Weed Control Strategies in Newly Established Strawberries
   $4,000
4. Objective Flavor comparison of Oregon Strawberry and other Climate Conditions
   $15,981
5. Factors Affecting the Development of Gray Mold Fruit Rot (Botrytis cinerea)
   $3,702
6. Development of New Strawberry Cultivars for the Pacific Northwest
   $15,000
7. Expansion of a Weekly E-Mail IPM Newsletter for Small Fruit Growers
   $1,000
8. NWREC Berry Extension Position Augmentation
   $7,500

Total: **$61,547**



Strawberry News

OSC Regional Partnership Update

- By Cat McKenzie, Berry Works, Inc. -

In 2002 the OSC received a Specialty Crop Grant for $50,000 from a Congressional Block Grant to state commodity producers, administrated by the Oregon Department of Agriculture. The grant was designed to foster partnership opportunities between industries. The OSC developed partnership plans with the Tillamook County Creamery Association and Burgerville to help boost the sales and to increase public awareness of Oregon strawberries. By conducting successful partnerships with businesses that are already supporting the Oregon Strawberry industry, the OSC enhanced sales during harvest, created a positive public image of the strawberry industry in Oregon and encouraged future sales with other similar businesses.

The joint promotion with Burgerville included an essay contest for school children in grades 1-6 in the Willamette Valley. Each child who entered received a coupon good for a free strawberry shortcake from Burgerville.

The results of the promotion showed sales of strawberry shortcake at Burgerville increased from 38,174 in 2000 and 38,887 in 2001 to 56,035 in 2002. Sales of strawberry shakes also rose from 45,282, and 57,438 for 2000 and 2001, respectively to 92,596 in 2002. Sales of smoothies increased in a like number and total sales of all items increased as well. There were 50,662 additional guests in June 2002 compared to 2001 and 90,815 additional guests compared to 2000.

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OREGON STRAWBERRY COMMISSION

Notice of Public Meeting

Oregon Strawberry Commission
Proposed Budget

The Proposed Budget is Published on Page 13

As required by ORS 576.425, the Oregon Strawberry Commission will hold a public meeting for the purpose of receiving comments on the Commission's proposed budget for the next fiscal year.

Date: Wednesday, May 14, 2003

Time: 5:30 p.m.

Location: Alessandro's, 120 Commercial St NE, Salem

Copies of the proposed budget are available for public inspection at each County Extension office.

At the meeting, any producer of the commodity for which this commission was created may comment on the proposed budget.

The meeting location is accessible to persons with disabilities. A request for an interpreter for the hearing impaired or for other accommodations for person with disabilities should be made at least 48 hours before the meeting to #541-758-4043, TTY 503-986-4762.

OSC Regional Partnership Update

- *Continued from Page 10* -

Figure 1: Strawberry Shortcake, Shake and Smoothie sales at Burgerville 2000 - 2002

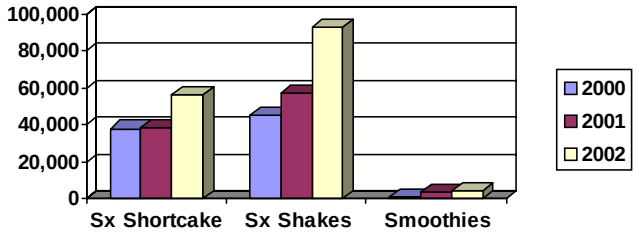
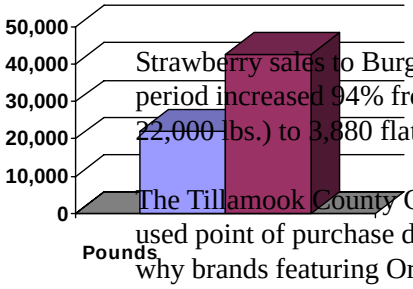


Figure 2: Increase in Strawberry Sales during the promotional period

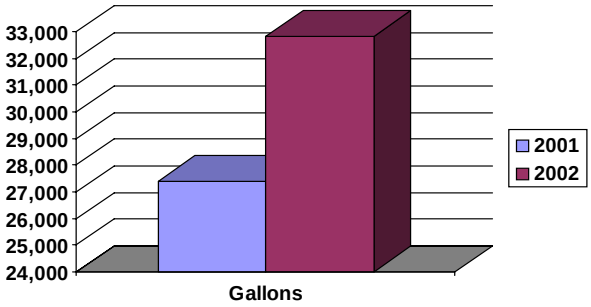


Strawberry sales to Burgerville during the promotional period increased 94% from 2,000 flats (approximately 22,000 lbs.) to 3,880 flats (approximately 42,680 lbs)

The Tillamook County Creamery partnership promotion used point of purchase display items to remind buyers why brands featuring Oregon strawberries are their best ice cream choice. Shelf talkers and static cling transparencies were created using the OSC logo and the "Sweeter, Redder, Simply Better" slogan. These were placed on freezer doors and in open freezer compartments over the Tillamook Ice Cream products. In addition the logo was used in advertising for several local food chains including Thriftway, Safeway, Albertson's, United West and Sentry Markets. Fred Meyer used some point of purchase materials at Lamb's and Fred Meyer stores. The total distribution of the logo and ads was 3,943,200. The estimated exposure for this promotion was 8.6 million people.

As a result of this effort strawberry ice cream sales for TCAA increased from 27,378 gallons in 2001 without the promotion, to 32,829 gallons in 2002 with the promotion. This is a 20% increase in ice cream sales during the promotional period.

Figure 3: Ice cream sales in gallons 2001-2002



The overall benefits to the Oregon strawberry industry were an increase in strawberry sales during and immediately after the promotion period, an increase in press about Oregon strawberries and a positive experience with our partners in this promotion. In all, the "Sweeter, Redder, Simply Better" message reached over 14 million people. This is definitely a program for the Oregon Strawberry Commission to build on in the future. It offers a strong base from which to expand potential partnerships with numerous other businesses.

If you would like further information regarding these promotions or would like to receive a copy of the results please contact the Oregon Strawberry Commission offices.

Nutraceutical Market Overview

- *Continued from Page 5* -

Red Bull and Sobe. Tea, both dried and ready to drink, especially herbal and green teas, is yet another beverage that appeals to health conscious consumers in this area. Add to this growing list, soy and rice milks, milk and soft drinks, all fortified with added vitamins and minerals and you get an idea of the scope of this burgeoning market sector.

Although growth in some areas of the functional food marketplace may have flattened out, notably supplement manufacturing, other areas, such as beverages, are growing and consumer awareness is the key to successful marketing in these sectors. Brand value built through quality products and strong consistent communication is the way to increase consumer demand in a highly competitive field. Recently food analysts have suggested that the food industry is greatly underspending on promotion compared to other consumer-packaged goods. We can expect to see firms working on this in the coming year.

2002-2003 OSC Commissioner List

Michael Christensen, 35981 Santiam Hwy Albany, OR 97321	(541) 928-8778 (w)	Second Term Expires 6/30/03
*Ronald Fujii, 6000 SW Minter Bridge Road PO Box 132 Hillsboro, OR 97123	(503) 640-2313 (w) (503) 640-0874 (fx)	Second Term Expires 6/30/05
Arne Goddik, 18265 SE Neck Road Dayton, OR 97114	(503) 864-3882 (w) (503) 864-3882 (h)	Second Term Expires 6/30/04
Stan Herr, 9631 Selah Springs Rd Silverton, OR 97383	(503) 873-8063 (w) (503) 874-0704 (fx)	First Term Expires 6/30/04
*Dave Ralls, 12415 Parrish Gap Turner, OR 97392	(503) 932-0008 (w) (503) 463-7104 (fx)	First Term Expires 6/30/03
Ron Vandecoevering, 11607 Baron Rd Mt. Angel, OR 97362	(503) 845-9490 (w) (503) 845-9490 (h)	Second Term Expires 6/30/05
Ken Kraemer, 12614 Dominic Road Mt. Angel, OR 97362	(503) 845-2489 (w) (503) 845-6474 (fx)	First Term Expires 6/30/04

Chairman – Ron Fujii **Vice-Chairman –** Stan Herr **Sec./Treasurer** – Arne Goddik

* = Processor Representatives

2002-2003 OSC Committee List

BUDGET
Michael Christensen, Chair
Arne Goddik
Ron Fujii

RESEARCH
Arne Goddik, Chair
Dave Ralls
Ron Vandecoevering

LEGISLATIVE
Michael Christensen, Chair
Stan Herr
Arne Goddik

EDUCATION/PROMOTION
Ron Fujii, Chair
Stan Herr
Ken Kraemer

OREGON STRAWBERRY COMMISSION

	ACTUAL BUDGET 2001-02	APPROVED BUDGET 2002-03	ESTIMATED BUDGET 2002-03	PROPOSED BUDGET 2003-04
SUMMARY OF REVENUES				
Assessments	132,571.12	$140,000	$137,000	$135,000
Interest income	1,477.87	2,500	2,500	2,500
Other Income	0.00	0	649	0
Grant Income	35,000.00	15,000	15,000	0
TOTAL REVENUE	169,048.99	157,500	155,149	137,500
Carryover/Begin. Cash Balance	85,372.97	115,000	134,633	100,000
Available for Expenditure	423,470.95	430,000	444,931	237,500
Expenditures	423,470.95	430,000	444,931	237,500
Balance Carried Forward	0.00	$0	$0	$0
SUMMARY OF EXPENDITURES				
Materials & Services	53,637.73	$41,300	$38,300	$49,100
Special Payments	63,283.89	$134,900	$126,100	108,000
Capital Outlay	0.00	$0	$0	0
Emergency Fund	303,682.33	$250,200	$277,820	75,900
ODA Oversight	2,867.00	$3,600	$2,711	4,500
Total Budget	423,470.95	$430,000	$444,931	$237,500
MATERIALS & SERVICES				
Materials & Supplies	3,805.87	$4,000	$4,000	$4,000
Communications	2,408.08	2,200	2,200	2,200
Travel (in state)	589.06	500	500	600
Travel (out of state)	2,532.40	2,000	500	3,000
Meals & lodging	2,372.12	2,500	1,500	2,000
Freight & postage	1,031.50	2,000	1,500	2,500
Insurance & Bonds	136.00	300	300	300
Auditing fees	1,122.20	0	0	1,500
Legal fees	76.20	2,000	2,000	3,000
Other Purchased Services	0.00	500	500	500
Administrative Services	39,564.30	25,300	25,300	29,500
Total Materials & Services	53,637.73	$41,300	$38,300	$49,100
SPECIAL PAYMENTS				
Promotion	31,417.23	$101,400	$96,105	$41,000
Research	28,300.00	$30,000	$29,995	$62,000
Legislative/Education	3,566.66	$3,500	$0	$5,000
Assessment Refund	0.00	$0	$0	$0
Total Special Payments	63,283.89	$134,900	$126,100	$108,000
CAPITAL OUTLAY	0.00	$0	$0	$0
ODA MGMT. FEE	2,867.00	$3,600	$2,711	$4,500
EMERGENCY FUND	303,682.33	250,200.00	$277,820	$75,900
GRAND TOTAL BUDGETED	423,470.95	$430,000	$444,931	$0

Nitrogen Fertilization of Berry Crops

- Continued from Page 2 -

Off-year:

- Very little N stored in the plant was used for new primocane growth (would come from the roots and the crown as plants start the season cut to the ground).
- Plants took up fertilizer nitrogen (FN) from late April through at least July.
- About 30% of the FN we applied was taken up by the plants (15 lb N/a…not including the roots as we couldn't dig all of those up).
- Before plants went dormant, FN moved from the leaves before they fell off the primocanes. Some FN moved from the primocanes into the crown and roots becoming "stored" nitrogen for the upcoming "on year".

On-year:

- Stored nitrogen was used for the emergence and growth of the fruiting laterals in the spring. About 20% of the FN we applied the year before ended up in the fruit (yield was 5.8 tons/a).
- Plants took up fertilizer N from April through July. A lot of this went to the primocanes. Of the total N present in the fruit (28 lb N/a), 30% of this came from the new fertilizer applied in the current season.
- By August, plants had taken 45% of the applied fertil izer N (22 lb N/a not including the roots).
- Nitrogen present in the floricanes was moved out of the dying canes after harvest (plant was conserving N). This implies that if dying fruiting canes are going to be removed in an every-year production system, it would be best to wait as long as possible to minimize loss of N (7 lb N/a lost if cut in August compared to 2 lb/a if cut in October); of course this is only possible in EY-February trained fields.
- In AY production, blackberries are cut to the ground in October after an on-year, so the 5 lb N/a in the primocanes and dead fruiting canes was lost from the plant.

In summary, fertilizer nitrogen is needed for primocane growth in the spring. Fertilizer is needed in both the on- and off-year, because very little stored nitrogen is used for primocane growth. No fertilizer N was needed or taken up until the primocanes started to emerge in early April. In an EY system, delay removal of the dying floricanes as long as possible. In an AY system, following an on-year, don't cut the floricanes and primocanes off until late October to early November, again to conserve as much N as possible.

Red raspberry:

We studied the uptake of fertilizer nitrogen (FN) in a mature 'Meeker' planting at the NWREC. The treatments were: 1) no added nitrogen; 2) 80 lb N/a in mid-March; 3) 40 lb N/a in mid-March; and 4) 40 lb N/a mid-March + 40 lb N/a in mid-May (we followed the uptake of FN in the second half of this split application only). No primocane suppression was done in either year and floricane prunings were removed from the field. Fruit was machine harvested. The soil type was a clay loam with a 3 to 4% organic matter content.

- Nitrogen rate or timing had no effect on plant growth (dry weight) or total plant nitrogen content over the two-year study.
- There was a trend for the unfertilized plants to have the lowest yield and for the split, 40+40, plants to have the highest yield. This was likely because, primocanes were longer in the fertilized plants than in the unfertil ized plants – 20 to 31" longer.
- From 36 to 37% of the fertilizer nitrogen applied in the spring (80 and 40 lb N/a in March) was taken up by the plants. When 40 lb N/a was applied in May (second half of the split application), 26% of this fertilizer was taken up by the red raspberry plants.
- We found that plants treated with higher rates of FN relied more on FN, while plants in the lower fertilizer rate treatments probably took up a higher percentage of their N from the soil and from recycled or stored N from the previous year.
- When fertilizer was applied in mid-March, more of the fertilizer initially went to the fruiting laterals and fruit. Later in the season, fertilizer that was taken up went primarily to primocanes. Fertilizer applied in mid-May went primarily to primocanes – in the last half of a split application, most of the value of the fertilizer is thus for the following year, not for the current season.
- The peak total nitrogen in the plant was 100 lb N/a. About 16 lb N/a was lost in harvested fruit, 16 lb N/a in leaf fall, and 14 lb N/a in removal of floricanes at pruning time in September. The remaining nitrogen in the plant over wintered in the above- or below-ground portion of the plant.
- Based on our study, if pruning or removal of dead fruiting canes is done in mid-September, on average, 13 lb N/a are lost (assuming prunings are taken out of field). However, if pruning is done in mid-August, on average 25 lb N/a are lost in the prunings. Prunings left in the field would slowly recycle their N back into the system.
- Data on soil nitrate and ammonium levels indicated that soil nitrate was available through mineralization in late

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summer, but this was not enough for plant needs. Thus, yield of the unfertilized plants declined over the two-year study. Higher rates of N fertilization led to levels of nitrate in the soil beyond plant needs; some of this may have been tied up in the organic matter fraction of the soil rather than leaching out of the root zone.

Our study showed that red raspberries require annual applications of fertilizer nitrogen to maintain growth and yield. Lower rates (40 to 50 lb N/a) than previously recommended here in Oregon would likely provide the best balance of improving efficiency of fertilizer uptake, providing for plant needs and reducing risk of nitrate leaching. Less nitrogen per acre is "lost" if growers delay pruning of dying floricanes until September rather than in August.

Strawberries:
We studied 'Totem' planted at the NWREC (15" single matted row on 40" centers) from the first through the third fruiting season. Some of our treatments included the following granular (broadcast band) applications: 1) no added fertilizer N; 2) 25 lb N/a in April + 50 lb N/a at renovation; and 3) 50 lb N/a at renovation. In addition, we added the following foliar treatments (5% solution of urea in 75 gallons of water per acre, amounting to about 14 lb N/a per application); all foliar treatments were in addition to a 50 lb N/a granular application at renovation: 1) foliar at pre-bloom in April; 2) foliar at green fruit in early June; 3) foliar at early post-renovation in early August; and 4) foliar at late post-renovation in early September. We did not study N needs in the planting year.

We monitored the amount of fertilizer N taken up, where it moved in the plant and what happened to it (stored or lost).

- Plants grew quickly in the spring increasing total plant dry weight over four fold from April to early July. Renovation or the physical act of mowing off leaves after harvest, led to a 65 to 70% decline in total plant dry weight. After renovation, plants grew slowly increasing dry weight to just above spring levels before entering dormancy.
- Plant dry weight decreased as the planting aged. Also how the plants "looked" changed: weight of crowns increased whereas the weight in the leaves decreased from the first to the third fruiting season.
- There was no effect of nitrogen rate or method of application on plant growth (dry weight), total plant nitrogen, yield, or fruit quality (rot, firmness, sugar concentration) from the first through the third fruiting season. There was a trend for increased fruit rot in the high spring N treatment. Unfertilized plants did not suffer a yield loss. Why? (see below)
- Strawberry plants did take up a large quantity of the 25 lb N/a applied as a granular in the spring, 63% of the fertilizer applied. Very little of the spring fertilizer N went to the roots or the crown, but rather was taken up and moved into the leaves and fruit. When plants were renovated, all of the spring FN was lost!
- About 42% of the 50 lb N/a applied at renovation was taken up by the strawberry plants. This fertilizer initially went into the leaves, but then accumulated in the crown and roots. About half of the FN taken up was lost as leaves senesced going into dormancy.
- Still, about 40% of the total N stored in the strawberry plant in late winter came from the fertilizer applied at renovation the year before. This stored fertilizer was used for new leaf growth and fruiting in spring.
- Plants that were not fertilized at all had the same total amount of N in the plant as those that received 50 lb N/a at renovation. The needed N in these plants likely came from mineralization in the soil in late summer.
- In the spring, about 46% (6 lb N/a) of the foliar N fertilizer applied was taken up whereas the post-renovation foliar applications were less efficient (15% taken up) likely due to increased volatilization of urea in the hotter summer temperatures.
- The accumulation of fertilizer N in the foliar treatments increased well after the foliar fertilizer was applied, indicating that most of the uptake was through the roots rather than the leaves.
- Any N obtained from foliar fertilization in spring was lost when plants were renovated.
- None of the foliar applications benefited yield or strawberry plant growth.

In summary, strawberry plants do take up fertilizer N when it is provided. Fertilizer N initially goes to the leaves and the fruit (if present during application) and moves into the crown and roots late in the season. Any fertilizer N applied in the spring is lost when leaves are mowed at renovation. I wouldn't recommend spring fertilizer N unless a planting is very weak; it did not benefit yield in this study and the added leaf growth can increase fruit rot. Since strawberry plants need most of their fertilizer after renovation to supply the new flush of growth, they can rely on mineralized N available in the soil when they do not get any fertilizer. Our unfertilized plants did just as well as those that received 50 lb N/a at renovation. If you have doubts about how much fertilizer your plants need or whether there would be enough mineralized N available in your soils, then leave a section of your field unfertilized after renovation and compare it to a normally fertilized section. I'd appreciate hearing from you.

SPRING 2003

Berry Commissions News

Pacific Northwest Administration
4845 B SW Dresden Avenue
Corvallis, OR 97333