

British Columbia

Organic Grower

Water Conservation

Tips & Tools for Dealing with Drought

National Organic Week

Time to Celebrate!

Tipiland Organic Farm

Farmer Focus

Journal for the Certified Organic Associations of BC - Fall 2015
Volume 18, Issue 4 (\$5.00)



Program Administrator:



COABC, 202-3002 32 Ave, Vernon BC V1T 2L7
Canadian Publications Mail Agreement
#40047167

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Intentional Peasantry

A magical forest setting combines with strong organic values and business savvy for the Tipiland success story.

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Dry Farming

An irrigation-free demonstration project makes the impossible, possible: watermelons, cucumbers, and more!

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BC Organic Grower

is received by all members of organizations belonging to the Certified Organic Associations of British Columbia. *BC Organic Grower* is published quarterly by COABC. Subscribe online at: www.certifiedorganic.bc.ca

We welcome letters to the Editor (300 words maximum) and articles (1000 words maximum). Letters to the Editor are published at the discretion of the editor, based on relevance and suitability.

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Advertising (rates & copy) & non-member subscriptions (\$20/year plus GST) to:

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On the Cover: Walla Walla onion seed heads ripen in the greenhouse at Amara Farm, Courtenay. Credit: Michelle Root

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Editor's Note

By Marilee Peters

As I write this, our long, hot summer is drawing to a close. Or at least, according to the calendar it is. Whether or not this record-breaking heat and drought will follow the norms for seasonal change is anyone's guess. With some climatologists predicting that the summer of 2015 will be a harbinger of annual summer droughts to come, the need for growers to quickly adapt to the unexpected has never been greater. That makes the theme for this year's upcoming COABC conference particularly relevant: Resilience.



With a focus as timely and topical as this one, it's a safe bet that the 2016 gathering will be every bit as engaging as the sold-out event in 2015. For a look ahead at what's in store at the conference, check out the COABC Newspanch on page 4 of this issue. And keep your eye on your email over the the fall and winter for announcements about speakers, workshops, and the opening of conference registration. Hint: register early -- this one could sell out too!

Resilience was also on our minds as we planned this issue of the Organic Grower, and you'll see that pre-occupation reflected in the topics for many of the articles, from the wise water use tips in Jose Cerrano's article on irrigation tools and techniques, to coverage of recent research into the viability of biodegradable mulches, to an update on a dry farming demonstration project that is opening eyes to the possibilities of less water-intensive growing methods.

One of the proofs of resilience is longevity, and in our Farmer Focus section you'll read about Marjorie Harris's recent visit to Argenta, BC's magical Tipiland Organic Produce, where owners Gary Diers and Inanna Judd have been surmounting challenges and defying expectations for more than a quarter of a century. Learn about their history of success starting on page 8: you're sure to be inspired.

Finally, a bittersweet announcement. This will be my final issue as editor of the BC Organic Grower. Although I am sad to depart, I know I leave this journal in exceptionally capable hands. Darcy Smith, who you can read about on page 6, will be taking over the editorship with the Winter 2016 issue. 🌱

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Resilience and the Organic Community: 2016 COABC Conference

With temperature records being broken in BC this summer, severe water shortages, the fourth year of drought in California, and an El Nino on the way, resilience in food production has never been more important. These environmental changes are going to have far-reaching and profound effects on the growth and development of both plants and animals. Join us at the 2016 COABC Conference in Vernon, from February 26 to 28, at the Prestige Hotel to explore the various meanings of *Resilience* as it relates to agriculture, water, seeds, and community.

Confirmed sessions will focus on seed saving (both for those just starting out and for those tackling more challenging crops, like carrots), soil biology, water harvesting, and a follow-up to last year's restorative agriculture session. Although details are still being fine-tuned, the Friday workshop will feature information on soil biology and fertility.

Our Friday Reception tradition continues with scrumptious food by Chef Inna and sampling from various purveyors of fine wines, ales, and spirits – the perfect combina-

tion for reconnecting with friends from afar or meeting someone new to talk shop.

Stay tuned to the COABC website for conference updates, with registration opening in the fall! COABC is pleased to welcome back Michelle Tsutsumi as conference co-ordinator. Michelle planned a sellout conference last year in Chilliwack and has already been working hard on the 2016 conference. Plan to join us in Vernon next February.

New Faces at COABC

The COABC office is pleased to introduce two of the newest members of the COABC team. **Eva-Lena Lang** started as our Administrative Assistant in mid-July. Growing up on an organic farm in the interior, Eva-Lena understands the organic sector and the issues it faces. She is passionate about food and food production. As one of Eva-Lena's first assignments, she is co-ordinating the COABC Organic Week Road Show, which is coming together quickly under her supervision. We are lucky to have her energy and enthusiasm working for us. Welcome Eva-Lena.



Eva-Lena Lang

Darcy Smith is joining the staff of the BC Organic Grower as the new editor, starting with our Winter 2016 issue. Darcy brings a wealth of experience and a passion for organic agriculture. Find out more about Darcy in her introduction, on page 6. We're excited to welcome Darcy on board!

Organic Regulation: Announcement Expected

COABC and other members of the Organic Sector are working with the Ministry of Agriculture as they move to regulate the word organic. The change will mean that in order to make an organic claim, an operator will have to be certified by an accredited body. Watch for an announcement from the Ministry of Agriculture during Organic Week.

All the Dirt on Soil

The Canadian Organic Grower is calling for photos of soil from across Canada to include in its Fall 2015 Issue of TCOG. Send your pictures to outreach@cog.ca.

Don't forget to include your name so it can be added to the photo!

And remember, the BC Organic Grower would love to feature your farm photos in one of our upcoming issues. Send your most scenic shots to bcogadvertising@certifiedorganic.bc.ca. And let us know what's happening on your farm — maybe your operation will be the next to be profiled in our Farmer Focus feature. 🌱

To be or not to be... CERTIFIED

By Nicole Boudreau

When the two-year review of the Canadian Organic Standards (COS) was launched in 2013, the Canadian General Standards Board requested one very specific study: an assessment of how small-scale producers cope with certification requirements. The study's goal was to determine if a certification model could be developed to fit their production systems.

The reason? Thousands of small-scale operators are choosing to not become certified under the COS, since the regime is not mandatory for intra-provincial commerce.

One basic prerequisite for the study was immediately established: the standards under review would not be tweaked to facilitate the life of small scale producers. The standards must be respected, whatever the size of the organic operation.

Tony McQuail, an Ontario certified organic small-scale producer, leads the working group responsible for the project. Their first move was to launch a survey, asking certified and uncertified growers about the factors that influenced their decision about certification, such as:

- ✕ I chose not to be certified because...
- ✕ Would your business benefit from being certified organic?
- ✕ Are there ways that organic certification could be designed that would serve your operation?
- ✕ As a certified organic grower, do you have any concerns about the current certification process?

The survey results are revealing: many producers commented that although uncertified, they follow the organic standards, while others report that they dropped certification for financial reasons. It is encouraging to note that many producers who responded to the survey are seriously considering becoming certified. But the lack of intraprovincial regulations in many Canadian provinces does not encourage growers to certify. Worse -- misconceptions about the cost, the

paperwork, the management of an inspection are discouraging many well-intentioned producers, even in Quebec, where use of the term 'organic' is forbidden unless your products are certified.

Following the survey, the working group met to discuss the responses. They came up with two proposals for certification models that could make life simpler for small producers and would not involve a yearly inspection. Both proposals, the Peer Certification Model and the Self-Declaration Mode, are described in a posting on the Organic Federation of Canada's blog — "To Certify or Not To Certify: The perspective of small-scale organic farmers."

The Self-declaration model met a lot of opposition on the blog. Comments included: "Many producers say they are organic without any knowledge of what it means." The working group, anticipating these concerns, stated in their detailed plan that the producers self-declaring themselves as organic would have to follow a regular training in organic production. All self-declared producers would be listed in a publicly available provincial directory, so consumers could ascertain if complaints had been lodged against specific producers.

The Peer Certification Model was more positively received. But many commenters remained sceptical. "Is it adding to the muddy-ness of the organic sector?" asked one participant. "Am I providing assurance to consumers that their food is safe to eat and has a small environmental footprint?"

Under either model, a system for monitoring producers' practices would be put in place to ensure producers are complying with the Canadian Organic Standards. And the system would require the support and approval of the provincial authorities.

In a recent statement, the working group led by Tony McQuail confirmed that "these proposals are not a change to the standard. They are an alternative way of documenting compliance with the standard from

the existing third party certification process required for interprovincial and international trade. And they would be only applicable to farmers who market directly to their customers. They would not be useable to make an “organic claim” for sales to retailers, wholesalers or chefs who would be reselling the farm products.” The national Canada Organic Regime would still be maintained for interprovincial and international trade, but small-scale farmers would be able to join the organic community.

The next step is to submit the models to provincial governments where organic trade is not regulated. Small-scale certification could also be implemented in provinces which regulate organic trade. The goal is to help convince small producers to realize that certification “is more than paying for a fee: it is a social assessment. It is about making a claim that you support ecological farming and are protective of your environment.”

Whatever the size of their operation, together organic producers can make an ecological difference. But to make it possible, organic growers need the appropriate tools. The Organic Federation predicts that if certification barriers to small scale producers were removed, we would discover that the 2% of organic producers from the latest Canada census is not reflective of reality. Organic agriculture is everywhere, in small fields and in large acreages. 🌱

For More Information

Read comments from survey respondents:

English survey

🔗 drive.google.com/file/d/0B8RSD45d0ZdYcEFpUFBUEThfV0E/view?usp=sharing

French survey (translated)

🔗 drive.google.com/file/d/0B8RSD45d0ZdYVUdTekpTdWRJa3M/view?usp=sharing

COABC NEWS

Meet Darcy Smith

New Editor Joins BC Organic Grower

On a recent summer evening, as the sun set behind steel wool rainclouds, I was sure I could feel the earth’s relief at the coming rain. I, too, felt relief – for the respite the rain might grant to drought-stricken farmers across the province.



Darcy Smith. Credit: Sara Dent (farmlove.org)

These days, I’m as passionate about plants as I am about words, but my heart didn’t always lay with the land (case in point – I might once have groaned about these welcome summer rain showers). I’m a recovering city girl getting back to my green roots and muddy boots. I grew up surrounded by community gardens, organic eggs, and homemade cloth grocery bags decades before they were a “thing.” By the time I finished university, I – and my words – got caught up in urban life, managing an art and fashion magazine and writing for Vancouver magazine and MONTECRISTO, among others.

An obsession with health led me back to all things green, and I soon found my way to urban, and then ever more rural, farms through Young Agrarians. Since then, I’ve been writing about food and farming for local publications, including Edible Vancouver. I’m a passionate advocate for certified organic, finding my policy and campaigning legs as a writer at Nature’s Path.

I’ve never been happier than I am now – putting my writing, editing, and marketing chops to growing BC’s already thriving organic movement – and I can’t wait to share the triumphs and troubles of everyone who has a stake in certified organic in the pages of BC’s Organic Grower magazine in the months to come.

Passing On the Seeds of Knowledge: Capturing the Founders of BC's Organic Movement on Camera

By Darcy Smith

Once upon a time, in lands both near and far, farming knowledge passed from one generation to the next. Children worked the land alongside their farmer parents and their community, and when the kids came of age, they'd take up the yoke and continue the tradition. Of course, many family farms across Canada still follow that model, but in the last decades, younger generations have flocked to urban centres, or a different kind of field, one meant to feed cars rather than people. The stats are all too familiar, with the median age of farmers in BC falling just shy of 56.

As a result, it's hard to say how much knowledge we've lost; how many farmers have retired without sharing their tried and tested organic fertilizing methods or passing on their insights into raising cattle. And while young and new farmers have started their return to the fields, many of them bring university educations and expertise in office work rather than the farming heritage of generations before them.

Today's fledgling organic farmers are eager to learn about the trade they've fallen in love with, eager to gain insight into land management, crop planning, and building healthy soil. And while the traditional path into farming is growing more rare, many of these young agrarians are finding eager mentors in the very farmers who founded BC's organic movement and have steadily grown it from a niche market to the engine of Canada's large organic sector.

We have a unique opportunity to capture these mentorships in action, to showcase the knowledge of experienced farmers, and to bridge the gap between generations. While our farmer members have been busy in the fields this summer, COABC has sown the seeds for a series of videos that will share the wisdom of our founders and give consumers a window into certified organic. Thanks to funding from Employment and Social Development Canada's New Horizons for Seniors program and Nature's Path Organic Foods, four videos

are in the works that will show the diversity and success of BC's organic sector, with special recognition to its forerunners.

The first of the videos will premiere at Organic Week events around the province, and will follow Golden Ears Farm on the path to getting certified. Canada's certified organic program and BC's organic checkmark are legacies left us by the pioneers of organic. As mandatory organic certification becomes a reality, farmers who are already using organic practices can turn to COABC for resources to help them become certified – this video among them.

Look forward to two more videos rolling out in the fall and winter of this year, featuring certified organic farmers and food makers from across the province. In these videos, we dig deeper into organic practices and knowledge sharing. (With gratitude to all the farmers who took a break from harvesting in the hectic summer months to invite us onto their land!)

Finally, join us at the 2016 COABC Conference, where you can share your organic voice. Our talented filmmaker will be on site to capture your thoughts in a video booth. Grab a mentor, a friend, or a new farmer and help us represent the wealth of people and perspectives that make BC's organic sector so resilient.

Our hope is that you'll be inspired and empowered by these videos, whether you count yourself as an established farmer, a new entrant to agriculture, or a friend of organic. They are a tribute to our community leaders, and a living record of their many contributions to a sustainable future. Here's to many more years of organic success – and many more to learn from our pioneers!

This project is partly funded by the government of Canada, New Horizons for Seniors program, and Nature's Path Organic Foods.

INTENTIONAL PEASANTRY

At Tipiland Organic Produce



Gardeners Sarah Ross, Gary Diers and Inanna Judd. Credit: Marjorie Harris

THE WAY OF THE PAST AS HOPE FOR THE FUTURE

By Marjorie Harris

What a magical adventure it was to visit Tipiland Organic Produce in Argenta, BC!

The ideals of the Aquarian Age generation are manifest in every aspect of Tipiland's success, demonstrating how the dreams of social interconnectedness, collective action and co-operative systems can become a positive and sustainable reality.

Tipiland celebrated their 25th year of operation in 2014, another milestone in their success story which is rooted in the back-to-nature, counter culture movement of the 1970s. The journey has been a fulfilling one for lifelong gardeners Inanna Judd, Gary Diers and Sarah Ross. Their collective commitment has been to provide the purest, freshest, most nutrient dense and beautiful certified organic produce possible from their market garden.

To reach Tipiland I headed to the northern head of Kootenay Lake and then turned south, driving along the base of Mount Willet's evergreen covered slopes that rise up out of the steel blue waters of the lake and climb high into the sky to form a brilliant white peak. The gravel road only got me as far as Tipiland's upper level garlic patch. From there I embarked on a 15-minute hike downhill through an enchanting forest, enjoying the aromatic scents and the springy soil underfoot that creates gentle earth music, like drum beats in your walking. As I lifted my eyes way, way up, 150 feet through the trees to the sky above, I was in awe of such a forest and such a location for this very special organic garden patch. I could sense the meditative pace of daily living here, even during the feverish work of the growing season: the forest calms the soul.

In 1989, Tipiland's founding farmer — the young and brave Sarah Ross, then in her mid-twenties — had a vision to start a market garden. She set about very carefully selecting a 2-acre garden plot near the middle of the 200-acre virgin forest held in common by the members of the Kootenay Co-operative Land Settlement Society. The land co-op was established in Argenta in 1972, emerging out of the back-to-the-land movement and locating itself next door to a Quaker In-

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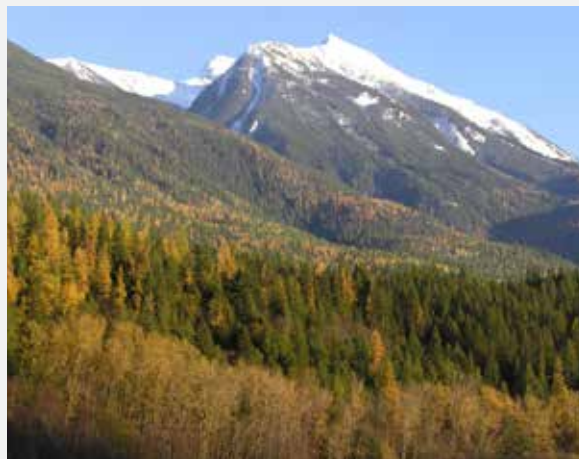
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*Left: Gary Diers and Innana Judd in the garlic patch. Credit: Marjorie Harris.
Right: Mount Willet towers above the farm. Credit: Gary Diers.*

tentional Community. Both communities shared common goals to live more locally, consume less energy, and make positive changes while having fun.

One of Tipiland's current farmers Gary Diers, explains how without Kootenay Co-op, Tipiland would simply not be Tipiland: "We have grown together hand-in-hand," says Gary. "A farm on a land co-op, selling to a food co-op: what a great fit!"

Thus began their long relationship. "Kootenay Co-op clearly lead the way," remembers Gary. "Local" is natural for the Co-op, it is an organization embedded in the community. The members are the Co-op. So when Sarah approached the Co-op about selling them local organic produce they quite naturally said, "Yes!"

Gary continues, "the management of the Kootenay Co-op didn't stop there. They decided to make what was then a radical commitment to sell only organic produce. They were listening to their members, and I think that they, like Sarah, sensed the blossoming of the organic movement."

By the mid 1990's Inanna and Gary took over operating Tipiland Produce fulltime, finally realizing their dreams of farming. This coincided with the time when Kootenay Co-op was instrumental in getting the Kootenay Organic Growers Society (KOGS) started. Gary recalls how every winter local organic farmers would meet with the produce team of the Kootenay Co-op to decide who would grow what in the following year. "They certainly didn't enjoy the task of trying to filter out just who was really organic, or who wasn't — a

ridiculous task for a store. So KOGS was born."

Tipiland was one of the founding members of KOGS, which was kind enough to issue them with the certification number #001, which remains with them to this day.

Gary enthusiastically remembers how Tipiland helped develop the market and has grown with the market. "Every single year Tipiland has sold more vegetables than the year before. We now sell 15 times more produce than when Inanna and I first took over the reins of Tipiland and we still have more capacity."

When Inanna first suggested growing kale, the Co-op manager was skeptical, since kale had never been seen in local stores before — but was willing to give it a try. The rest is history. Kale is now Tipiland's second-largest crop, with 10 varieties planted this year. They still sell their kale to the Co-op, and to eight other businesses.

Tipiland also has a flourishing business in certified organic flowers. Again, the Kootenay Co-op was their first buyer, and continues to retail their bouquets. Inanna has trialed hundreds of varieties of vegetables and flowers and saves seeds of over a hundred varieties. Gary says with a smile, "Inanna can run circles around anyone with a wheel hoe!"

In Gary's estimation, in order for a farm to truly be sustainable it must employ farm workers from its local community. And for farm work to be viewed as an honourable occupation in our society, the workers must receive all the same rights and pay as other work-

ers in Canada. Early every Wednesday and Thursday morning a crew of locals, ranging in age from 18 to 72 years old, from Argenta to the Lardeau Valley, assembles to fill farm orders. Gary proudly notes that Tipiland has not missed one delivery from May to November in all these years.

Farming at Tipiland is mostly unmechanized. As Gary says, "We have always enjoyed working with our hands and believe it is not only the way of the past, but the hope for the future. One might call us intentional peasants. The beauty of all this for us at Tipiland is that this model works. With our low capitalization we have never needed to secure a loan. We pay our farm workers above average agricultural wages, providing jobs in our community. The bottom line is definitely working."


Tipiland uses almost no electricity in its operation. Their home and farm are completely off the grid. They do not need a cooler as all produce is picked, then hydrocooled and delivered to stores within 24 hours. Tipiland is labour intensive, not energy or capital intensive. Everyone walks or bicycles to work.

But as Gary is quick to point out, "We're not purists. We do have an Italian rototiller and a truck. Our rototiller has a diesel engine and last year we used almost 40 litres of fuel for our entire operation. Our Japanese import delivery truck is also diesel with a 4 cylinder engine and we can deliver almost one and half tons of produce all the way to Nelson and back for about \$40 in fuel."

Gary's final take home message is a quote from Wendell Berry, "Never farm more than you can garden!" 🌱

📄 kootenay.coop/blog/farmers-suppliers/tipiland-organic-produce/

Marjorie Harris, BSc, IOIA V.O., P. Ag, lives in Armstrong, BC and works locally and internationally. She can be reached at marjorieharris@telus.net.




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Knowing Your **DIATOMACEOUS** **EARTH** *(types and uses)*

By Marjorie Harris

Diatomaceous earth is a natural substance derived from the exoskeletal remains of small creatures called Diatoms. Diatoms are a microscopic type of algal phytoplankton that have enclosed themselves in an intricate silica glass cell wall. Looking at them through a microscope will reveal a vast, beautiful array of delicate glass structures as diverse as snowflakes.

Like diatoms themselves, diatomaceous earth comes in a surprisingly wide range of types and differing qualities. That makes selecting the right type of diatomaceous earth for your particular job a little tricky, so it's useful to know more about this unusual substance and its many practical applications.

Currently, diatomaceous earth is approved for use in the Permitted Substances List (PSL) in four sections: 4.3 Crop Production Aid; 5.2 Feed Additive; 6.6 Processing Aid; and 6.7 Pest Control. It is classified into the following categories: food grade, feed grade and filter grade, which are not interchangeable in use, except that food grade can be substituted for use in feed and filtering.

Diatoms live in both fresh water and marine water and as they die their bodies fall to the bottom, forming sediments that, after millions of years of accumulation, can be mined. Every deposit of diatomaceous earth is different. Both marine and fresh water diatomaceous earth are a mixture of amorphous silica and crystalline silica. Amorphous silica is regarded as a low risk product for human and animal health. Crystalline silica, on the other hand, is dangerous to inhale and can lead to severe health problems including cancer. For health reasons, the crystalline silica content of diatomaceous earth is regulated. Food grade diatomaceous earth must have less than 1% crystalline silica present.

Marine diatomaceous earth is higher in crystalline silica than fresh water sources, and is only used for making filters for the pool, beer and wine industries. During a process called calcination the marine diatomaceous earth is heated to fuse the silica into larger particles. This process increases the percentage of crystalline silica up to 70%.

The final calcined filtering product for the beer and wine industry is called Kieselgur and is the type of

DIATOMACEOUS EARTH IN THE PSL

4.3 Crop production Aids

Diatomaceous earth: Only non-heated forms may be used. Make sure no synthetic pesticides or synergists are added.

Plant protectants, natural: Substances that protect plants from harsh environmental conditions such as frost and sunburn, infection, the buildup of dirt on leaf surfaces, or injury by a pest. Natural substances are allowed, including but not limited to calcium carbonate, **diatomaceous earth**, kaolin clay, pine oil, pine resin and yucca. White wash is allowed for use on trees to protect against sunburn and southwest disease.

5.3 Health Care Products and Production Aids

Diatomaceous earth: For use in control of external parasites

5.2 Feed, Feed Additives and Feed Supplements

Diatomaceous earth : Approved as an anti-caking agent in feed to a maximum of 2% of the total diet

6.6 Processing Aids

Diatomaceous earth as a food filtering aid or as a clarifying agent only

6.7 Pest Control Substances

FOR MORE INFORMATION ON DIATOMACEOUS EARTH, SEE:

WorkSafe BC

- 🔗 [worksafebc.com/regulation_and_policy/public_hearings/assets/pdf/2014ProposedAmendments/Part6.pdf](https://www.worksafebc.com/regulation_and_policy/public_hearings/assets/pdf/2014ProposedAmendments/Part6.pdf)
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Source: Permitted Substances List: CAN/CGSB-32.311-2006, Supersedes part of CAN/CGSB-32.310-99, Amended October 2008, December 2009 and June 2011, Reprinted, August 2011, Incorporating Corrigendum No. 1


diatomaceous earth referred to in PSL Section 6.6 Processing Aids as a food filtering aid or as a clarifying agent only.

In 2013, at the 245th National Meeting & Exposition of the American Chemical Society, the world's largest scientific society, Mehmet Coelhan, Ph.D., and colleagues reported, that "breweries, wineries and other food processors that use kieselguhr should be aware that the substance can release arsenic. Substitutes for kieselguhr are available," he noted, and simple measures like washing kieselguhr with water can remove the arsenic before use.

Food Grade and Feed Grade diatomaceous earth are sourced from fresh water amorphous diatomaceous earth. The presence of heavy metals and other contaminants is restricted and determines the difference between food and feed grade. Food grade amorphous diatomaceous earth must not contain more than 10mg/kg of arsenic and no more than 10mg/kg of lead. Feed grade diatomaceous earth is used as an anti-caking agent for feed grain storage and listed as an approved feed additive in PSL Section 5.2, and is limited to 2% of the total diet.

Food grade and non-calcined diatomaceous earth can be used for pest control, and its effectiveness is determined by the time period in which it formed. Diatoms from the Miocene age, 12 to 13 million years ago, are reported to be spikier than those from the Eocene age (40 to 50 million years ago). It is thought that spikier diatoms lacerate the outer surface of insects and slugs better, causing greater fluid losses leading to the pests' demise. Currently the evidence does not support diatomaceous earth as an effective dewormer in livestock or poultry.

When used as a crop production aid, diatomaceous earth must be food grade and non-calcined, without any synthetic pesticides or synergists added.

Because diatomaceous earth retains water, it can be added to soil much like perlite, vermiculite, and expanded clay, allowing a higher oxygen circulation within the growing medium. 

Marjorie Harris, BSc, IOIA V.O., P. Ag, lives in Armstrong, BC and works locally and internationally. She can be reached at marjorieharris@telus.net.

Animal Welfare

& the Challenge for Organic Standards



Laying hens at Amara Farm. Credit: Michelle Root

By Anne Macey

Joa Costa's article in the summer 2015 issue of the BC Organic Grower took a critical look at how well the organic standards cover animal welfare issues, so it seems an opportune time to explain what happened in the animal welfare debates we had during the recent standards revision process.

It should be a given that animals raised in organic systems enjoy the highest standards. A diet suited to their physiology, living conditions that allow for natural behaviours, access to fresh air and pasture, adequate space and a reduction in stress are necessary for healthy animals and good performance. All these aspects were covered in the old organic standard but only in general terms which set limits for acceptable methods using words such as "appropriate" or "sufficient" without many of the specific details outlined in animal welfare standards such as those of the BCSPCA. With research showing that organic animal husbandry has not always fulfilled its promise with respect to the highest levels of animal welfare, we needed to figure out how to improve the standard to retain consumer trust, educate farmers as to best practices and ensure the best outcomes for animals on organic farms.

The Animal Welfare Task Force submitted a number of revision proposals to the CGSB standards process to address perceived shortcomings. There was also an attempt to introduce outcome-based standards where indicators, such as the amount of lameness in the herd, are used to evaluate whether or not there are welfare problems related to living conditions. However, with animal welfare increasingly being addressed in the conventional sector, the CGSB Livestock Working Group (LWG) concluded it was redundant and cumbersome to duplicate requirements and create more paperwork for farmers and VOs. We also questioned whether standards that require compliance rather than demonstrating continuous improvement in weak areas were an appropriate tool to achieve our objectives. After much debate we ended up with a mix of approaches including more prescriptive requirements in some parts as well as references to other documents and programs and additional emphasis on the principles.

Hopefully the revised and updated standard demonstrates the commitment and the intent, and organic farmers will set the bar high for their own operations. Whether the revisions are enough we will find out in

time and no doubt there will be more proposals for the future work list.

Examples of revisions related to animal welfare:

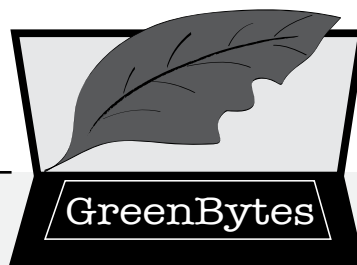
- A new paragraph requiring that operators demonstrate their commitment to animal welfare and carry out corrective actions if an animal welfare issue is identified.
- A new requirement to use artificial teats rather than buckets when feeding milk to young mammals that are not nursing in order to satisfy their motivation to suck.
- “Skip a day” feeding regimes for breeding birds are explicitly prohibited.
- More details in the transport and handling section referencing the Code of Practice for the Care and Handling of Farm Animals: Transportation.
- References to the specific livestock Codes of Practice for age restrictions, methods and use of pain control when carrying out allowed physical alterations such as dehorning and castration.
- Minimum space requirements for maternity pens for dairy cows.
- Phasing out of derogations for remaining tie-stall barns in eastern Canada.
- A new section on milking parlours, prohibiting electric crowd gates and requiring no-slip flooring.
- Several additions in the poultry section aimed at increasing the use of outdoor range.
- More explicit requirements regarding natural light in poultry barns.
- An expanded section on living conditions for rabbits.
- An explicit prohibition on the use of farrowing crates for pigs.

The LWG didn’t address the calf housing in this round so the allowance for individual pens for calves 3 months of age provided they are located so the calves can see, smell and hear other calves remains unchanged. Group housing is not mandated until 3 months age. Any proposal for further change will have to be brought forward at the next revision.

We were fortunate to have on the Livestock Working Group individuals such as Brandy Street from the BC-SPCA and François Labelle, the chair of the Animal Welfare Task Force, as well organic farmers and others with an interest in organic husbandry. François is also a member of the steering committee of the IFOAM Animal Husbandry Alliance, which is an informal, international network of individuals and organizations interested in inspiring, supporting and strengthening the development of organic animal husbandry.

The challenge is ongoing and standards are just one of the tools needed to improve animal welfare on organic farms. In my opinion workshops and trainings for producers and VOs should be a high priority and hopefully we will see more of these types of sessions being offered over the next few years. 🌱


Anne Macey has been involved in the organic sector for over 30 years in many different roles. She has contributed as a writer and editor for several COG publications including the Organic Livestock Handbook; A Guide to Understanding the Canadian Organic Standards, and Living with Worms in Organic Sheep Production. Currently Anne is the convenor of the Livestock Working Group for the CGSB Organic Standards Technical Committee and a member of the Animal Welfare Task Force. She is President of the Salt Spring Island Agricultural Alliance and is involved with establishing agricultural infrastructure on Salt Spring Island including a community owned and operated Abattoir.



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There is so much to celebrate during this year's National Organic Week! A vibrant alternative food system, an ever-growing number of ecologically minded consumers and growers, and the imminent prospect of provincial regulations for use of the term organic. In a few short years, organic agriculture has moved from the fringes to take center stage for many consumers and retailers. The strong values and commitment of organic producers and processors are increasingly being rewarded by the attention and appetite of consumers hungry for sustainable, local, certified organic produce (that tastes great!). So this September, let loose and celebrate your accomplishments during National Organic Week!

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 organicweek.ca/find-an-event

Check out certifiedorganic.bc.ca for info on the COABC's Organic Week Roadshow events



ORGANIC WEEK

SEPTEMBER 19-27 2015



Opposite page: clockwise from bottom left: Sky Valley Greens trays of microgreens growing. Tomato harvest at Umbrella Farm. Mistral Gris meat birds also at Umbrella Farm.

Top left: Delicious microgreen creations from Sky Valley Greens. *Credit: Joey Armstrong (Design to Dine)*

Above: Walla Walla onion seed heads ripen in the evening sun in a greenhouse at Amara Farm in Courtenay, BC. *Credit: Michelle Root*

Left: Curious, shiny cows graze lush pastures at Creekside Dairy in Agassiz, BC. *Credit: Creekside Dairy (www.inud-dernews.com)*



Irrigation Management in times of drought

By Jose M Celedon

Whether you grow vegetables in a small or large farm, in a community garden or your backyard, at this time of the year your plants need water to survive and produce a good yield. To be on the safe side, some farmers might try and provide their plants with 'extra' water that, if not needed, would safely drain out of the root zone to deeper soil layers. But along with the water, nutrients are washed away, making the soil less fertile and negatively affecting crops. In times of drought, such practices should be especially avoided since they waste significant amounts of water, a very limited and valuable resource.

Being a water-efficient farmer takes commitment, knowledge, and some funds, but thanks to the tools available today the investment often pays off in a short time. In this article, we'll look at the advantages and disadvantages of different irrigation systems for organic agriculture, how to calculate how long and how often you should water your crops, and new instruments and tools that can assist you to become a water-efficient farmer.

Irrigation systems

Irrigation systems can be divided into pressurized (drip, sprinkler, etc.) or non-pressurized (furrow, flooding, etc.). Pressurized systems can achieve efficiencies of 90%, whereas non-pressurized systems typically have efficiencies around 50%, with significant losses due to evaporation and percolation to deeper soil layers.

In organic farming systems, drip irrigation presents two key advantages compared to sprinkler systems: reduced weed pressure, since no water is applied between the rows, and prevention of diseases by keeping leaves and fruits dry. This means higher yields, saving money, and in some cases might determine the success of a crop when limited or no products are available for the control of weeds and diseases. Another advantage of drip systems is that their efficiency is not affected

by the wind, a common problem with sprinklers. A disadvantage, however, is that drip systems require good water quality and/or water filtration systems and careful operation to avoid clogging of drippers.

How often and how long should you irrigate?

Every farmer faces these critical questions. To answer them properly we need to look at three elements: the plant (especially the depth of the roots and the crop's sensitivity to water stress), the soil (especially its capacity to store water), and the weather conditions (which determine the crop's water demand). The amount of water to apply is determined by two factors: how deep in the soil the water needs to reach, and the soil's capacity to store water.

The first factor depends on where the majority of the roots are located — a crop- and stage-specific factor. The capacity of the soil to store water is primarily determined by its texture (the proportion of sand, clay and loam) and gravel content. Generally, sandy soils store little water and heavy (high clay) soils can store larger amounts of water and therefore require longer irrigation times to reach the same depth as a sandy soil.

To answer the question of how often you should irrigate you'll need to consider a different set of crop and soil characteristics. In general, more frequent irrigations will keep the soil moisture level higher and reduce water stress to a lower level, which is desirable during water-sensitive stages like flowering, fruit set and fruit growth. Less frequent irrigations allow the soil moisture to vary in a wider range, allowing more air to enter the soil as it dries. Better aeration is critical in crops susceptible to root rot and similar diseases. Heavy soils generally have a poorer aeration than sandy soils and lack of oxygen can affect the roots' health if the moisture is kept high with frequent irrigations.

Tools to help you become a water-efficient farmer

A water-efficient farmer should have a way to measure soil moisture. With practice this can be done by hand to water their crops efficiently, but more commonly it is done with instruments that accurately measure soil moisture and provide a moisture value that can be recorded and used to evaluate your irrigation program. More sophisticated instruments use wireless communications and sensors to measure soil moisture in real-time — a computer decides when to irrigate and for how long, based on the soil moisture level.

A key aspect to carefully consider is where to measure soil moisture. It is recommended to measure the soil moisture in the root zone and below the root zone at various points and not just a single point, depending on the uniformity of soil properties. Farms with very uniform soils require fewer measurements than farms with soils that change from one plot to the other or even within the plot.

Recently, new instruments and tools are allowing farmers to ask their crops directly if they need more water. These types of instruments are not influenced by the variability in soil properties and respond directly and more promptly to water stress. Examples include dendrometers (which measure small contractions in the diameter of stems and trunks due to water stress), infrared thermometers (which measure leaf temperature -- transpiring and well-watered leaves have cooler temperatures) and sap-flow meters (which measure the flow of sap as it goes up the trunks and stems in well-watered plants).

The well-trained eye of an experienced farmer can also identify symptoms of crop water stress, and more importantly, can integrate them with other sources of information like the presence of insects and signs of nutrient deficiencies. New instruments and tools can detect symptoms of water stress much earlier than the human eye, but they don't have the ability to integrate different sources of information. Therefore, the experience and knowledge of farmers are still the most valuable resources, and should have central roles in all decisions regarding the management of irrigation systems. Field scouting and inspection of your crops are non-replaceable and complementary to the new technologies described above.

Conclusions

Agriculture and food production account for the largest use of water resources in the world. When water is scarce, farmers – small and large – have a responsibility to water their crops efficiently. Whether you use your hands or instruments to assess soil moisture, and whether you have a drip irrigation system or a sprinkler or showerhead, the principles and guidelines explained here should help you to ensure optimal watering of your crops without wasting the precious water we have. 🌱

Dr. Jose Celedon is an expert in irrigation systems and has worked for the Chilean Ministry of Agriculture developing new approaches to increase water efficiency and reduce crop water stress. He obtained a PhD in Horticultural Sciences at the University of Florida, USA, and is currently doing Postdoctoral studies in plant defense mechanisms against insects at the University of British Columbia. In addition to that, Jose is collaborating with the UBC Farm to improve their irrigation system and practices.

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Protecting Precious Water

By Moss Dance

I live and farm right at the base of Mt. Washington Ski Resort in the Comox Valley. All winter, I watched with dismay as the snow failed to accumulate. In June, the B.C. government issued a statement urging all municipal, agricultural and industrial users on Vancouver Island, the Gulf Islands and Haida Gwaii to reduce water use by 20 per cent or more, anticipating the possibility of “significant water supply shortages in 2015.”

Over the past few years, I’ve lived with the stress of low water supply and adjusted accordingly. I’m a small-scale farmer growing food and I’ve done my part to conserve and steward this precious resource. It makes the relaxed approach taken by the provincial government to curb industry’s skyrocketing levels of water consumption all the more frustrating to watch.

Last May, the provincial government finally passed the Water Sustainability Act, replacing our century-old Water Act. The new act has the potential to offer us a better understanding of how much water we’ve got

above and below ground, how much is being taken by different users and how much is needed for a healthy environment. This new set of laws is essential to agricultural planning in our communities, and we’ve been without it for far too long.

The government is now developing regulations for the act, scheduled to go into effect in January 2016, and we need them to have teeth.

To make sure that all users — including Nestlé, and yes, farmers — leave enough water to protect fish and aquatic habitat, we need a rule that sets proper thresholds for the minimum allowable flow of water.

For the first time in B.C., there will be regulations about groundwater. As someone who ran out of water last summer despite maintaining three dug wells on my land, I urge the government to include monitoring requirements that will prevent new large groundwater license holders from depleting our aquifers.


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Also, we need a commitment now from Environment Minister Mary Polak and Forests, Lands and Natural Resource Operations Minister Steve Thomson to review within two years the shockingly low water rates released in February so that we can get rates that enable government to actually implement all the goodies promised by the new act.

Water is on my mind every day from May to October. When will it rain? Will it be enough to recharge the groundwater? So I understand the need for the province to set restrictions when water is in short supply. And I plan to do my part to continue to steward the groundwater I use to grow my vegetable crops. I've already installed drip irrigation and a rainwater harvest system. I spend my early mornings and evenings carefully watering my crops, walking up and down the rows to make sure there are no leaks. Now it's time for the B.C. government to hold up its end of the bargain by developing and implementing watertight regulations.

Ultimately, a strong Water Sustainability Act is not going to compensate for a lack of action on the part of all levels of government on the root causes of human-

induced climate change, but protecting fresh water is as good an effort as any to mitigate those impacts. And while it's hard not to be smug with our friends out east who can only dream about going fishing in February, our changing climate comes with a price that we will likely have to pay this long, hot summer.

I'll be mulching and caring for my slice of the watershed. I look forward to seeing the provincial government doing its part for all of us and all the fresh water in B.C. 

Moss Dance is a small-scale farmer in Merville and is the co-founder of Merville Organics Growers' Co-op. This article is excerpted from the complete op-ed which appeared in the Victoria Times Colonist on June 23, 2015.

Read the full op-ed at:

 blogs.theprovince.com/2015/06/23/moss-dance-victoria-must-do-its-part-to-save-our-precious-water





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The Case of the **UNAPPROVED BIODEGRADABLE PLASTIC MULCH**

By Shannon Jones

At the end of March of this year, we found a memo in our inbox from Ecocert (the organic certifying body that we are certified with). In this memo, we were told that we would no longer be able to use our biodegradable plastic mulch (made with non-GMO corn starch) unless we removed it after use. We were surprised and concerned. It was definitely a little last-minute! We still had leftover rolls of it at the farm from last season and had made our order for this season back in December. And the removal part...it's pretty tough to completely remove something that biodegrades as it's in use.

Bryan and I have been using biodegradable plastic mulch (which I will refer to from now on as biofilm to reduce typing) since the first year we started Broadfork Farm. As small farm operators, we have appreciated the reduction in our time spent weeding in particular. But there are other benefits to using plastic mulch, like warming the soil and retention of moisture in the soil. With our deep feelings of stewardship for the soil, we have also liked how we have been able to keep more of the soil covered during the season (with the biodegradable mulch in the beds, our pathways have been maintained in living mulch that we mow). Soil left bare tends to create its own "cover" of a dry, dead, erodible soil layer.

We knew that, as a manufactured product, biofilm wasn't the perfect solution in our utopian organic vision. But it was a solution we preferred to regular plastic mulch (with the required pulling up at the end of the season and taking to the landfill) or frequent cultivation. There are of course other mulches like straw or leaf mulch but they didn't fit in as well with our whole system.

We had often talked about the fact that we didn't think we could have made 100% of our household income from our farm from our first year without the use of biofilm. We even listed it as one of our 5 favourite market gardening tools! Especially in our first year while we converted hay fields to vegetable fields...

while growing vegetables. The sod clumps that we'd overturned were too lumpy to be able to use a wheel hoe (or any other kind of hoe for that matter) for weeding.

So, after receiving the Ecocert memo, I contacted other people involved with the Organic Standards and asked, what's up with this? It turned out, that our Canadian Organic Standards had never allowed the use of the biofilms (without removing from the field after use) that are currently available in the marketplace. But there was a lot of confusion around this, both by farmers and certifiers.

So, why aren't biofilms allowed? Well, all of the biofilms on the market currently contain a certain percentage of petroleum source materials (which are prohibited) that seem to be referred to as raw fossil-based ingredients (by manufacturers). The biofilm that we had been using, while having the lowest percentage of petroleum source materials of any other biofilm, is still around 20%. I didn't like learning that. And I was disappointed it wasn't clearly expressed by the companies that were manufacturing and selling these biofilms. I had thought the biofilm we were using was actually 100% non-gmo corn starch.

Then there is the issue of biodegradability. Most farmers who have used these biofilms know that the biodegradability varies from farm to farm, field to field, season to season. In particular, it varies based on the life in the soil, the soil temperatures, and the soil moisture. There has been a bit of research done on this but not enough. The primary ingredient in the biofilm we've used, the corn-starch material Mater-Bi, is shown to be compostable in ideal composting situations but that's not the same as using it on top of the soil in highly variable field conditions.


As I was trying to learn as much as possible about this input, I realized that there are currently too many unanswered questions. Like what happens to all the bits (even the bits we can't see with the naked eye)

that don't fully biodegrade? Are they contributing to those floating garbage islands in the ocean? Are they being taken up into the web of life through food chains (insects, birds, mammals) and their materials concentrated? And to what effect? Are the microorganisms in the soil changing...adjusting to a new food source.... and if so, is this harmless or harmful on the balance of life in the soil? Are there residue buildup issues we should be concerned with (the labelling always says "No toxic residues" but what is this claim based on? Over how many years and with how much biofilm use? Is this claim unlimited?)

As organic farmers, we are committed to being stewards of the soil. While we need all the help we can get with improved products and efficient techniques in order to provide ourselves a livelihood, as small-scale organic farmers, we realize that we are only the caretakers of this land for the tiny time period of our lifetime. This land needs us to consider our impact on the generations that follow ours. So, we are always researching, learning, and questioning what we thought we knew.

Bryan and I have decided that, beyond using up our leftover biofilm from last year, we wouldn't use any more biofilm (unless the manufacturers make some

serious improvements in the future). But how will we replace its benefits in our operation?

At this point, we're thinking about increasing our annual use of landscape fabric (which can be rolled up at the end of each season and re-used for many years). This reduces our opportunities for living mulch in our pathways which we've really liked having... though there are always plenty of beds that don't get any mulch at all (like beds of salad mix, carrots, salad turnips, radishes) that will still have the living mulch pathways. 

 broadforkfarm.ca

Shannon Jones and Bryan Dyck are the hearts and hands behind Broadfork Farm, a 15 acre farm in River Hebert, Cumberland County, Nova Scotia. They blog about their farming adventures at broadforkfarm.com. This article is excerpted from a longer version which appeared in the ACORN's summer 2015 issue and which is available on the Broadfork Farm blog.

For more on Biodegradable mulch and organic standards, see page 28.



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An Introduction to DRY FARMING



July 29, 2015 – Dry Farming Plots at the Oak Creek Center for Urban Horticulture

Demonstration Project in Oregon Points the Way Forward

By Amy Garrett

As our water supply becomes increasingly affected by climate change through reduced snowmelt, higher temperatures and drought, water scarcity is becoming a harsh reality in the western region. It is critical for our food security to understand what we are capable of producing in the absence of irrigation. Dry farming practices could assist in diversifying cropping options for some growers who are on land without water rights or on irrigated land in drought years when water supply is limited.

So what is dry farming?

Dry farming is not a new way of farming. Before the rise of dams and aquifer pumping, dry farming was a staple of agriculture for millennia in places like the Mediterranean, and much of the American West including the Papago Indians in the Arizona desert.

Dry farming refers to crop production during a dry season that utilizes the moisture stored in the soil from

the rainy season. No irrigation is used. In Oregon, the Willamette Valley receives about 40" of precipitation per year, with less than 1" of rain falling during July and August combined. This seasonal drought coincides with the greatest period of transpiration. Dry farmers work to conserve soil moisture during these long dry periods through a combination of management strategies including drought-resistant crops and varieties, planting technique (timing, depth, spacing and method), tillage, surface protection and increasing soil organic matter. Regional rainfall and soil type are important considerations for dry farming as well. A soil with moderate clay content and high organic matter can effectively store water for crop growth during dry summer months.

Dry farming is not a yield maximization strategy; rather it works with nature to produce sustainable food with fewer external inputs such as irrigation water and fertilizer. Production costs are lower, as are yields, and the economics of dry farming are poorly documented.

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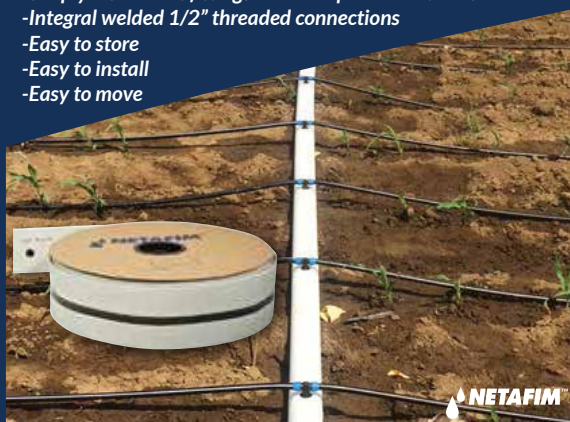
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There is little research-based information on what soil types are most conducive to dry farming vegetables or how dry farming management practices affect vegetable quality and productivity.


The Demonstration Project

In response to rising drought concern in the west, three 10' x 100' plots were established at Oak Creek Center for Urban Horticulture (OCCUH) in Corvallis, Oregon to demonstrate dry farming practices in several crops including: dry beans, tomatoes, potatoes, squash and melon. Varieties and management practices (soil preparation and planting techniques) were selected based on interviews with several established growers experienced in dry farming.


In Western Oregon these crops are typically irrigated with between approximately 12 to 20 inches (or 300,000 to 500,000 gallons) of water per acre depending on the location, planting date, seasonal variation, irrigation method, and variety. These dry farming plots did not receive any irrigation for the entire growing season.

On August 3, 2015 more than a hundred farmers and gardeners attended an Oregon State University Extension Dry Farming Field Day to tour the plots, learn more about growing without irrigation and find out how dry farming works. Participants were also able to taste a variety of dry farmed crops including a side-by-side tasting of dry farmed and irrigated melons and tomatoes.

Many of the attendees were on land without water rights and several had experienced their well running dry this year. Seeing many crops ripening and ready for harvest after receiving no irrigation in an extremely hot and dry summer was encouraging for these growers.

In 2016, OSU Extension Small Farms Program will be doing another dry farming demonstration and further field research focused on yield, quality and economics, as well as mapping the soils in our region that may be conducive to dry farming vegetables to better understand how dry farming management practices may assist growers in our region. 

For more information about the dry farming demonstration visit:

 [smallfarms.oregonstate.edu/
dry-farming-demonstration](http://smallfarms.oregonstate.edu/dry-farming-demonstration)

This project is funded in part by the National Institutes of Food and Agriculture under the Beginning Farmer



Dry Farming Field Day photos. Top: August 3, 2015 – Dry Farming Field Day. Bottom: participants tasted dry farmed and irrigated tomatoes and melons.

and Rancher Development Program, and supported by the OSU Small Farms Program, OSU Department of Horticulture, and the USDA National Water and Climate Center.

Amy Garrett currently works part-time with Oregon State University Extension Small Farms Program. She is devoted to learning and teaching others about ways to improve the economic and environmental sustainability of our food production systems. Amy got her B.S. in horticulture from Purdue University in 2003 and moved to Oregon in January 2007 to begin working towards her M.S in horticulture. Upon completion, she moved to Lummi Island, Washington to manage a diverse three-acre farm. Her special interests are in organic crop production, rotation strategies, composting, cover cropping, season extension and permaculture design.

2015 Dry Farming Demonstration Oak Creek Centre for Urban Horticulture



June 17, 2015



July 29, 2015

Dry Bean Plot



June 17, 2015



July 29, 2015

Squash & Melon Plot




June 17, 2015



July 29, 2015

Tomato & Potato Plot

For most recent photos visit

 smallfarms.oregonstate.edu/dry-farming-demonstration

Biodegradable Mulch Films & Their Suitability for Organic Agriculture



By Carol Miles, Shuresh Ghimire, Mary Peyron, and Douglas G. Hayes

Editor's note: The following article is US-based research and pertains to USDA standards. In Canada, the use of biodegradable mulch films has been contentious in the Organic Standards review process. Watch for the revised standard for further guidance and be sure to check with your CB prior to using biodegradable mulch film products.

Today there are many agricultural mulches marketed as “biodegradable.” A biodegradable mulch must retain a relatively high level of intactness during the growing season, so that it meets the functionality expectations of growers (e.g., weed control, moisture retention), and then at the end of the growing season it can be incorporated into the field where it will biodegrade fully over a relatively short period of time (within 2 years). Being able to till the mulch into the soil after the crop harvest eliminates removal and disposal costs for growers and reduces landfill waste for communities.

Last October, the USDA National Organic Standards Board (NOSB) added ‘biodegradable biobased mulch film’ to their list of allowed substances for organic crop production. The primary points of the new rule are:

To be considered biodegradable and biobased, a mulch film MUST:

- Achieve at least 90% biodegradation in the soil within two years
- Be biobased, with biobased content measured using ASTM D6866
- Meet compostability specifications
- A biodegradable biobased mulch film must be produced without organisms or feedstock derived from excluded methods
- A biodegradable biobased mulch film must be produced without the use of synthetic (non-biobased) polymers. Minor additives such as colorants and processing aids are not required to be biobased

Currently, no biodegradable mulch films have been approved for use in the U.S. because, so far, none meet the requirement of using only biobased feedstock. To be considered ‘biobased’ the feedstocks used to make the mulch must be derived from a renewable resource (plant and/or animal mass derived from carbon dioxide recently fixed via photosynthesis), and the feedstock must be made using biological processes and may not be derived from, or use, GMO organisms. The biodegradable mulch films currently on the market contain 10 – 20% biobased content and the remaining content includes polymers derived from fossil fuels (petroleum or natural gas) as well as dyes, minerals, and in some cases heavy metals.


All biodegradable biobased mulches contain anywhere from 4% to greater than 10% non-biodegrad-

able ingredients, which will accumulate in the soil following repeated applications. An example of a non-biodegradable ingredient added to most biodegradable mulch films is the dye carbon black. Carbon black may originate from lignin or it may be produced by the incomplete combustion of heavy petroleum products such as fluid catalytic cracking tar, coal tar, ethylene cracking tar, and to a lesser degree, vegetable oil. To know the potential biodegradation of a mulch film, it is necessary to know the percent of non-biodegradable constituents within the product.

In the U.S. growers are responsible for ensuring that the mulch reaches 90% biodegradation within two years. Yet all the biodegradable testing has been laboratory procedures that utilize controlled conditions such as temperature, moisture, and organic matter substrates; and the tested mulches are ground into a fine powder. In the field, there is quite a bit of variability in environmental conditions: heat, UV light, wind, soil type, pH, microbes, irrigation, aeration of the soil, and other production practices will affect the rate of biodegradation. Environmental conditions during the period of time when the mulch is being used on the soil surface may also reduce the extent of biodegradation. If the mulch does not adequately biodegrade in the soil, the grower may be in non-compliance.

In 2009, a project funded by the USDA-Specialty Crop Research Initiative followed four biodegradable mulches (BioAgri, BioTelo, PLA Experimental, WeedGuard) in the soil for 2 years at three locations in the U.S. While WeedGuard biodegraded at all lo-

cations, BioAgri and BioTelo (very similar products) biodegraded at different rates at each location, and the PLA mulch did not biodegrade at any location.

A new 5-year field study initiated in 2015 at Washington State University Northwest Washington Research and Extension Center and the University of Tennessee–Knoxville is testing 5 biodegradable mulch products: WeedGuard, BioAgri, Naturecycle, Organix, and an experimental PLA/PHA-based mulch film. Evaluation includes mulch impacts on crop production and soil micro-organisms, and mulch biodegradation in the soil over 4 years of repeated applications. Soil sampling methods will be developed to enable growers, certifying agencies and scientists to determine how much mulch is remaining in the soil post-incorporation. 

For more information about this research project, see:

 biodegradablemulch.org

Dr. Carol Miles has lived in subsistence agriculture communities in places such as Panama, Afghanistan, Cameroun, Malawi and Tanzania. She received her B.S. (1983) in Bio-Agricultural Science from Colorado State University, and her M.S. (1989) and Ph.D. (1993) in Vegetable Crops from the Department of Fruit and Vegetable Science at Cornell University. Carol's goal has been to work with farmers to create sustainable production systems which provide a source of well-being to both the family and the community.

Table 1. Common polymeric materials used to make biodegradable mulch films, their sources of origin, and their estimated rate of biodegradation (ERBD) in the soil.

Ingredient ¹	Origin	Synthesis	Feedstock	ERBD in Soil ²
Cellulose	Natural	Biological	Biobased	High
PBAT	Synthetic	Chemical	Hydrocarbon	Low - moderate
PBS	Synthetic	Chemical	Hydrocarbon	Low - moderate
PBS & PBSA	Synthetic	Chemical	Hydrocarbon	Low - moderate
PCL	Synthetic	Chemical	Hydrocarbon	Moderate
PHAs	Natural	Biological	Biobased	Moderate - high
PLA	Natural	Biological & Chemical	Biobased	Low
TPS/Starch	Natural	Biological	Biobased	High

¹ Abbreviations: PBAT – poly(butylene adipate-co-terephthalate); PBS – poly(butylene succinate); PBSA – PBS-co-adipic acid; PCL – poly(caprolactone); PHA – poly(hydroxyalkanoate); PLA – polylactic acid; TPS – thermoplastic starch

² Source: Brodhagen, M, M. Peyron, C. Miles, and D. A. Inglis. 2015. Biodegradable plastic agricultural mulches and key features of microbial degradation. *Appl Microbiol Biotechnol* (2015) 99:1039–1056.

News & Announcements

National Organic Week Events September 19 – 27

COABC's Organic Road Show

COABC is planning a series of events during National Organic Week, September 19 to 27. A number of presentations are being planned around the province that will provide a mix of topics from business to production. Watch for presentations in your area. Sessions will be announced on the COABC website as they are confirmed:

📍 certifiedorganic.bc.ca

10th Anniversary Organic Okanagan Festival

Sunday September 27th, 2015 from 11:00 am - 4:00 pm. We are honoured to announce that this milestone event will be hosted at Summerhill Pyramid Winery, 4870 Chute Lake Road, Kelowna. More information:

📍 okanagangreens.ca

Horse and Tractor Ploughing Workshop

Want to learn how to plough with horses or tractor? Join us at Deerfoot Farm for a ploughing workshop coordinated by David Doran.

When: Sunday, September 20th | 10:00AM – 4:00PM

Where: Deerfoot Farm, 4420 Hullcar Road, Armstrong, BC

Registration: \$20/person

To register contact David Doran: daviddorantel@telus.net or 250-546-6884.

Creston Valley Tour de Farm

Meet in downtown Creston and take off for a day of exploring farms showcasing the Creston Valley's agricultural diversity.

Stops along the 35km loop will include: an organic market garden, a small-scale organic grain farm, an organic dairy and fromagerie, an organic orchard, and a vineyard and winery!

When: Sunday, September 13, 10:00am to 4:00pm (depending on biking speed)

Where: Meet at the Creston & District Community Complex – 312 19th Avenue North

Email kootenays@youngagrarians.org for more info.

The Soilution

To promote the importance of soil to human health during International Year of Soil, Canadian Organic Growers have partnered with Save Our Soils. To help re-build soil, like Save Our Soils on Facebook and they will release €5 (~\$7) to save 500 square meters of degraded soil.

Find out more at:

📍 www.cog.ca

Farmers Appreciation Week

Join others at your local farmers' market September 12th-19th for the sixth annual Farmers Appreciation Week and celebrate BC farmers, agriculture and local food.

Details at:

📍 bcfarmersmarket.org/market/farmers-appreciation-week-2015

Carrot Seed Production Field Day & Potluck

When: Friday, September 18, 2015

Where Growing Opportunities

Farm Community Co-op, 13110 Doole Road, Ladysmith

Contact: event organizer Chris Thoreau chris@farmfolkcity-folk.ca

Irrigation Systems Workshop

When: Saturday, Sep 12, 2015

Where: UBC Farm, 3461 Ross Drive, Vancouver, BC

What: Exploring different irrigation systems, how to set them up, benefits and challenges, this workshop will cover the basics of irrigation systems for small scale farms, including benefits and challenges of drip vs overhead, determining flow rate and water pressure. This workshop is meant as an overview to give a general understanding of irrigation systems.

Email karly@urbanfarmers.ca for more info.

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- ☐ Option 1:
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- ☐ Option 2: PST Number: _____
- ☐ Option 3: Certificate of Exemption
Farmer exemption: 0458FILL.pdf
Other enterprises exemption: 0490FILL.pdf
or request the appropriate exemption form from the office.

Item	Units	Unit Price	Quantity Discount	Quantity	Total
Stickers 1" round	1000 pc roll	\$13.50	10 rolls \$120.00		
Stickers 1 1/4" square	1000 pc roll	\$10.50	10 rolls \$90.00		
Twist Ties 10" (15,000 per case)	1000 pc	\$13.00	Full Case-\$165.00		

The packaging materials above are only available to COABC Certified Organic members and are PST exempt for qualifying enterprises (see above).

Have you signed a Consent to use Official Marks Declaration Form (July 2006 revision)? Y/N Are you Certified? Y/N

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Natural T-shirts (Logo) M *	\$7.25	\$7.25	PST taxable		
Natural T-shirts (Plain) S, XL or XXL	\$5.00	\$5.00	PST taxable		
NEW!! COABC T-shirts Designed by Brian MacIsaac Men's size S-XXL & Ladies sizes S-L	\$17.85	\$17.85	PST taxable		
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Western Canada Organic Directory	\$6.00	\$6.00	No PST		
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*Limited quantities available - please contact the COABC office for availability

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