



British Columbia Agroforestry Industry Development Initiative

Agroforestry Workshop: Forest Farming Berry Crops

Held October 16, 2008  
In Courtenay, BC

Final Report

**November 14, 2008**

Prepared by:

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**George W. Powell, Ph.D., P.Ag.**

*Consulting for natural resource management solutions*

PO Box 4261 Stn Main, Quesnel, BC, V2J 3J3  
Email: [agroforestry@uniserve.com](mailto:agroforestry@uniserve.com)

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*Funding provided by:*



## 1 Introduction

Since 2003, the BC Agroforestry Industry Development Initiative has delivered nine regional agroforestry workshops throughout BC. This latest workshop was designed to serve a recurring interest in emerging production/product development opportunities from native shrub species focused on accessing niche markets for specialty foods and natural health products for berry crops. Workshop participants were provided a balance of practical information on production and conservation methods, harvesting and processing technology, product development and marketing with a focus on good agricultural practices and food quality and safety procedures.

As with previous regional workshops, the goals of this workshop included providing both general and regionally specific information to participants as well as collecting information that the Agroforestry Management Committee (AMC) could use in furthering industry development. Specific objectives of this event were to:

1. Provide education and build awareness about agroforestry systems and their economic, environmental and social benefits;
2. Increase specific knowledge of native berry crop cultivation practices, harvesting and processing technology, potential products and markets, food safety and quality awareness;
3. Increase awareness of the Agroforestry Industry Development Initiative; and,
4. Identify new agroforestry development opportunities, information gaps and potential partners.

In addition to the Agroforestry Initiative Facilitator, BC Ministry of Agriculture and Lands (BCMAL) staff and Harold Macy (Headquarters Creek Woodlot Ltd.) provided support for the organization and implementation of the workshop. Specific details on the organization, location, objectives, format, and content of the workshop was coordinated by a committee consisting of George Powell (Agroforestry Initiative Facilitator), Dave Trotter and Lisa Zabek (BCMAL) and Harold Macy (AMC, Headquarters Creek Woodlot).

Presentations were invited from a variety of regional stakeholders and provincial specialists to provide examples and to speak about the general environmental, economic and production concepts in agroforestry practices, product development and marketing. These presentations are summarized in section 2.1 of this report. Participant input on both the workshop content and delivery was solicited through a feedback form. Input from the workshop is summarized in section 2.2 of this report.

The final agenda for the workshop, as delivered, was as follows:

## ***Forest Farming with Berry Crops***

***Thursday October 16, 2008, 9:45 am to 5:00 pm***

***The Westerly Hotel Best Western, 1590 Cliffe Ave, Courtenay, BC***

- 9:45 Welcome – Opening Remarks
- 10:00 Introduction to Forest Farming  
*Harold Macy, Headquarters Creek Woodlot*
- 10:40 Vancouver Island Berry Production Options and Ecology  
*Wendy Cocksedge, Centre for Non-timber Resources, Royal Roads University*
- 11:20 Propagation Methods  
*Siriol Paquet, Sylvan Vale Nursery*
- 12:00 Lunch
- 13:00 Berry Production and Harvesting Overview  
*Mark Sweeney, BC Ministry of Agriculture and Lands*
- 13:40 Berry crops: Good Agricultural Practices and Food Safety Awareness  
*David Trotter, BC Ministry of Agriculture and Lands*
- 14:20 Refreshment break
- 14:40 Access and Land Management Issues  
*Steve Lorimer, TimberWest*
- 15:20 Options for Adding Value  
*Keith Hunter, First Nations Wildcrafters, BC*
- 16:00 Panel discussion – “Opportunities and Challenges with Berry Production”
- 16:40 Session wrap-up

## 2. Workshop Summary

### 2.1 Presentation Summaries

#### 2.1.1 Introduction to Forest Farming - *Harold Macy, Headquarters Creek Woodlot*

Forest farming is the intentional management of a forest to produce a variety of crops in conjunction with silvicultural operations such as planting, brushing and weeding, juvenile spacing, commercial thinning and harvesting. It is important to note that forest farming is not tree farming, but rather an integrated practice involving timber and non-timber components.

Traditionally, agriculture has developed on Vancouver Island through the clearing of forest cover. The opportunity exists to integrate the production of non-timber forest products and forest management, specifically where selective timber harvesting creates gaps in closed forests. Some non-timber forest product opportunities on the Island include:

- Greenery: Christmas trees and boughs, live nursery stock, ornamental greenery;
- Edibles: berries, syrups;
- Medicinals and nutraceuticals;
- Mushrooms;
- Craft and specialty items; and,
- Recreation and tourism.

One potential forest farming system suitable to Vancouver Island is the concept of a “Four story forest” consisting of:

- Shade intolerant conifer overstory (e.g. Douglas-fir);
- Shade tolerant conifers or hardwoods mid-story (e.g. red cedar, maple);
- Shade tolerant small trees and shrubs layer (e.g. cascara, red huckleberry); and,
- Shade tolerant perennials at the ground layer (e.g. Oregon grape, sword fern).

Species	Position or Story	Tolerances	Products	Other
Douglas-fir	Four	Shade intolerant, medium to dry sites.	Wood fibre, logs.	Requires mineral soils for seedbed.
Red cedar	Three	Shade tolerant, medium to moist sites.	Wood fibre, logs, boughs, oils.	
Red huckleberry	Two	Shade tolerant, often at forest edges or openings, rich soils, often on old logs or stumps.	Berries, twig-ends for floral product, landscaping.	Propagated by seed or stem layering.
Oregon grape	One	Semi-shade tolerant, dry to moist sites.	Berries, leaves for floral product, roots for natural health products, dyes	Propagated by root cuttings or seeds.

In designing a forest farming system it is important to consider the following information needs:

- Species requirements (light, moisture, nutrients, soil, drainage, and climate);
- Reproduction (seeds, runners, roots);
- Access for management and harvesting;
- Ecosystem function;
- Overstory stand characteristics; and,
- Pathogens and competitors.

There is already a considerable amount of wild harvest of berries on the Island with established buyers stations and tools to assist with harvesting efficiency (e.g. hand rake developed in Sweden). Considerable attention has to be paid to quality and labour needed to sort and clean berries to ensure you have a salable product and can make a profit.

Cultivation of berries in a forest farming system is still very much in its infancy, but the precedence for developing a forest farming enterprises has already been set with the emergence of the bigleaf maple tapping industry on the Island. With some training and industry development support, similar success could be achieved with forest farmed berry crops.

### **2.1.2 Vancouver Island Berry Production Options and Ecology**

*- Wendy Cocksedge, Centre for Non-timber Resources, Royal Roads University*

Wild berries in BC: “The fruits and berries of all 31 species are harvested on a personal basis; 7 species are known to be harvested on a commercial basis.” (deGeus, 1995).

Why the interest in wild berry production?

- Food security;
- Increasing food prices;
- 100-mile diet; and,
- Health concerns.

Market Trends:

- Functional foods and nutraceuticals - Growing at 7-8% per year;
- Organic foods - increase to \$31B in 2005; and,
- Natural health products - 50% of Canadians now use natural health products (Health Canada 2005).

Current Management Situation

- No regulation on Crown land
- No baseline information to guide management.

Conventional inventories (e.g. BEC/TEM/PEM, VRI, wildlife studies) can provide some insight on where species occur, but they only inventory occurrence, not quality or quantity of berries produced. NTFP inventories are needed, integrating conventional sciences with traditional / local ecological knowledge.

Berries can be produced under a range of management from wild harvest (no integration with forest management) through compatible management, agroforestry (full integration with forest management) and into agricultural settings (overstory removed).

Some important management considerations include:

- With no tenure rights for berry harvesters there is no incentive to actively manage the berry crop.
- Information on participants is needed; who is involved and why?
- Full forest management and the implications on loss of habitat.
- What are the management goals?
  1. Sustainable / assured level of berries?
  2. Ecosystem maintenance?
  3. Economic diversification?
  4. What species? E.g. blackberries vs bog cranberries.

Commercial wild berry production options for Vancouver Island include:

- Red huckleberry (*Vaccinium parviflorum*)
- Oval-leaved blueberry (*Vaccinium ovalifolium*)
- Alaskan blueberry (*Vaccinium alaskaense*)
- Black huckleberry (*Vaccinium membranaceum*)
- Evergreen blueberry (*Vaccinium ovatum*)
- dwarf blueberry (*Vaccinium caespitosum*)
- bog blueberry (*Vaccinium uliginosum*)
- bog cranberry (*Oxycoccus oxycoccos*)
- Blackberry (*Rubus ursinus*; *R. discolor*)
- Salmonberry (*Rubus spectabilis*)
- Blackcap (*Rubus leucodermis*)
- Cloudberry (*Rubus chamaemorus*)
- Thimbleberry (*Rubus parviflorus*)
- Salal (*Gaultheria shallon*)
- Oregon grape (*Mahonia nervosa*; *M. aquifolium*)
- Saskatoon (*Amelanchier alnifolia*)
- Highbush cranberry (*Viburnum edule*)
- Black hawthorn (*Crataegus douglasii*)
- Red elderberry (*Sambucus racemosa*)
- Stink current (*Ribes bracteosum*)
- Black gooseberry (*Ribes lacustre*)
- And potentially many more...

### **2.1.3 Propagation Methods - *Siriol Paquet, Sylvan Vale Nursery***

Two primary propagation options exist for plants: sexual and asexual reproduction.

Asexual reproduction involves replicating plant material from a single parent plant. Types of asexual propagation include:

1. Cuttings (from hardwood, softwood or leaf material) e.g. kinnikinnick;
2. Crown division;
3. Root division e.g. salal; and,
4. Micropropagation (a.k.a. tissue culture) – very expensive and technically complex.

Sexual reproduction involves crossing the genes from two parent plants and growing the seed output from that cross.

The advantages of asexual reproduction are that you can take a superior plant with desired qualities (e.g. disease or pest resistance, enhanced fruit production, desirable growth characteristics) and maximize the output of that type, true to its parent's form. The disadvantages of asexual reproduction are there can be unpredictable rooting ability for some species, and the increased costs associated with the labour and greenhouse heating.

The advantages of sexual propagation are it is a cheaper method than asexual propagation, seed is more readily available and easier to store than cuttings, provides genetic diversity for planting into non-uniform field conditions. The primary disadvantages associated with propagation by seed are the need for stratification before most seeds will germinate and the lack of information on these requirements, poor seed availability and viability for some species.

Controlled propagation generally requires climate controlled facilities ranging from large greenhouse set-up to very small scale 'home' greenhouse or substitutes (e.g. a plastic sheet anchored over planting blocks). The propagation environment must take into consideration the individual plant's needs for light, moisture, heat and humidity.

The challenges in propagating plant material for forest farming / agroforestry applications are the lack of readily available information for many species of interest, the need for more research on emerging ideas, and better distribution of existing information. As with all plant production, we need to understand the risk factors involved with production and involve all aspects of the production chain (researchers, producers, nurseries, and market demands) in the development process.

### **2.1.4 Berry Production Overview – Mark Sweeney, BC Ministry of Agriculture and Lands**

#### *Why grow berries?*

There has been major market growth, especially for blueberries, as consumer demand for food with health benefits grows. Berries are a versatile crop with adaptability to a range of production options, including agroforestry systems.

#### *BC Berry Industry*

Berry production generates approximately \$200 million in farm gate sales annually from a production base of 25,000 acres. Production is concentrated in the Fraser Valley, but they are grown all areas of province. The industry is export driven and the primary crop is blueberries. A lot of cultivated berry crops have ‘close cousins’ in the wild that could be managed in less intensive systems. Emerging berry crops include blackberries and currants. They have limited market but European taste and antioxidant potential could expand market potential; a private breeder is developing currant cultivars in BC. Saskatoons are another emerging berry crop. It is not widely grown other than in the Peace region but has large potential.

#### *Berry Markets*

From a producer standpoint it is important to look at markets and understand what you are trying to grow for. Direct marketing has a lot of potential, but requires time and skill for sales. Wholesale markets are the focus of the Fraser Valley industry – a very competitive, cost sensitive market segment. The processed market– fruit for freezing, manufacturing – has good infrastructure in Fraser Valley, but not in other areas. Small scale, on-farm processing has some real potential with nutraceutical linkages, but it is very important to understand the value chain. Certified Organic market is there BUT berries as a group are generally very difficult to grow organically. ‘Local is the new organic.’

#### *Climate/Weather*

Winter hardiness is a very important consideration and it is not just as simple as matching a crop to your plant hardiness zone. For example, 30% of the blueberry crop was lost in 2006 because cold weather arrived at the wrong time when plants had not ‘hardened down’ yet. It is important to do your homework on crop choices and varieties. Growing season is also important– for example, raspberries don’t like growing season temperatures above 25°C. Within general climate suitability zones you must also consider your farm’s microclimate - what is happening on your site (e.g. frost pockets) that directly affects the climate experienced by the berries. Is climate changing? A warming climate is expanding the regions in which crops can be grown. For example, blackberries used to be marginal but are now grown dependably in the Okanagan.

#### *Investment / Returns*

Establishment costs range from \$5,000 to \$25,000/acre with annual operating costs of \$5,000 to \$10,000/acre. Production costs and returns are highly influenced by labour costs; labour costs (and sourcing labour) are approximately 50 to 60% of the total cost of production.

#### *Land Suitability and Management*

Soil type, topography, drainage, irrigation and fertility are the primary considerations. Freely drained sites are important! Management of berry crops is very intensive. Weed control one of largest challenges together with lots of pests and diseases. As a rule, berries are extremely

perishable (for example, raspberries and blackberries will ‘melt’ after a few hours in sun). World wide there is interest in intensive fruit production and in particular ‘out of season’ product. Protection from the elements and pests has led to greater use of field tunnels to protect crops and improve the microclimate around the berries.

Harvest considerations include equipment (from low tech, such as a rake, to high tech harvesters), varieties suitable to mechanized harvest, field layout and training, topography, and economy of scale. It costs approximately \$100,000 for a harvesting machine; therefore you need at least 20 or 30 acres in production to justify the investment. Machines lower labour costs, but they can damage the crop plant and affect the fruit grade.

Processing challenges include foreign material such as insects with the berries in machine harvested products. There is a continual need for cleaning equipment to get saleable product. Foreign material in berries raises food safety issues – mechanical sorters use color/metal detectors to isolate contaminants.

Blueberry pollination can also be a challenge and there may be an advantage in agroforestry systems because they encourage wild pollinators.

### **2.1.5 Berry Crops: Good Agricultural Practices and Food Safety Awareness**

*- Dave Trotter, BC Ministry of Agriculture and Lands*

Good Agricultural Practices (GAP) are “common sense” practices that reduce the risk of contamination from:

1. Chemical hazards (e.g. pesticides);
2. Misidentified plants (e.g. mushrooms);
3. Physical hazards (e.g. glass shards); and,
4. Microbiological hazards (e.g. *E. coli*).

Why are GAPs important? The entire industry suffers when an incident occurs; individual operations need to be able to distinguish their practices from the business triggering the incident; this is done with GAPs. There is growing consumer awareness of food safety and quality issues and because of a growing “fear factor”, relatively small incidents can have large ramifications.

*Key Areas of Consideration in GAP:*

1. Plant identification
  - Understand what your planting, propagating and harvesting;
  - Assurance from material suppliers or identifier (training/experience);
  - Certification may be needed depending on end market or use; and,
  - Records are needed.
2. Chemical application/storage
  - Use only products that are registered for your crop;
  - Pest control (use Integrated Pest Management - IPM where possible);
  - Fertilizer;
  - Equipment cleaning;
  - Store products in a locked location and as per label specifications; and,

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- Keep records: what you are using, when you used it.
3. Production Site: know your location and identify all potential hazards at your location
    - Understand the risk from: wildlife (e.g. geese weeding leafy greens), adjacent field use, integrated systems (e.g. livestock with horticultural crops);
    - Access to hand washing / sanitary units for workers (harder to manage when wild harvesting); and,
    - Proper storage to maintain quality – bioactive compounds may be affected by storage conditions.
  4. Water quality
    - Washing/Cleaning equipment or products;
    - Always use potable (free of pathogens) water for final rinse;
    - Test water (three times per year is ideal: prior to season, mid season, end of season);
    - Water treatment;
    - Maintain records for treatment; and,
    - Include: when, how it was done, who did it.
  5. Harvest
    - Employee training – do they know what they are harvesting?
    - Proper identification of plant or crop;
    - How to harvest and handle properly ;
    - Tools and equipment used; and,
    - Hygiene.
  6. Post harvest activities
    - Drying/processing: understand the process and how it affects safety and quality.
    - Pest control: bait station vs. other trapping devices and chemicals.
    - Packaging material, storage facilities.
    - Cleanliness of reusable materials.
    - Transportation: cleanliness, distance, location – use of ‘reefer’ or dry run?
    - Records and traceability (records are a means of proving due diligence).

Traceability includes letters of assurance from suppliers as to material identification, chemical application, permits, equipment calibration, etc.

### **Available Tools & Resources**

Good Agricultural and Collection Practices Workbook – Canadian Herb, Spice & NHP Coalition

National Herb & Spice Coalition: <http://www.nationalherbspice.com>

Saskatchewan Herb & Spice – Plant identification:

<http://www.saskherbspice.org/Good%20Practices%20for%20plant%20identification.pdf>

### **2.1.6 Access and Land Management Issues - *Steve Lorimer, TimberWest***

TimberWest operates on 800,000 acres of private land, one Tree Farm License (TFL 47), and some Forest Licenses and Leases. As a land management company TimberWest operates both timberlands and real estate divisions. The timberlands operations include the Tree Farm License, Forest Licensees/Leases and a core area of approximately 83 % of the private lands. The real estate operations are focused on the remaining 17 % of the private lands.

Private land access issues of concern to TimberWest:

- Safety and interference with harvest and hauling operations;
- Vandalism – to land, equipment, forests;
- Garbage dumping – to save tipping fees;
- Theft – of wood products, gravel/rock, equipment;
- Liability – the land owner may be liable for accidents/injuries that occur on private land if lands are open or individuals invited to use; and,
- Fires.

Who wants access to TimberWest lands and why?

- Our contractors – to conduct work for us;
- Other logging companies – through road use agreements;
- NTFP gathers;
- Recreation, including hiking, biking, hunting, camping, fishing, hang gliding;
- First Nations – Aboriginal rights;
- Roads used as access routes: - to sites on our land or as access to other sites or communities;
- Cabin owners – Nanaimo Lakes, Comox Lake, Caycuse;
- Mining exploration;
- Government agencies interested in management of fish and wildlife resources;
- Campsites and boat launches – some developed (Nanaimo Lakes and Cowichan Lake) and others undeveloped;
- Homes and summer cabin access where legal access is by water; and,
- Access for community watershed purveyors and water license holders.

Issues with permitting others to use our lands:

- Legal and liability issues (e.g. First Nations, mining exploration, adequate signage);
- Fire hazard – urban interface;
- Community impacts/reaction – entitlement approach ;
- Ongoing discussions: land acquisition/trade talks with government;
- User groups (fish and game clubs, wilderness watch, hiking clubs etc);
- Public relations and communications; and,
- Security patrols.

There is approximately 9000 km of road on TimberWest private lands and access controls are employed through:

- Gating;
- Barriers: - rocks, ditches and berms at entrances to seldom used roads;

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- Signage: - indicating private road status and other conditions; and,
- Some areas are not controlled.

Access to TimberWest properties is contingent on managing for sustainability:

1. Comply with all regulatory requirements;
2. Adhere to TimberWest's environmental policy;
3. Manage under other TimberWest commitments:
  - Community & sensitive watershed program
  - Local agreements; and,
4. Conform to applicable international certifications.

Sustainable forestry:

To meet the needs of the present without compromising the ability of future generations to meet their own needs by practicing a land stewardship ethic that integrates *reforestation and the managing, growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, biological diversity, wildlife and aquatic habitat, recreation, and aesthetics.*

The company uses a variety of access management protocols depending on the type of access required and activities undertaken. Access management used include:

- Passive;
- Restricted/not permitted;
- Permit system; and,
- Land use agreements.

When access to TimberWest properties is desired for NTFP harvesting or otherwise, contact the appropriate regional office:

- Where access is desired and timing important;
- Where the activity is of a commercial nature;
- Where there are, or may be conflicting uses;
- Provide as much lead time as possible;
- Provide detail of the area, road name or map location; and,
- Inquire up front what requirements are to access or use the land.

TimberWest Contact Information:

Web site: [www.timberwest.com](http://www.timberwest.com)

Regional office: Nanaimo 250 729-3700

Campbell River Office 250 287-9181

Steve Lorimer 250-729-3727 [lorimers@timberwest.com](mailto:lorimers@timberwest.com)

### **2.1.7 Options for Adding Value - *Keith Hunter, First Nations Wildcrafters, BC***

Diversifying forest resource management needs to be both practical and profitable for your operation. A “practicality” checklist includes:

- Options must be compatible with other forest management goals, strategies and outcomes;
- Integration of additional forest product management must be compatible with other forest management operations;
- Potential increased risk management issues must be accurately identified and adequately addressed; and,
- The business case must be made and must produce a competitive rate of return on investment.

Diversifying forest resource management for wild food product management starts with a ‘Forest Resource Management Operational Plan’ that identifies potential areas to be managed, conducts due diligence for contamination and conducts due diligence of safety concerns and exposure to liability.

When identifying potential management areas, you must have a set of commercial harvest management indicators including road or trail accessibility and ability to control access. Due diligence for contamination is of the utmost importance: managing for food means managing a working forest environment for safe food production. Due diligence involves inspecting potential harvest management areas for evidence of prior contamination, situating harvest management areas away from dust contamination of mainlines and registration of the area as “no spray” zones. Conducting due diligence of safety concerns and exposure to liability is also an essential part of risk management. Safety plans must be suited to management operations to determine level of risk willing to undertake and ensure every one working on your lands are following your safety guidelines and criterion.

There are three economic models for revenue generation in forest farming:

- Harvesting permit systems;
- Design trail system to access harvest management areas for eco-tourism, agroforestry-tourism; and,
- Self-directed harvest and marketing.

Commercial markets for wild berry crops include:

- Farmer’s markets;
- Wineries;
- Specialty jam manufacturers;
- Wild Food Chefs;
- Wholesale berry commodities markets;
- Natural health products; and,
- Functional foods.

It is important to note that depending upon the markets, varying degrees of Provincial and/or Federal regulatory provisions must be met (with varying costs associated with entering different markets).

Other potentials for integrating economic diversification of forest resource management

- Do you have a campground or trail system in place or planned?
- Do you have eco-tourism businesses locally to interface with?
- Is there a 'U-pick' potential for berries?
- Do Cruise ships come into your area?
- Are there under utilized agricultural processing or packing facilities in your area?
- Look for interfaces and synergies with compatible business focuses.

Social and cultural capital also adds value. In 'values-based' marketing, work with businesses that are building a customer base on shared social values. In a changing world filled with uncertainty, having forest products that can be trusted, with a documented chain of trust, are of greatest value.

### **2.1.8 Panel Discussion: Opportunities and Challenges with Berry Production**

Speakers from the workshop were asked to comment on what they believed were the primary strengths/key opportunities and/or the challenges for developing forest farming sector of berry crops on Vancouver Island and then questions and comments were taken from the floor.

#### **Harold Macy**

The key challenge will be in securing long-term access to the majority of production areas on Vancouver Island – large private holdings and Crown lands. Without long-term security of access it will be difficult to build an industry.

#### **Wendy Cocksedge**

The lack of information on production of native berry crops needs to be addressed.

#### **Siriol Paquet**

The lack of easily accessible information – both production-related and the on the economics of regional forest farming opportunities is the key challenge.

#### **Mark Sweeney**

Berry crops represent a growing opportunity for BC, but labour costs and the logistics of berry production in both agricultural and agroforestry settings are the key challenges.

#### **Dave Trotter**

Regulatory harmonization between various levels of government is needed and we need to create policies that support industry development.

#### **Steve Lorimer**

Addressing land access issues on Vancouver Island is essential, particularly we need to address liability issues for harvesters on private land. Good economic information is also needed to build the business case for advancing forest farming.

#### **Keith Hunter**

Three keys to growing the industry are putting in place partnerships to ensure we have the scale of operation to access market opportunities, supporting tech transfer on best management practices, and putting in place quality assurance controls to achieve the highest standards for food safety and end product quality.

#### **Questions and Comments from the Floor**

1. Economic information and marketing challenges are key and without good business information, nothing will succeed. We tried diversifying, but are challenged to make good money at it.
2. For Steve Lorimer, are you open to the model put forward by FN Wildcrafters, BC?  
Yes, they have put forward a very comprehensive framework to address the risks.

## 2.2. Participant Feedback

The workshop participants were provided with feedback forms to relay their rating of the workshop content and delivery, as well as to provide information on regional agroforestry practices to assist the Agroforestry Initiative to develop and prioritize support for agroforestry in the province. Nine workshop participants submitted full or partially completed feedback forms. Questions and responses received are listed below.

### How did you hear about this workshop?

- No response = 1
- Agroforestry Initiative mailing list = 3
- Agroforestry Initiative website = 1
- Other producer/professional association mailing list = 1
- Newspaper advertisement = 2
- Personal communication/third party reference = 1

### Overall, how would you rate this workshop?

(1= poor, 2=below average, 3=average, 4= good, 5 =excellent).

- Nine responses; average = 4.8 ( $\pm 0.1$ ), median response = 5.

### What elements of the workshop content did you find the most informative? The least?

#### *Most (9 responses)*

- All presentations informative (3)
- Forest farming introduction (2)
- Vancouver Island Berry Production Options and Ecology (1)
- Options for adding value (3)

#### *Least (3 responses)*

- Access and land management issues (2)
- Plant propagation (1)

### What additional content, if any, would you like to see in future workshops?

Six responses:

- Value added manufacturer (e.g. commercial jam production).
- Nutraceutical information.
- More wildcrafting content.
- List of species and species uses.
- Processing and marketing information (3)
- Information on necessary permits and regulations for selling berry products (2)

**How would you rate the following elements of the workshop delivery?**

(1= poor, 2=below average, 3=average, 4= good, 5 =excellent)

**Venue?**

Nine responses; average = 4.9 ( $\pm 0.1$ ), median response =5.

**Catering?**

Nine responses; average = 4.6 ( $\pm 0.3$ ), median response =5.

One respondent requested more local food as part of catering.

**Registration process?**

Nine responses; average = 4.6 ( $\pm 0.3$ ), median response =5.

**Do you have any other suggestions to help us deliver future agroforestry information and training?**

One response:

- Need this type of workshop on the mainland.

**What regional agroforestry practices and opportunities exist? Do you have some specific examples that would be suitable demonstration sites?**

One response:

- Woodlot
- Wild berries
- Maple syrup
- Floral greenery
- Mushrooms
- Nettles (fresh and for tea)

**Who are the current and potential regional partners for developing agroforestry?**

No responses.

**What are the markets for agroforestry products?**

One response:

- Farmers markets
- Local retailers
- Restaurants (especially those striving to use local produce)
- Timber, wood flooring, furniture
- Nutraceutical markets.

**What agroforestry information and extension needs exist?**

No responses.

**What are the marketing challenges and needs for agroforestry products in British Columbia?**

No responses.

### 3 General Themes and Conclusions

Based on formal and informal feedback from the participants, both the format and range of content provided a good balance of information. Most expressed that it was an excellent forum for discussing all aspects of enterprise development (primary production through marketing) and valued the integrated nature of the presentations and topics.

Four general themes emerged over the course of the workshop and form the basis of industry development needs to advance forest farming.

- There is strong interest in berry products highlighting the opportunity for further industry development. The primary production challenges relate to obtaining planting stock, propagating native species and optimizing production in a forested environment. The need to manage labour costs is also important, as labour input is the single largest factor in determining the profitability of berry production.
- Product quality and safety assurances are vital to access and maintain markets, thus ultimately, determine the long-term viability of this industry. Safety and quality controls begin at the very earliest stages of production and must be adhered along the entire value chain. Good agricultural/collecting practices (GACP) involves a systemized approach to assessing risks, adequate worker training and supervision and good record keeping at all stages of production.
- Land access is a very important issue on Vancouver Island for forest farming development. Agroforestry has an important role in 'wild' berry production, as both an option to improve production and thus take pressure off increasingly overused wild harvest sites and as a means to integrate production and conservation practices.
- Detailed information on production and markets is often lacking. In order for the industry to develop we need better access to existing information and additional research and development on forest farming opportunities.

The workshop format was well received. It is suggested that future workshops also continue to include a mix of speakers, including those with production experience and local knowledge, and covering the range of environmental, economic and social considerations. In general agreement with previous feedback, participants identified a lack of readily available information about agroforestry practices and opportunities as limitations to agroforestry expansion. Additional workshops in the region and elsewhere in the province to raise awareness and provide basic agroforestry education were suggested.