British Columbia Cultivated Mushroom Industry Initiative

Five Year Strategic Plan

2006 – 2010

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1 Purpose

This document is the Mushroom Industry Strategic Plan (2006 to 2010), which has been prepared as a roadmap for industry development over the next five years. It is aligned for consideration under the auspices of the Agri-Food Futures Fund (AFFF). The AFFF is a cost-sharing trust fund whose goals are the development and sustainability of the agri-food industry in British Columbia. The AFFF was established as a joint federal/provincial initiative within the Canada – British Columbia Framework Agreement on Agricultural Risk Management, and is continued under the present Agriculture Policy Framework (APF). In addition to the purpose of meeting the guidelines of the AFFF, this document also outlines projects and initiatives that the industry will pursue through other sources. These activities are clearly delineated within the plan.

Strategic planning relates to organizational and operational decisions which guide a group's activities and use of resources, defining and enabling realization of it's objectives. It is a dynamic process providing for formulation, implementation and evaluation of activities needed for industry development. Thus, a strategic plan is a management tool or framework that will provide direction and guide decisions of future activities to meet the needs of the existing and emerging mushroom industry. As such it considers both cultivated *Agaricus* species (white and brown mushrooms) and specialty mushrooms within its scope. The goals and actions outlined in this plan will: facilitate growth and development of the emerging specialty sector; further diversification and stability of the established sector of *Agaricus* mushrooms, currently in a transition stage; facilitate a more viable and stable mushroom industry with increasing grower knowledge and environmental stewardship; and, improve food safety and product quality assurance. The Mushroom Industry Strategic Plan builds on a previous Strategic & Operational Plan (2001 to 2005) assessing and revising focus, direction and achievements and incorporating information gained from studies, reports and a levy usage survey. Direct current input was achieved through facilitated sessions with individuals and groups of both *Agaricus* and specialty growers and with representatives from the marketing and supply sector. Thus, the new plan provides an update to challenges and opportunities faced by the industry, identifying those areas which need to be addressed for development, growth and sustainability of the mushroom industry.

2 Introduction

Agaricus bisporus
white button, crimini, portabella, portabellini

White and brown *Agaricus* species are the main mushroom crops grown in British Columbia. A brown coloured strain of *A. bisporus* is grown to three different sizes known as crimini (brown button, or Italian brown), portabellini (small portabella) and portabella. Several specialty mushrooms are also grown, including oyster, king oyster, enoki and shitake. Other species of interest include pioppino, honey

Specialty
oyster, king oyster, shitake, enoki, organic production

nameko, pom-pom and maitake. Thus, in practice, the specialty sector may be considered as composed of the cultivated production of non-*Agaricus* species and organic mushroom production.

Sustainable development of BC's mushroom industry was identified as a priority initiative under the AFFF announced in March 2001. Through the assistance of the BC Mushroom Marketing Commission (BCMMC), a Strategic and Operational Plan was created which articulated the needs of the industry and acted as a guide to future industry growth and development. The document served to support application for funding from the AFFF and other government sources, and to design a process that resulted in change and development in the BC mushroom industry up to 2004. The Mushroom Marketing Scheme and the regulatory powers of the BCMMC expired on March 31, 2004. Prior to expiration, mushroom growers expressed a desire to form a Mushroom Industry Development Council (MIDC). A Steering Committee was formed and a plan developed for presentation to growers for ratification. The MIDC became a legal entity January 1, 2005. The AFFF funds remaining at the expiry of the BCMMC, and assigned to the mushroom industry, were retained at the BC Investment Agriculture Foundation (IAF) in trust. The MIDC has applied to the IAF for transferal of the remaining resources for further industry development activities.

In 2004, a survey of industry growers was instigated polling the basis for industry levy contributions and use to which growers wished to see industry funds allocated. (Table 1). Growers were contacted individually by committee members or faxed/mailed in their questionnaires – 35 out of 47 farms responded yielding a 74% response rate. Responses indicated the majority of interest by growers centered around activities dealing with challenges and opportunities relating to: research and development; marketing; food safety and quality; and, communication.

Table 1. Results of industry questionnaire regarding levy usage.

Use of Industry Dollars	No. Farms	% Farms
Farm Research and Development	11	32%
Marketing	8	24%
FS / HACCP	7	21%
Industry Communication	6	18%
CMGA Membership	2	6%

Similar feedback resulted from the facilitated sessions. Both short- and long-term activities and priorities were identified in the areas of: industry research and development; market development and diversification; food safety and quality; and, communication and tech transfer.

An Advisory Committee derived from the industry membership will manage the AFFF Cultivated Mushroom Industry Initiative (CMII), having oversight for approving and funding projects, evaluating the impact and reporting back to the IAF on the outputs and outcomes. This plan outlines the next-steps in industry development under the new industry structure. The Advisory Committee will work to achieve long-term industry development following the goals and principles laid out in the Strategic Plan.

Vision

The British Columbia Cultivated Mushroom sector is committed to being an economically viable, cohesive and sustainable diversified industry which is highly competitive in the global marketplace, using good agricultural practices to produce the highest quality cultivated mushrooms for its consumers.

Mission

To strengthen the viability and development of the cultivated mushroom industry in British Columbia through industry research and development, and sector education and promotion.

Principles and Values

- High Product Safety & Quality
- Industry Profitability & Viability
- Leadership in Good Agricultural Practices
- Research & Innovation
- Environmental Sustainability
- Industry Involvement & Self-Reliance, Teamwork & Collaboration
- Strong Industry Communication
- Good Neighbour Relationships

3 Mushroom Industry Profile

Larger Context

In 2002, world production of mushrooms was estimated by the United Nations to be over 2.96 million metric tones (Table 2). China is the world's largest producer, accounting for approximately 42% of world production. The United States is the second largest producer, followed by the Netherlands and France. Together, these three nations account for about 28% of production. Canada ranks 7th with 2.6% of total global production. Other important mushroom production areas include Poland, Spain, the United Kingdom, Japan, Germany and Ireland.

Table 2. World mushroom production 2002.

Country	Metric Tonnes
China	1,244,968
United States	390,000
Netherlands	280,000
France	150,000
Poland	90,000
Spain	80,000
Canada	77,000
Italy	70,000
United Kingdom	67,626
Japan	67,224
Germany	60,000
Ireland	60,000
Other	324,675
World	**2,961,493**

Data Source: United Nations as reported by the USDA Economic Research Service.

In 2003, the United States produced 844 million lbs of mushrooms, valued at $889 million US. Pennsylvania is the main mushroom producing region, accounting for about 55% of US mushroom production. California, Florida and Washington are other important mushroom producing states.

Between 1993 and 2003, Canadian production increased by 40%, hitting a peak in 2001 (Figure 1) (Patterson 2005). Canada accounts for the majority of fresh imports into the United States[1], holding a market share ranging from 78-96% between 1993 and 2003. In 2004, Canadian share of the US fresh import market fell to 85%. Potential contributing forces include a stronger Canadian dollar and increasing exports by China and Mexico. In addition to the United States, other export destinations for Canadian *Agaricus* production include Japan, France, the Netherlands and Switzerland. In 2003, 31% of fresh production in Canada was exported, growing from 3% in 1993 (Patterson 2005).

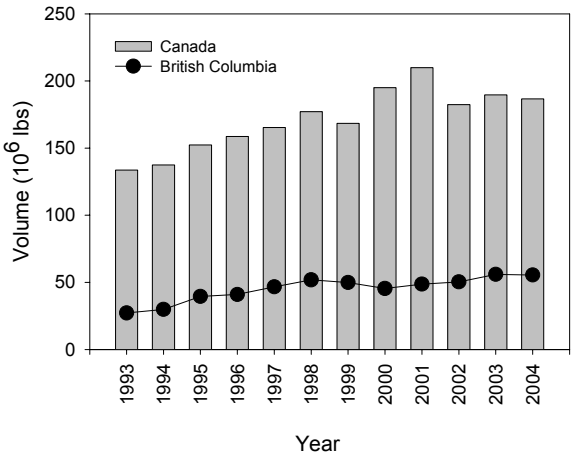

Figure 1. Volume of fresh and processed mushrooms produced annually in Canada and British Columbia.

In the United States, specialty mushroom production increased six-fold between 1986 and 2002, from just over 2 million lbs to over 13 million lbs (Figure 2). The varieties grown were classified as shitake, oyster and other. Over the same period, average price per lb decreased for shitake, was highly variable for oysters and increased for those varieties classified as 'other' (Figure 3). Thus economic growth has primarily resulted from growth in production as opposed to price. As of July 1, 2004, commercially grown specialty mushroom production was recorded in 31 states[2]. The total number of growers was 167 producing 13 million lbs of mushrooms at a value of $40

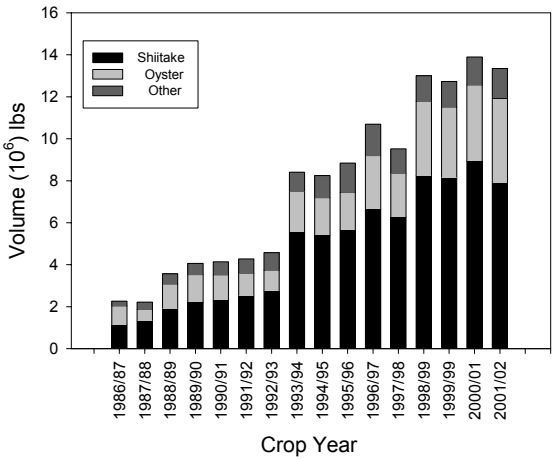

Figure 2. Volume of sales of specialty mushrooms produced annually in the United States.

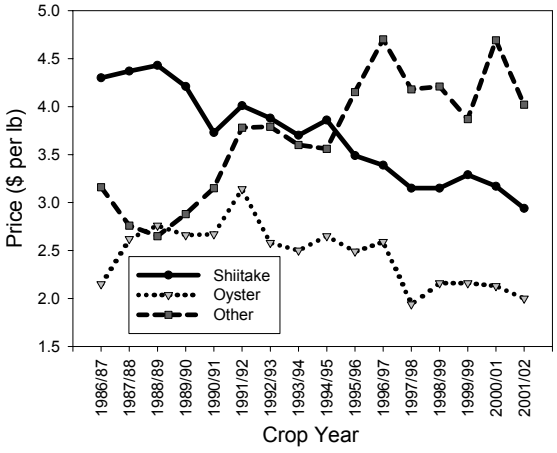

Figure 3. Average prices producers received at point of first sale.

[1] Imports estimated to be ~7.4% of US domestic consumption (Patterson 2005).

Data sources Figure 1: BC Ministry of Agriculture and Lands, Horticultural Statistics; Patterson 2005; Mushroom World, Vol 16, Issue 4.

Data sources Figure 2 & 3: USDA, National Agricultural Statistics Service (NASS).

[2] Pennsylvania Agricultural Statistics 2003-2004.

million. Average price ranged from $2.05 to $4.47 per lb. Value of sales for commercially grown specialty mushrooms in 2004-05 was $46.1 million, representing a 14% increase over 2003-04[3].

Current State – Agaricus - BC

In 2002, almost 95% of BC *Agaricus* mushroom production was sold in the fresh market with the remainder being sold for processing (Figure 4). There are no major mushroom processing companies in BC, so mushrooms destined for canning are shipped to a processor in Oregon. On the import side, annual canned mushroom imports into BC are the equivalent of approximately 13.5 million lbs of fresh mushrooms, the majority of which originates in China. The four major markets for fresh BC mushrooms are large retail grocery chains, produce wholesalers, food service providers supplying restaurants, hotels and institutions, and export clients.

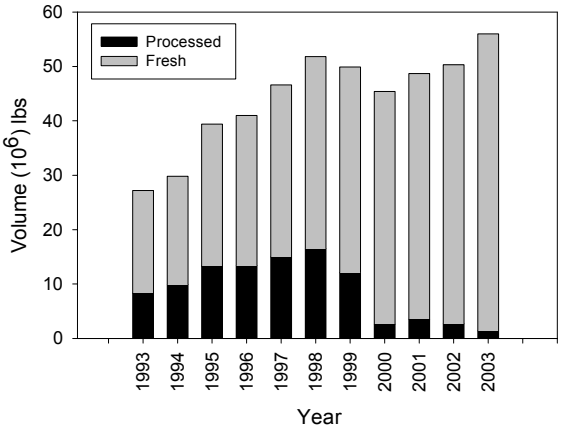

Figure 4. Volume of fresh and processed mushrooms produced annually in British Columbia.

Mushrooms produced in BC compete in an international marketplace. In 2002, approximately 65% of BC mushrooms were exported. Of these, ~95% were sold to fresh markets in the United States, predominantly to Washington State, Oregon and California. BC mushrooms are also shipped to Alberta.

BC Production 2003
56 million lbs - $78.8 million
65% exported
majority to fresh market

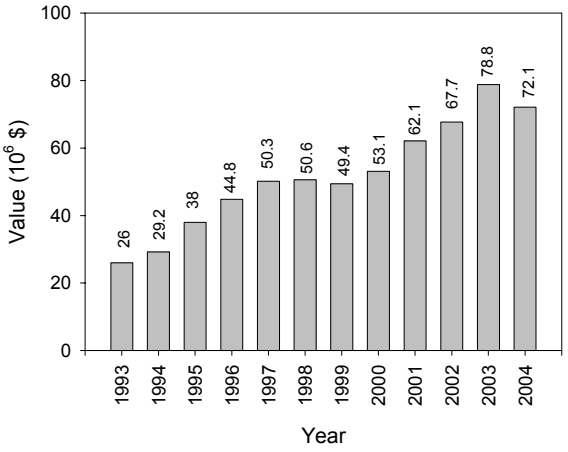

Figure 5. Value of fresh and processed mushrooms produced annually in British Columbia.

Between 1993 and 2003 annual industry revenue tripled, from $26 million to $78.8 million (Figure 5). Industry revenue in 2004 fell slightly to $72.1 million. Preliminary estimates for 2005 indicate a value of $74.5 million; however, this was concomitant with an increase in production and a decrease in average price per lb. Rapid growth in sales revenue between 1999 and 2002/2003 was in part due to the favourable exchange rate on sales of *Agaricus* mushrooms to the United States. Quality BC products combined with a favourable exchange rate facilitated expansion of BC exports to the US.

[3] USDA, National Agricultural Statistics Service (NASS).

Data sources Figure 4 & 5: BC Ministry of Agriculture and Lands, Horticultural Statistics

However, the recent increase in value of the Canadian dollar relative to the US dollar (between 2003 and 2005) is expected to result in slower growth of Canadian exports to the US (Patterson 2005), which in turn will likely be reflected in slower growth of BC's exports to the US. Concomitant with the changing export environment, enhancing compost productivity and quality and adoption of Phase II and III production, are anticipated to result in higher mushroom production. Thus there is a need for the industry to expand consumption and to diversify local, national and international markets.

Year	Exchange Rate[a] (US/Can. $)
1993	1.29
1994	1.37
1995	1.37
1996	1.36
1997	1.38
1998	1.48
1999	1.49
2000	1.49
2001	1.55
2002	1.57
2003	1.40
2004	1.30
2005	1.22

[a] Bank of Canada annual averages

Until April 2004, marketing of *Agaricus* mushrooms was regulated under the Natural Products Marketing Act. The BC Mushroom Marketing Board administered the Act, allocated marketing quota (but not production quota) of *Agaricus* mushrooms and licensed designated marketing agencies through which all *Agaricus* mushrooms were officially sold. Minimum grower prices were set by the marketing board.

Growers now sell their product either through packing facilities or independently. The purpose of the restructuring was to enable the industry to more readily adapt to market changes by favouring a free-market approach, and to bring the BC industry in line with other North American mushroom production regions.

Within BC there has been a trend toward increased production by fewer growers. Between 2000 and 2003, the number of growers dropped from 60 to 49, while the volume of production increased from 45.4 million lbs to 56 million lbs. Preliminary estimates for 2005 show a further increase to 60.6 million lbs. Statistics Canada estimates BC production area increased by 68% between 1997 and 2002 (from 2.3 million sq ft to 3.9 million sq ft). During this time, production increases have also occurred in Ontario and the Maritimes. Internationally, mushroom production is relatively stable with the exception of some expansion in The Netherlands and a high degree of expansion in China.

increased production
fewer growers
larger share of national production

Mushroom production in British Columbia has nearly tripled in the past decade from approximately 20 million lbs in 1993 to 55 million lbs in 2004 (Figure 1). Over the same period, BC's share of national production has increased from 14% to 30% (Figure 1). In 2003 it was estimated that 230,000 sq ft of *Agaricus* growing beds were spawned every week throughout the year. Since that time, and as a result of de-regulation of the marketing of mushrooms in BC, the area under production has expanded by about 30%. The 2005 estimate is that 320,000 sq ft of *Agaricus* growing beds are spawned every week and 60.6 million pounds are now being produced per annum.

The BC *Agaricus* mushroom industry is composed of approximately 45 active growers. Commercial *Agaricus* mushroom operations are housed in capital-intensive barn-type structures with multiple growing rooms containing a multi-level system of growing beds. These rooms have typically been 20 ft wide and 85 ft long, with shelving to hold 6 or 7 levels of growing media. A number of new farms have been built with a trend toward larger growing rooms and overall larger farms.

Most farms in BC have traditionally produced their crops in a single zone system where the production period is about 10 weeks long for a total of 5.2 production cycles per year per growing room. Each cycle involves an integrated five stage process, after phase 1 composting including phase II pasteurization, spawning, casing, cropping and harvesting. Throughout the growing process, moisture, temperature, air circulation and carbon dioxide levels are carefully monitored and adjusted to optimize mushroom quality.

single-zone ⇨ multi-zone systems
⇩
increased # crop cycles yr^{-1}
⇩
increased volume produced

Multi-zone systems are now being considered in BC where phase II compost or fully spawned compost is loaded into the growing rooms. This technology is currently being used in other growing areas in Canada and throughout the world and has the potential to increase individual farm production by 25% to 55%. The number of crop cycles per year can increase from 5.2 cycles per year in the traditional single zone system to 6.5 cycles per year for phase II compost and 8 cycles per year for fully spawned compost. Currently one farm has adopted this newer technology and is producing 7.5 cycles per year for brown mushrooms and 8.6 cycles per year for white mushrooms. More farms are expected to adopt this newer technology. This newer technology is very capital intensive and growers will need to adapt to the new growing techniques.

Current State – Specialty – BC

It is estimated that specialty mushrooms represent approximately 3% by volume and 5% by value of total provincial mushroom production. In 2004 and 2005, BC specialty mushroom production was 2.5 million lbs each year, valued at $5.3 and $5 million respectively. The drop in value was associated with a drop in price of $0.11 per lb[4]. Overall, there is a lack of data on types grown of mushrooms grown, production costs, numbers of producers, grower turnover, total volume and volume by quality grade produced, and sales. Thus there is a lack of the type of information used in: 1) industry parity assessment leading to a lack of recognition for the specialty sector; 2) farm business planning leading to inaccurate assessments of operational viability by new producers; and, 3) market analysis leading to less than optimal exploitation of market opportunities.

In general, the majority of product is sold locally[5] (within the province) into the fresh market. Dried product is imported from China and Taiwan. Canned product is imported from China. BC has a high quality fresh product, and growers identified that current production is not meeting demand, thus the fresh market is not saturated. There is a high degree of interest in diversifying and increasing production, and increasing production efficiencies. Currently, production limitations are severe due to intensity of labour, low production efficiencies, and pest management challenges. New methodologies and mechanisms to address these limitations are of high priority.

[4] BC Ministry of Agriculture and Lands, Horticultural Statistics

[5] Information via direct communication – facilitated session with specialty grower group, January 4, 2006.

The primary market avenues identified for fresh specialty mushrooms were small retailers, produce wholesalers/distributors, and farmers markets. On an individual grower basis, the smaller volumes of product produced, limits a grower's ability to enter larger market places. In addition, the need to increase consumer awareness of specialty mushrooms their attributes and uses was identified as important for continued industry development, along with value-added uses for spent mushroom substrate. The need for variety and product diversification, and small scale processing was identified as a means of expanding markets and decreasing wastage of 'imperfect' product.

Industry capacity to provide information and tech transfer support to potential, new and established producers is lacking. Mechanisms for cooperative or collaborative approaches to production, management and marketing challenges have been identified as important to individual grower and industry sustainability. General tech transfer focal areas include pest management (IPM), production efficiencies (decreasing farm costs), new production methodologies and farm business management[5].

Several specialty mushrooms are grown, including oyster, king oyster, enoki and shitake. Production methodologies between crops and among producers of the same crop can vary widely. For example, oyster mushrooms grow on a range of agricultural and wood waste products including hardwood chips, chopped cereal straws and corn cobs[6]. In BC, the primary media used is alder sawdust[7]. After the growing medium is sterilized or pasteurized and cooled, it is inoculated and packed into bags or bottles. Once the spawn has colonized the media, bags are moved into growing rooms for flushing. Temperature, water, light and air exchange are all important management variables. More than one flush can be achieved, however, tradeoffs in terms of crop rotation length, production volume and pest management challenges can be expected.

Similar types of variation in production practices would be expected for most species produced. Degree of mechanization is highly variable impacting production efficiencies and methods among producers. Research needs identified include: new production methods and adjustments to current methods which decrease crop rotation lengths; pest management approaches which address product quality challenges; value-added uses for spent substrate; and, new specialty mushroom products.

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[6] Mushroom Council. Commercially Grown Mushroom Varieties. http://www.mushroomcouncil.org/

[7] Information via direct communication – facilitated session with specialty grower group, January 4, 2006

Strengths Weaknesses Opportunities Threats

STRENGTHS

The mushroom industry is a significant component of the BC agricultural economy. It ranks 9th out of the top 75 agricultural commodities with five-year average sales of $65.7 million.

The *Agaricus* mushroom industry has a well established and integrated infrastructure including compost producers, supply companies, production facilities, labour force, packers and marketers.

The industry employs about 3,500 people with both upstream and downstream multipliers associated with the supply, food processing and service industries.

Since the mid 1980s the BC mushroom industry has had a history of steady growth and a reputation for excellent quality product.

The industry enjoys favourable proximity to both national and international markets and to transportation hubs.

There is high generational continuity expected in the industry allowing for continued interests in growth and environmental sustainability.

In addition to the traditional *Agaricus* markets, specialty mushrooms are gaining interest from large urban populations interested in unusual and gourmet foods.

WEAKNESSES

The *Agaricus* industry has moved from a regulated to a non -regulated market place. Challenges associated with de-regulation include increased production and competition within BC and unstable farm-gate prices.

Lack of industry cohesiveness. Competition between groups of farms and between packing/marketing facilities make it difficult to work together on common issues.

Low adoption of new production technology and changes in management practices

Low level of education on IPM.

Lack of time and financial resources for individual farms to upgrade their growing facilities, educate employees and to develop new markets.

Reliance on a limited product base. Main product - fresh products whole or sliced (*Agaricus*).

Short shelf life of fresh product, affecting shipping potential to long-distance markets.

Export market primarily one country.

Lack of organized body for specialty growers to represent industry position, concerns and issues to larger organizations, government and potential investors.

OPPORTUNITIES

Industry cohesiveness through communication, issue management, research and education.

Training of farm managers and labour - better educated and more efficient work force.

Increased education and awareness of IPM methods to minimize pest problems.

Enhanced education and research for production of consistent and high quality compost.

Adoption of new production technologies to maximize crop production and minimize pest concerns.

Increased environmental sustainability by education and awareness of GAPs (good agricultural practices) for mushroom production.

Research, development and awareness of end uses of spent mushroom substrate as a value-added product.

Development of good community relationships and communication.

Build on product quality reputation via food safety and quality initiatives and environmental stewardship initiatives.

Research into new products, processing methods, and other means of diversifying marketplace entry.

Increased market opportunities through on-farm food safety, value-added fresh and processed products, consumer education, and product diversification. Potential focus areas: demographics, cultural diversity, increasing health awareness and consumer demand for high quality and convenience foods.

THREATS

Diseases and pests –significant impacts on product quality and supply.

Limited and diminishing supply of chemical pest control products.

Increased product competition within BC and from similar or same products from other countries.

Recent strengthening of the Canadian, dollar adversely affecting grower and marketer returns (*Agaricus)*.

Reduced farm-gate prices as a result of increased production costs (energy and other inputs and increased production).

Urban rural divergence due to larger more industrial-like farms.

Consolidated market place and short shelf life of product making it very difficult for growers to market independently

Poor communications within industry and its sectors.

Decreasing pool of general and trained labour.

Increasing amount of spent mushroom substrate and other products needing environmentally sound solutions for use and disposal.

Unstable energy costs.

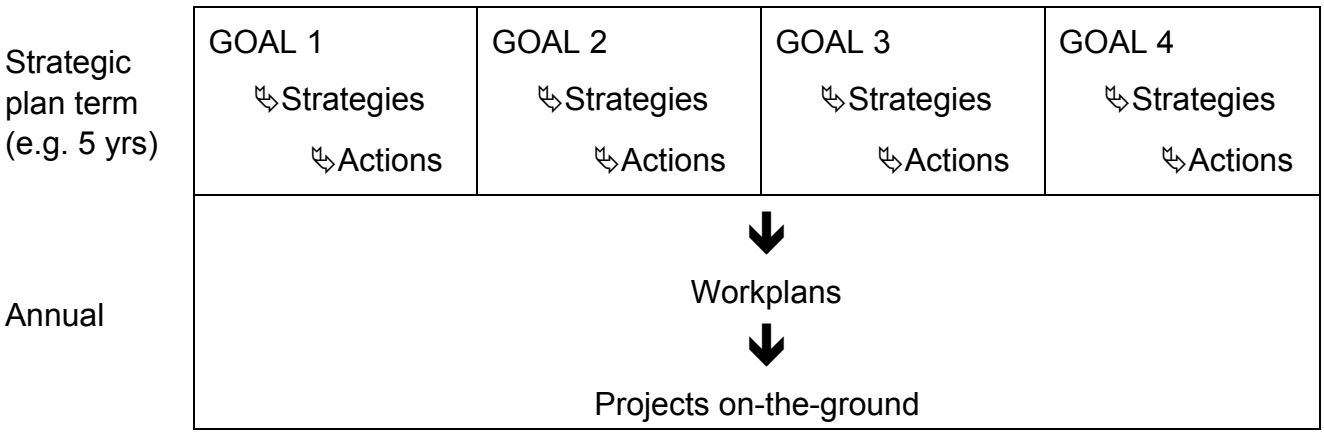
Lack of specialty mushroom industry quantification data needed for industry parity and business planning: types grown, production costs, numbers of producers, volume produced, sales.

OPPORTUNITIES	THREATS
Initiatives which decrease energy use or provide for alternative fuels. Development of organized body for specialty growers enabling support for new and potential growers, providing direction for research and development needs, and representing producer concerns and opportunities to government and the larger agri-food industry. Build on food service opportunities created through the 2010 Olympics, introducing mushrooms and mushroom products into the consumer view of 'BC Cuisine'.	

4 Goal Overview

From the vision and mission statements, and the current state of the mushroom industry in British Columbia and the SWOT analysis four goals for industry development have been identified. The goals indicate tangible areas in which the industry has identified progress needs to be made. Strategies are approaches by which the goals may be achieved. Within the strategies, specific activities (actions) outline the major aspects of the implementation process. Annual workplans will be built based on the general actions identified in this strategic plan and the priorities identified by industry each year, delineating projects in a detailed manner (Figure 6).

Figure 6. Structural example of how a strategic plan relates to annual workplans and project implementation.



Each action in this strategic plan is designed to address a component of the overarching strategies, building on each other to provide the means to realize industry goals as well as to monitor progress in industry development. The result will be a solid base from which the Mushroom Industry may develop further strategies for the next strategic planning cycle, building on the successful relationships created, and projects and programs initiated through this strategic plan.

1 Goal: To foster and support research and industry development activities which address areas of topical importance to the mushroom industry.

CHALLENGE: **E.g. Production efficiency; pest management; environmental sustainability; substrate materials usage, quality and supply; new products, processing and storage options.**

Context: Producers have an evolving variety of research and industry development needs. Activities within this goal will address current priorities identified by the *Agaricus* and specialty industries, while providing scope to address those challenges which arise or gain prominence during the term of the strategic plan. Focus areas currently identified (but not limited to) include: 1) methods which increase production efficiencies thereby reducing production costs, making growers and the industry more competitive; 2) technologies and tools for integrated pest management from sanitation practices through to pesticide registration; 3) projects which explore sustainable uses and value-added options for spent mushroom substrate; 4) projects which explore product alternatives, methods of extending product shelf life and storage thereby expanding the market; 5) projects that promote good agricultural practices and environmental stewardship.

2 Goal: To enhance industry standards of food safety and quality.

CHALLENGE: **Food Safety and Quality**

Context: On-farm food safety is defined by the Canadian Horticultural Council as "agricultural practices that promote the safe production of fresh fruits and vegetables, taking into account the conditions specific to a particular production area in such a way so as to minimize potential human health hazards due to the contamination of fresh fruits and vegetables." Penn State University provides the following comment: "Food safety has become a critical issue throughout the fresh produce industry as food service and retail buyers increasingly require growers and packers to develop and implement food safety plans. Although there have been no documented cases of foodborne illness attributed to consumption of fresh domestic mushrooms, wholesale buyers are increasingly requiring their suppliers to provide evidence of safe growing practices." Similar trends are evident throughout the agri-food sector. Thus, on-farm food safety is becoming an integral component of the ability to acquire and maintain markets, and may become integral to reassuring and maintaining the high level of consumer confidence in BC mushrooms.

3 **Goal: To increase industry, agri-food sector stakeholder and end-user communications and knowledge base.**

CHALLENGE: Communication, Tech Transfer and Skills Development, Industry Capacity Building

Context: Producers and their employees have a wide variety of communication, informational and training needs. Activities within this goal will enhance communications between and within the sector participants, and improve grower and employee knowledge and information availability. Needs currently identified (but not limited to) include: improved communications among the growers and the packers/marketers focusing on cooperative approaches to industry issues; language and translation; awareness and skills development of GAPs (good agricultural practices), regulation, marketing, IPM, sanitation, food safety, environmental practices, compost practices, production efficiencies (decreasing farm costs), new production methodologies and farm business management. In addition, "beyond-the-farm-gate" determines producer prices and profit margins. Reducing risk through awareness of the determining factors of farm-gate price and the ability to maintain markets, will help individual producers and the industry as a whole adapt to changes inherent in a free-market system, make market entry and commitment decisions, and make viable margins with the predicted increase in production of the *Agaricus* sector. In addition, the mushroom industry is an integral component of the larger agricultural sector providing food products for consumers. However, there is a general lack of awareness of production methods, product attributes and uses which need to be addressed. Thus industry facilitation activities via education and good community relationships will enhance consumer/public awareness and knowledge base.

4 **Goal: To enhance market development and diversification.**

CHALLENGE: Increasing production simultaneous with decreasing farm-gate price

Context: The mushroom industry expects significant production increases as productivity challenges are addressed. In order to facilitate controlled growth and a stable pattern of commodity prices a marketing strategy is needed to plan for market growth and diversification within both the local and export markets. Needs identified to date include strategies to increase consumption, and development of alternate products and processing technologies which expand market access increasing product demand. Ultimately, expanded consumer awareness, new products and partnerships with other agri-food sectors are expected to result in an increase in the number and size of local, national and international markets.

5 Fiscal Strategy

Proposed Expenditures

The Mushroom Industry Initiative is based on a five-year strategic plan. The table below outlines the details of the proposed five-year budget. Since this Strategic Plan outlines a proactive, responsive approach to achieving long-term industry stability, these allocations are guidelines to be used in effecting the actions outlined within each goal. Thus, as industry challenges or concerns arise and shift within the term of the strategic plan, projects and the resources needed to address those changes will be allocated appropriately within the goal framework. The overall cost sharing between industry and the CMII is 50:50. However, variation will be allowed on a project by project basis dependent upon the projected needs. The overall 50:50 balance will be achieved over the term of the initiative. Of the industry contributions up to 50% may be in-kind (25% overall). The budget is based on a five-year allocation of $375,000 from the AFFF and 50:50 cost sharing between the AFFF and industry, reflecting only AFFF eligible activities.

(See Table 2 – following this page)

Cost Sharing

Cost sharing of initiatives between governments and industry is a primary principle of the AFFF[8]. The target level for cost sharing by the mushroom industry with the AFFF is 50:50 by the end of 2010.

The mushroom industry strategic plan provides for both centrally driven projects and third-party applications. Each application to the CMII Advisory Committee will be expected to provide for the necessary matching funds. Some projects will be able to access varying sources of matching funds. Government sources may not be matched by the CMII, however they can be stacked resulting in a more comprehensive project and greater value for Industry and AFFF dollars invested in the project. The CMII has identified an approach for developing strategic partnerships focussing on common goals and priorities, as well as several specific vehicles by which the 50:50 cost-sharing target can be met.

A few of the specific vehicles identified for attaining industry contributions include:

- Industry levies.
- Fees for workshops and training sessions.
- Industry auctions or galas.
- Contributions from associated industry businesses and partnering associations.
- Fees for publications produced under the Initiative such as best management manuals.

[8] Document: Agri-food Futures Fund - Background Information

Partnerships

Partnerships will be approached as collaborations between individuals and organizations whose contributions include cash (matching and stacking), professional and technical expertise and other resources (i.e. cash and in-kind commitments). In addition to growers, suppliers and marketers within the BC mushroom sector, potential partners fall into four broad categories: industry related; market related; educational and outreach; and, governmental. Other partnerships with other associations and agencies will be created as needed and as new potential partners are identified.

Industry Related

- Industry associations and organizations such as the Canadian Mushroom Grower's Association, BC Cattlemen's Association, Direct Farm Marketing organizations, British Columbia Agriculture Council, the American Mushroom Institute, Australian Mushroom Council, BC restaurant and trades organizations, etc.
- Regional economic development associations (e.g. Community Futures)
- Agriculture Advisory Committees

Educational and Outreach

- Universities and University-Colleges (Provincial, Canadian, US)
- Regional and Community Colleges
- BC 4-H
- Agriculture in the Classroom

Governmental

- Federal (e.g. PMRA, CFIA)
- Provincial (BC MAL and others)
- Municipal/Regional

6 Goals, Strategies and Actions

The following tables outline the strategies and actions which will enable realization of each goal. Within the tables, unless specifically indicated as *Agaricus* or specialty, actions refer to the mushroom industry as a whole providing project opportunities for both sectors.

Goal 1:	**To foster and support research and industry development activities which address areas of topical importance to the mushroom industry.**		
Strategy	Actions	Expected Outcomes	Performance Measures
Develop an IPM and GAP strategy.	Review existing general IPM and GAPs for mushroom production. Develop draft IPM and GAP guidelines. Partner with agencies, experts and associations to identify disease and pest types and industry risk. Develop management modules for specific pests such as green mold, dry bubble etc; including resistance management strategies. Partner with agencies and organizations to provide industry input into testing of new products, minor use pesticide registration and risk assessment projects.	Partnerships with governmental regulatory agencies, CMGA etc; Industry input and participation in minor use committees. Information for education and extension.	IPM guide(s). GAP guide(s). Production of specific pest modules and degree of adoption of recommended procedures on farm.
Address production limitations.	Develop procedure for standardizing lab testing of raw composting materials. Develop procedures for testing and quality control of finished Phase I and II products. Investigate compost quality control practices/procedures. Projects related to research	Adequate supplies of more consistent, higher quality and productive compost. Information for education and extension. Enhanced specialty production via decreased production time, increased product	Production of compost quality and controls guide(s). Documentation of technologies tested and results. Strategy document providing analysis of limitations to the specialty sector and proposing methods

	and development of newest production technologies. Problem analysis of the specialty sector focusing on crop specific production limitations. Establish projects which test alternate production systems/methods or technologies for specialty mushrooms.	quality etc;	for addressing. Production of documents which outline specialty production methods.
Increase environmental sustainability and profitability of sector.	Review existing potential uses of other organic residuals, spent mushroom substrate use in other locales, and associated product qualities. Develop and establish pilot project(s) which address management of spent mushroom substrate – storage and value-added uses. Establish projects which address environmental issues which are topical to industry over the term of the SP. Establish projects assessing energy consumption throughout production cycle and investigating conservation methods and alternate energy sources.	Information for education and extension. Value-added uses for previous waste products. Decreases in production costs with increasing efficiencies. BC Mushroom Industry associated with good stewardship practices.	Project cost:benefit analyses. Volumes of spent substrate (or other byproducts) sold in marketplace or recycled in sustainable fashion. Documentation and results of environment-related projects, energy consumption-related projects, etc;
Extend product shelf-life.	Review existing materials available world-wide on potential alternate products. Explore and establish projects regarding product development, processing and product storage options.	New fresh- and processed-mushroom products.	New fresh- and processed-mushroom products, and production methodologies.

Goal 2:	**To enhance industry standards of food safety and quality.**		
Strategy	Actions	Expected Outcomes	Performance Measures
Increase awareness of and participation in food safety and quality programs.	Develop partnerships with organization-based food safety and quality programs and/or National Food Safety Programs. Review food safety systems in place for other mushroom growing areas and agri-food industries. Develop on-farm food safety and quality program for BC mushroom industry, including traceability. Implement information sessions for growers, farm employees and stakeholders. Establish on-farm pilot projects. Develop pilot project reports including cost:benefit analysis.	Recognition of the BC Mushroom Industry as synonymous with high quality, safe product. Enhanced consumer confidence in product reliability.	Published grower on-farm food safety program. Implementation of pilot projects. Published reports and cost:benefit analysis. Proportion of growers adopting.

Goal 3:	**To increase industry, agri-food sector stakeholder and end-user communications and knowledge base.**		
Strategy	Actions	Expected Outcomes	Performance Measures
Provide for and increase access to tech transfer materials, workshops and training sessions.	Grower workshops addressing production practices/techniques; technologies; production efficiencies; pest management practices; markets; marketing skills; business management (incl. employee management). Workshops focused on 'beyond-the-farm-gate', price determinant factors and trade. Development of worker training programs and increased access to skills-building programs – e.g. sanitation procedures, pesticide applicator, apprenticeship program. Investigate/participate in the EFP Program. Strengthen sector communications including language/interpretive projects; website partitions addressing specific needs; other. Strengthen grower communications. Develop an industry-wide directory of mushroom growers, products (e.g. SMS), suppliers & service providers. Facilitate development of coordinated specialty mushroom organization.	Increased industry communication and participation. Information and experience exchange. Increased knowledge-base of growers and employee skills. Increased ability to make informed decisions by potential and new specialty producers via access to a specialty industry body. Increased industry participation and collaboration among supplier, grower and marketing sectors.	Number and log of workshops held. Event feedback from participants. Participation by supplier and marketing representatives. Tech transfer information posted to website. BC Cultivated Mushroom Industry directory (see BC Natural Sources Directory etc; for examples). Active specialty and *Agaricus* industry groups. Formation of informal/formal industry network.

	Facilitate collective *Agaricus* industry body. Facilitate development of an industry network providing an avenue for collaborative approaches to industry-wide challenges or opportunities. Participation/representation by *Agaricus* and specialty growers, and the supply and marketing sectors.		
Increase consumer/ community awareness and knowledge of mushroom production.	Develop materials which increase awareness of production methodologies and materials, GAPs, product (mushroom and spent substrate) attributes and uses.	Increased public awareness that 'farming' includes indoor production. Increased awareness of mushrooms, mushroom products and production products. Increased public awareness of GAPs, contributions to community economics, etc; Enhanced community relationships. Links to and showcase of mushrooms and mushroom products in association with 2010.	Information sheets and educational materials relating to mushrooms, the mushroom industry and GAPs. Information kits, tours etc; designed for municipal governments, schools, the media etc;

Goal 4: To enhance market development and diversification.			
Strategy	Actions	Expected Outcomes	Performance Measures
Create a marketing strategy, develop partnerships and increase consumer/stakeholder awareness.	Conduct an updated market study, identifying expansion and diversification opportunities including use of products such as spent mushroom substrate. Develop a marketing strategy to plan for growth and diversification. Develop a promotions and advertising program (non-AFFF). Build alliances with other related organizations e.g. CMGA, AMI, BCAC, LMHIA etc; Product Promotion Activities (non-AFFF): advertising, partnerships with food-service industry, 2010 opportunities. Develop a co-operative marketing system for specialty mushrooms, providing for collaboration and sufficient volumes for marketplace entry.	Increased access to markets. New value-added markets. Increased awareness of markets and business opportunities. Identification of specialty and other non-traditional markets (e.g. landscaping and reclamation industries). Expansion of provincial, national and international markets. Mushrooms viewed as integral BC agri-food product.	Industry growth monitored via MAL Horticultural Statistics. Marketing strategy document. Promotional and advertising materials. Specialty mushroom co-operative guidelines and protocol.

7 Program Oversight and Management

The Mushroom Advisory Committee (MAC)

A Cultivated Mushroom Industry Initiative Advisory Committee will be formed which will have oversight responsibility for approving and funding projects conducted through this Strategic Plan. The Advisory Committee has the final authority on all strategic decisions including the approval of all projects subject to compliance with the terms of funding established by the IAF and the fund administrator. In addition, the MAC will establish program priorities and budgets

on an annual basis through work/business plans. The MAC will have a structure similar to the steering committee overseeing development of the strategic plan with both industry and ex-officio representation. As suggested in the *Agri-Food Futures Fund – Background Information* document, it is proposed that the MAC will seek to have representation by industry members and ex-officio members from the Investment Agriculture Foundation (IAF), the British Columbia Ministry of Agriculture and Lands (MAL) and from Agriculture and Agri-Food Canada (AAFC). The role of the ex-officio members is to provide support in establishing directions and assisting in achieving goals.

It is proposed that the MAC initially be composed of a minimum of six voting Directors plus ex-officio members. Representation will also be sought from the business sectors aligned with mushroom production.

Administrative services will be contracted out to an established industry with an existing infrastructure. It is proposed that administrative support be handled by the MIDC.

Evaluation/Implementation and Performance Framework

The performance framework is based on the performance measures defined in each goal and the specifics of each project approved under the annual workplans. For third-party applications, each proposal will be required to submit project deliverables, outcomes and performance measures, in relation to the strategy which the project is supporting and the action item it is addressing. Criteria, against which progress in implementing the strategies of the CMII plan can be assessed, will be based on the performance measures, but further refined in consultation with industry members. This relationship will provide a foundation for continuing the dynamic strategic planning process in an iterative manner of continuous evaluation, improvement, adjustment and reevaluation.

8 Administration and Communication

Each project initiated under the Mushroom Industry Initiative will be required to submit information demonstrating where and how funding was (or will be) spent in a transparent, efficient and timely manner, including allocations of the cash and in-kind contributions. In turn the MAC and the administrator will demonstrate the same to the IAF through annual reports.

Access to the funds will be through both third-party applications and by the Advisory Committee initiating requests for proposals (or other centrally-driven processes) to address key priorities that have been identified by this plan. In order to facilitate the process, each project and project proposal will include a brief description of the project, key objectives, benefits sought, project deliverables, cash and in-kind contribution, linkages to other projects or initiatives and specific benchmarks with which to assess project progression and evaluation upon completion.

The program administrator will be under the direction of the Advisory Committee having responsibility for day-to-day administration of the program. Duties will include:

- Financials;

- Developing and distributing materials to communicate the purpose and goal of the program;
- Responding to public enquiries;
- Document management: co-ordinating and disseminating of applications to the CMII for presentation to the MAC;
- Contract preparation and management;
- Fiscal and program planning and reporting.

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Other:

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