Resource Guidebook

Risk Mitigation Best Management Practices *for* Washington State Dairy Producers

September 2006

Washington State
Department of Agriculture

A risk management resource guide published by the

Washington State Department of Agriculture

Washington State University Extension

Washington State
Dairy Federation

co-sponsored by

Washington State Dairy Federation

Washington State University Extension

USDA Risk
Management Agency

made possible by funding from

United States Department of Agriculture
Risk Management Agency

AGR PUB 425-162 (N/9/06)

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How does your dairy operation rate in these risk areas?
Take these quick self-assessments:

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Introduction

Washington State Department of Agriculture

The Washington State Department of Agriculture (WSDA) supports the agricultural community and promotes consumer and environmental protection. WSDA employs about 500 full-time staff and also many others seasonally to carryout the agency mission.

Washington's Vibrant Agricultural Community

The food and agriculture industry is Washington's largest employer. In many parts of the state, the agricultural economy is essentially the only source of employment and income, and with an overall impact of $29 billion, it supports the economic vitality of the entire state. The map on page 2 reveals the importance of agriculture, showing each county's ranking and value of agriculture production.

Washington State's Dairy Industry

The Washington State dairy industry produces the second most valuable commodity in the state. The Washington State Department of Agriculture licenses more than 575 dairy farms. These farms earned 861 million dollars in 2004, twelve percent of all the agricultural production in the state that year.

Agriculture—Washington's No. 1 Employer

Key economic facts on Washington Agriculture:

Washington's farmers and ranchers reached a record value of production for crops and livestock in 2004, climbing to $5.94 billion.

The top 10 commodities, in millions of dollars, were:

Apples	$962
Milk	$861
Wheat	$524
Cattle	$476
Potatoes	$460
Hay	$377
Nursery/ Greenhouse	$329
Cherries	$242
Pears	$133
Farm Forest Products	$130

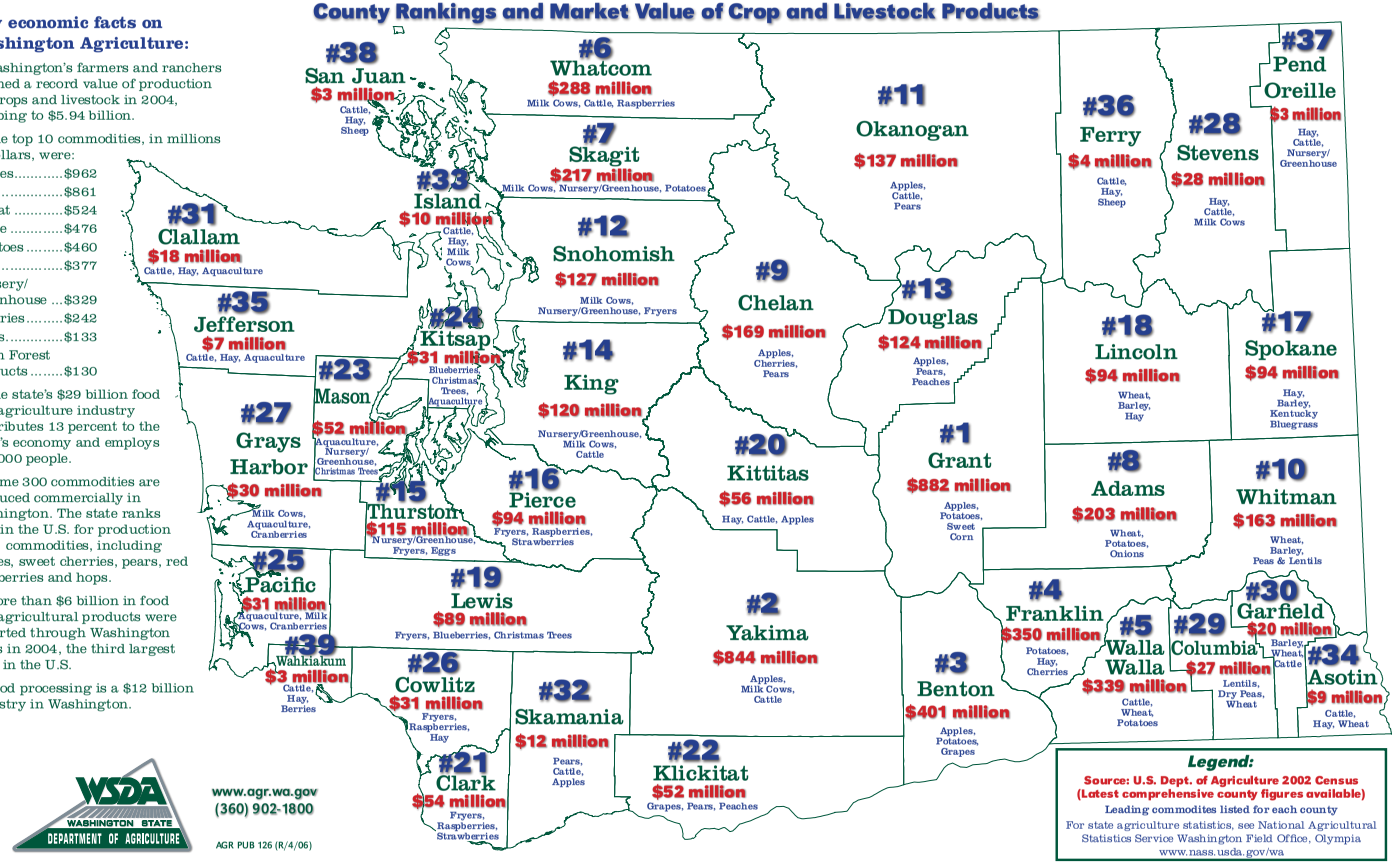
The state's $29 billion food and agriculture industry contributes 13 percent to the state's economy and employs 160,000 people.

Some 300 commodities are produced commercially in Washington. The state ranks first in the U.S. for production of 11 commodities, including apples, sweet cherries, pears, red raspberries and hops.

More than $6 billion in food and agricultural products were exported through Washington ports in 2004, the third largest total in the U.S.

Food processing is a $12 billion industry in Washington.

County Rankings and Market Value of Crop and Livestock Products



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To view and download map from the WSDA Web site go to:
http://agr.wa.gov/CropMap.htm

Introduction

Why Manage Risk?

Successful businesses identify their risks and develop strategies to effectively reduce those risks. Wall Street companies do a “SWAT” analysis: Strengths, Weaknesses, Opportunities and Threats. Similarly, farm operations should ask what things would keep them from being successful? What are some worst-case scenarios for you? Most likely, the worst things won’t happen, but if you have a plan in place to deal with them, you will be ready to respond quickly with effective solutions.

This best management practices manual is a resource guide for dairy producers to determine areas of their operations which are vulnerable to risks that could negatively impact their herd health, farm and family security, milk safety and financial viability. WSDA received funding in October 2005 from the U.S. Department of Agriculture’s Risk Management Agency to work with dairy producers on risk mitigation.

This resource manual will help dairy producers assess their risks, identify vulnerable areas, and mitigate those risks. This guide addresses risks associated with animal health, disease, feed security, farm security, drought, milk product safety, human health, and diversifying farm incomes through value-added on-farm processing, organic certification and direct marketing opportunities.

Risk Assessments

Animal Health Management

Infectious diseases pose an ever-increasing risk for dairies as dairy expansion and animal movements become more and more routine and herd sizes increase. Based on a recent USDA study, the U.S. dairy industry is at significant risk of infectious disease transmission, both within herds and across herds. This study found that:

1. Nearly 1/2 of U.S. dairies bring in new animals each year,
2. Less than 1/6 of U.S. dairies isolate new additions,
3. Approximately 1/2 of the dairies don't require vaccination of new additions,
4. About 2/3 of U.S. dairies don't test new additions for infectious disease,
5. More than 3/4 of U.S. dairies do not check mastitis status,
6. More than 3/4 of U.S. dairies have barn cats and / or dogs, and
7. Each case of infectious disease costs a dairy $200 - $1,000 per year.

Implementing an Animal Health Management Plan

1. Protects the financial investment of the dairy,
2. Increases production and revenue (healthy cows make more milk),
3. Assures milk and meat quality,
4. Prevents problems which is cheaper than treating problems,
5. Protects the future assets of the dairy (calves and heifers), and
6. Protects markets and secures consumer confidence.

The Animal Health section of this resource guide provides a risk management framework and related literature for managing infectious disease risks on dairies. This framework is proposed

because it allows available quantitative information to be included in the development of best management practices. The four parts of this framework are a one-page quick assessment of dairy biosecurity, a comprehensive risk assessment tool for assessing the likelihood of transmitting infectious diseases on the dairy, guidelines for developing an Animal Health Management Plan to reduce the potential risks identified in the risk assessment, and strategies for communicating the Animal Health Management Plan to dairy employees and advisors.

The first document is the Quick Animal Health Biosecurity Assessment for dairies (page 6). Answering the questions on this self-assessment will give a dairy producer or advisor a rough idea of how well protected a dairy is to the introduction and spread of infectious diseases. For each **YES** answer, give yourself one point and add up your points. Compare your score with the key to learn how your dairy operation rates in this risk area.

WSDA is in the process of developing a free software version of a comprehensive risk assessment tool. When completed, dairies can use this system to compare their results with other dairies or share their data with WSDA. In the meantime, review the Johne's disease risk assessment tool on pages 27 - 31. The guidelines for developing an Animal Health Management Plan are a set of materials that discuss how to use the results of the risk assessments to formulate Animal Health Management Plans. The Animal Health Management section (page 19) provides tips for communicating the Animal Health Management Plan to dairy employees and advisors. Finally, a list of resources, including Internet sites, to get more information related to Animal Health Management Plans can be found on page 157.

Animal Health Management Biosecurity Risk Assessment

Please answer the following questions by selecting YES or NO:

1.	Do you have a written biosecurity plan or protocols?	YES	NO
2.	Have you purchased animals in the last 5 years?	YES	NO
3.	If you've purchased animals, were they inspected / tested, vaccinated, and their health records received prior to their arrival?	YES	NO
	3a. Do you have a separate quarantine area (e.g., facility, corral, pen)	YES	NO
4.	Do you discourage all non-essential visitors, and if visitors arrive, do you require them to disinfect their shoes and have clean clothes?	YES	NO
5.	Do you have a separate area on your farm for parking vehicles from off-site locations or have a facility to disinfect vehicles?	YES	NO
6.	Do you protect against manure entry onto your farm from other farm or vehicles?	YES	NO
7.	Do you implement management practices to limit the potential for manure contamination of feed? (separate equipment to handle manure and feed, disinfect equipment etc.)	YES	NO
8.	Do you implement management practices to limit the potential for manure contamination of water?	YES	NO
9.	Are sick animals separated from all other animals on the farm?	YES	NO
10.	Do you have a vaccination/disease management program?	YES	NO
11.	Are all animals uniquely identified with records of treatments maintained?	YES	NO
12.	Do you have written treatment protocols for disease conditions?	YES	NO

Risk Assessments

Risk Assessment Key

For each **YES** answer, give yourself one point and add up your points.

- Less than 6 points: Your biosecurity program needs help.
- 6 – 9 points: You are doing some things right, but could stand some improvement.
- 10 or more points: You deserve a ribbon. You are doing well, but must maintain your diligence and always look for ways to improve.

For more information please see the Animal Health Management section of the best management practices manual (page19).

BSE - Related Feed Management Risk Assessment

Most dairy operators are aware of Bovine Spongiform Encephalopathy (BSE) or mad cow disease. However, many dairy producers may not have taken actions to prevent the disease on their own farm, but instead are relying on others to prevent the spread of BSE. Answer the questions below on these self-assessments to see if you need to be more active in preventing this devastating disease.

Part A

Please answer the following questions by selecting YES or NO:

1.	Do you feed multiple species of animals on your farm?	YES	NO
2.	Do you feed processing waste or salvage feed?	YES	NO
3.	Do your feeds contain any animal ruminant proteins?	YES	NO
4.	Do you feed or store pet food where ruminants could have access to it if they get out?	YES	NO

If you answered **YES** to any of the questions in **Part A**, your animal feed monitoring program needs some attention.

Part B

Please continue by answering the following questions by selecting YES or NO:

1.	Do you know what material your feed delivery truck contained during the three previous loads?	YES	NO
2.	Do you read feed labels before feeding the feed to your animals?	YES	NO
3.	Are your employees trained to look for the BSE cautionary statement on labels, and know what to do if they find it?	YES	NO
4.	Have you reviewed your feed company's ruminant animal protein contamination prevention HACCP plan?	YES	NO

5. Do you know that feed is the most common, if not the only, way BSE is transmitted?	YES	NO
6. Do you know which feed ingredients are prohibited materials?	YES	NO
7. Do you know that there are other ruminants besides cattle?	YES	NO
8. Do you know that as a dairy producer, you are required to keep a copy of the label of any feed (except pet food) that contains animal protein as an ingredient? (*Note: Milk based milk replacer contains animal protein.*)	YES	NO
9. Do you know that pet foods most often contain prohibited materials and should not be fed to cattle and other ruminants?	YES	NO
10. Do you know that the US Food and Drug Administration (FDA) has guidance documents in easy to read language for dairy producers to explain the regulations to their employees that are intended to prevent the spread of BSE?	YES	NO
11. Do you know that FDA has a proposal to amend the ruminant feed ban with additional restrictions that strengthen the current measures for preventing the spread of BSE?	YES	NO

For each **YES** answer in **Part B**., give yourself one point and add up your points.

- Less than 6 points: Your animal feed program needs help.
- 6 – 9 points: You could increase your knowledge and reduce your risks.
- 10 or more points: You deserve a ribbon. You are on board with BSE risk management, but must maintain your diligence and stay up to date with potential changes to the regulations.

For more information please see the Managing BSE-Related Feed Risks section of the best management practices manual (page 43).

Risk Assessments

Farm Security Planning

After a long day in the field, shop, or barn, you trust that your tools and equipment will be safe until morning. Life in the country should be safe and secure. But the rural community is changing. That neighbor you knew for 20 years is no longer down the road, and new faces have moved in.

How would your local police react if you suspected someone were stealing your anhydrous ammonia to make the illegal drug methamphetamine? Are essential farm assets secured against vandalism and theft? Do law enforcement officials know what “hot” marketable assets such as farm tools and chemicals are located on your farm? How would enforcement officials or your insurance company react if protesters were to turn off the electricity to your animal production facility or trample your bioengineered crops?

Securing your farm and the equipment to run your operation is vital. The loss of equipment and tools affects your insurance and can interrupt a workday, which would considerably disrupt your operations during planting or harvesting seasons. Costs caused either by loss or damage to your farm could be the difference between you staying in business or not. While it’s difficult to monitor every corner of your farm, there are measures you can take to deter potential thieves.

You may think that you know what the fire department volunteers would do if your barn were to catch fire, but do you really? How would they react if no one were available to answer the question; what is stored in the barn?

Risk Assessments

Farm Security Planning

Who are the people who respond following a storm causing power-outage on your farm? How would various phases of government react if a terrorist were to release mycotoxins or other hazardous substances into your grain bins, and what would happen if you were to unknowingly ship some of the contaminated grain? What would happen to your dairy operation if a quarantine were initiated to curb a disease outbreak? These questions are linked by the necessity for accessible information to help responders react to an emergency in progress—an emergency on your farm. Is your farm secure? And is your family secure in knowing that you've taken every precaution to guard their safety?

How secure is your dairy farm?

Complete the Farm Security Planning Risk Assessment on the next page to determine any areas of your dairy operation which are vulnerable. Then refer to the Farm Security Planning section on page 49 to learn about the things you can do at low or no cost to plan to prevent a disaster or criminal act from damaging your business and livelihood. Some of these methods require little change in your daily routine, however, some may require you to take a new look at your work practices and business methods to prevent criminal acts, lessen the impact of disaster, and ensure your ability to continue your business.

Risk Assessments

Farm Security Risk Assessment

Please answer the following questions by selecting YES or NO:

1.	Have you identified critical processes and operations that are essential to the operation of your farm?	YES	NO
2.	Have you made sure that critical items are covered by your farm insurance?	YES	NO
3.	Has your insurance company performed an assessment of your property?	YES	NO
4.	Do you have an inventory of your assets on the farm to include model and serial numbers, vehicle identification numbers or any other identifiable markings?	YES	NO
5.	Have you video taped or photographed insured assets on your farm with dates and identifiable backgrounds?	YES	NO
6.	Do you store a copy of the completed inventories, important documents, such as payroll and financial records, and computer back-up disks in a secure off-site location?	YES	NO
7.	Do you store important documents on-site in a fireproof container?	YES	NO
8.	Do you post and maintain “No Trespassing” signs along your property?	YES	NO
9.	Do you conduct background checks on all of your employees?	YES	NO
10.	Do you require a regular check-in point for all deliveries?	YES	NO
11.	Do you have an established parking area for farm deliveries away from critical farming operations?	YES	NO
12.	Do you have procedures to control access, by former employees, to your farm operations?	YES	NO
13.	Do you collect keys, credit cards and other means to access your assets from former employees?	YES	NO

14. Do you disable farm equipment, chemical storage and dispersing equipment when parked and not in use?	YES	NO
15. Do you have an inventory of all the locks and keys to your farm	YES	NO
to include the location of the lock, number of keys and who has them?	YES	NO
16. Do you require employees to sign for keys?	YES	NO
17. Do you keep spare keys locked in a secure location?	YES	NO
18. Do you issue keys to employees only as needed?	YES	NO
19. Do you have security lighting installed in key locations?	YES	NO
20. Is your security lighting controlled by motion sensors or photocells?	YES	NO
21. Are your chemicals stored away from your home and livestock?	YES	NO

For each **YES** answer, give yourself one point and add up your points.

- Less than 11 points: Your farm security program needs help.
- 12 – 18 points: You are doing some things right, but could stand some improvement.
- 19 or more points: You deserve a ribbon. You are doing well, but must maintain your diligence and always look for ways to improve.

For more information please see the Farm Security Planning section of the best management practices manual (page 49).

Risk Assessments

Drought Preparedness Risk Assessment

Please answer the following questions by selecting YES or NO:

1.	If you rely on a water right for domestic or production purposes, do you know if you have a junior or senior right for your area?	YES	NO
2.	If you use a well, do you know how stable the water level is?	YES	NO
3.	If your current water supply is reduced, do you have access to an alternative supply or a plan to reduce your use to match the supply?	YES	NO
4.	Do you know where to get additional information on your water supply or alternative sources including use of an emergency well?	YES	NO
5.	Are you implementing measures to conserve water such as:		
	a. Enclosing irrigation ditch lines in pipes.	YES	NO
	b. Converting rill irrigated fields to more efficient systems.	YES	NO
	c. Reusing plate cooler water for livestock watering or other uses.	YES	NO
	d. Cutting back on landscaping that requires lots of water.	YES	NO
	e. Only running your dishwasher when it is full.	YES	NO
6.	Have you evaluated your facility for fire risk, establishing fire breaks, reducing fuel loads and other appropriate measures?	YES	NO
7.	Do you know there are state and federal programs that may be available to address economic impacts of drought?	YES	NO

For each **YES** answer, give yourself one point and add up your points.

- Less than 4 points: You could work on preparing for drought.
- 5 – 9 points: You are aware and could reduce your risk with further knowledge.
- 10 or more points: You deserve a ribbon. You are doing well, and are on board with drought preparedness!

For more information please see the Drought Management section of the best management practices manual (page 75).

Human Health Risk Assessment

As a food producer, you have a responsibility to consumers of your milk and your dairy industry to understand and use safe food production procedures. Use this risk assessment to learn if you need to improve your procedures and reduce your chance and the resulting liability for the production of milk that poses a human health risk.

Please answer the following questions by selecting YES or NO:

1.	Have you received your WSDA Milk Producer license?	YES	NO
2.	If doing on-farm processing, have you received your WSDA Milk Processor license?	YES	NO
3.	Do you test your herd annually for TB and Brucellosis?	YES	NO
4.	Has your water supply been tested for microbiological and chemical levels?	YES	NO
5.	Do you have backflow prevention devices installed and maintained properly?	YES	NO
6.	Have you drawn a map to show product and foot traffic flow?	YES	NO
7.	Have you used the traffic flow chart to determine potential areas for contamination?	YES	NO
8.	Are your equipment and supplies being properly stored to protect from contamination?	YES	NO
9.	Have your employees been trained on proper hygiene practices?	YES	NO
10.	Do you have hand washing signage posted on the farm in appropriate languages?	YES	NO
11.	Do your employees report their illnesses?	YES	NO

(continued on next page)

Human Health Risk Assessment *(continued from previous page)*

12. Are your toilets and hand washing facilities maintained and stocked with supplies?	YES	NO
13. Do you have written procedures for washing and sanitation of equipment?	YES	NO
14. Do you have written procedures for washing and sanitation of your facilities?	YES	NO
15. Have your employees been trained on how and when to properly wash and sanitize?	YES	NO
16. If you use antibiotics or chemicals on your farm, have your employees been trained on proper and safe handling of antibiotics and chemicals?	YES	NO
17. Have you completed a Hazard Analyses Worksheet with your WSDA Food Safety Officer?	YES	NO

For each **YES** answer, give yourself one point and add up your points.

- Less than 5 points: Your risk management program needs help.
- 6 – 14 points: you are doing some good procedures, but could make more improvements
- 15 or more points: You deserve a ribbon. You are doing well, but must maintain your diligence and always look for ways to improve

For more information please see the Mitigating Human Health Risks section of the best management practices manual (page 85).

Value-Added On-Farm Processing Risk Assessment

With the interest in communities to support local agriculture, the number of dairy producers exploring on-farm processing has grown tremendously. Many producers are looking for new ways to diversify their product and generate additional income. Along with a new business venture come new risks and considerations. Starting or expanding your on-farm processing business increases your responsibilities for final product and end-consumer safety. Some of the areas to become familiar with are equipment requirements, new facility requirements, employee training and marketing.

The more you plan and prepare, the greater your chance for developing a successful business. The department has many programs that can assist in your new venture. Food Safety Officers can assist in developing a hazard analysis with a focus on reducing potential contamination and developing a food recall plan. The Small Farm and Direct Marketing Program can assist in identifying markets and marketing tips. This risk assessment will help you identify areas to make improvements for your on-farm processing operation.

Please answer the following questions by selecting YES or NO:

1.	Have you received your WSDA Milk Processing Plant license?	YES	NO
2.	Have you developed a hazard analysis with your WSDA Food Safety Officer?	YES	NO
3.	Have you identified the types of safety issues associated with your operation?	YES	NO
4.	Can you identify and control the concerns about the safety of your product?	YES	NO

(continued on next page)

Value-Added On-Farm Processing Risk Assessment *(continued from previous page)*

5. Are you pasteurizing your product?	YES	NO
6. If not pasteurizing, have you identified controls for mitigating potential contamination?	YES	NO
7. Have you developed a food recall plan?	YES	NO
8. Have you identified your market?	YES	NO
9. Are you aware of any special considerations your consumers may have?	YES	NO
10. Have you determined how your product will be displayed at the point of sale?	YES	NO
11. Have you researched the local county health department requirements for selling food products?	YES	NO
12. Have you developed a business and marketing plan?	YES	NO
13. Have you contacted other dairy producers processing similar products for suggestions?	YES	NO
14. If currently under contract with a cooperative, have you considered those obligations and communicated your intentions with them?	YES	NO

For each **YES** answer, give yourself one point and add up your points.

- Less than 5 points: Your will benefit from learning how to reduce your risk.
- 5 – 10 points: you are doing some good procedures, but could make more improvements.
- 11 or more points: You deserve a ribbon. You are doing well, but must maintain your diligence and always look for ways to improve.

For more information please see the Value-Added On-Farm Processing section (page 103).

Assessing Your Dairy's Risk Level:

Introduction

Managing animal disease risks is a key component of having a successful dairy operation. This is especially true when many dairies are going through expansions or are buying replacement animals from outside sources. This article describes strategies to assess your dairy's infectious disease risk level, and gives you the tools to work with your veterinarian to build an Animal Health Management Plan to minimize the risk of infectious disease on your dairy.

In a 1996 study by the USDA National Animal Health Monitoring System (USDA-APHIS-VS Document N204.596), nearly half of over the 2,500 dairies surveyed brought in new animals each year. This is no surprise since the average culling rates exceeding 30% and average pregnancy rates less than 12%, it is very difficult for a dairy to maintain herd size through their replacement program without outside animals. This same study found that less than 15% of newly acquired cattle were isolated prior to introduction into the herd. Combine these findings with the fact that only half of these dairies required vaccination of new additions prior to arrival and only one third tested new additions for infectious disease, and the risk of infectious disease is very likely.

Animal Health Management

There are numerous infectious diseases which may be acquired through introduction of new cattle. **Some of the major ones are:**

- Bovine Leukemia Virus / Leukosis – BLV
- Bovine Respiratory Synctial Virus – BRSV
- Bovine Viral Diarrhea – BVD
- Chlamydiosis
- Clostridial Diseases – Black Leg, Entertoxemia, etc.
- Contagious Mastitis – Staphylococcus aureas, Streptococcus agalactiae, Mycoplasma
- Cryptosporidia parvum
- Haemophilus somnus
- Infectious Bovine Rhinotracheitis - IBR
- Papillomatous Digital Dermatitis – “Hairy Heel Warts”
- Leptospirosis
- Mycobacterium paratuberculosis – Johne’s Disease
- Neosporosis
- Parainfluenza-3 Virus – PI3
- Rota / Corona Virus
- Salmonellosis
- Winter Dysentery – bovine corona virus

So how do we manage this increasing infectious disease risk? The key is to have and implement an Animal Health Management Plan. Developing this Animal Health Management Plan is based on five steps:

Step 1. Define the dairy goals and areas of concern.
Any time we are designing plans and protocols for a livestock operation, it is important to understand the reason why the farm is in existence. Designing a plan for a dairy whose goal is to maximize production is different than designing a plan for a dairy whose goal is to be in business so the owner's daughter can qualify for a county dairy princess. I realize this example is extreme, but it does make the point that you need to understand where you want to go before you can decide how to get there.

Step 2. Assess the risks of infectious disease transmission by using a risk assessment tool.
Once we know where we want to go, we need to decide where we are right now. The idea of a risk assessment tool is to walk through the various parts of a dairy and identify potential places where infectious disease transmission might occur. The goal of the risk assessment is to generate a list of potential risk factors for disease transmission; ranked by how likely they are to allow disease transmission.

Step 3. Design an Animal Health Management Plan based on the risk assessment.
In this step, we take the list generated in the risk assessment and pick a few items or tasks to work on. It is important to limit the number of tasks in your Animal Health Management Plan for several reasons. First, it helps us focus our efforts of doing a good job implementing the new task (it is better to do one thing well, rather than multiple things part way). Second,

it does not drain the dairy's financial resources. Finally, if a change results in a negative outcome, we have fewer changes to go through to find out which one was the problem.

Step 4. Review the plan with all dairy personnel and consultants.
Once a plan has been formulated, it is very important to make sure everyone knows what is going on. Part of the plan should be to assign a person to be responsible for each task. It is also important to get input on any changes that need to be made to the plan and to make sure your plan can be implemented.

Step 5. Monitor and review the plan.
This step is often left out, but is probably the most important to the overall success of the plan. It is important to have a way to monitor completion of each task. Plans should be reviewed with your veterinarian at least quarterly and with the entire dairy team (employees, vet, and consultants) on an annual basis.

There are many reasons that producers give for not having an Animal Health Management Plan. The following list is some of them … see if any of them fit for someone you know:

- "We've always done it this way."
- "I've already had most every disease on this dairy."
- "I don't have time to mess with this."
- "It's too complicated."
- "It's too expensive."
- "It won't make a difference."
- "I don't have the extra pens."
- "We vaccinate our cows."
- "We tested once, didn't find anything, and wasted our money."
- "We pretty much have a closed herd."

Animal Health Management

So why should you implement an Animal Health Management Plan? It's basically an economic decision as experts estimate that each infectious disease case will cost you $200 - $1,000 per year (depending on the disease). Maybe the other way to look at it is that an Animal Health Management Plan will:

1. Protect your financial investment in the dairy;
2. Increase production and revenue (healthy cows make more milk);
3. Protect milk and meat quality and bolster consumer confidence in dairy products;
4. Prevent problems, which is cheaper than treating problems; and
5. Protect the future assets of the dairy (calves and heifers).

Background Theory

To develop an effective Animal Health Management Plan, it is important to understand some basic terminology and concepts. Many people refer to Animal Health Management Plans as "biosecurity" plans. **Biosecurity** can be defined as the collection of management practices that protect a group of animals from exposure to, and infection with, infectious agents. There are two general classes of biosecurity practices: external and internal**. External biosecurity** refers to management of risks related to infectious agents arriving from locations off the dairy. **Internal biosecurity** refers to management of risks related to agents that are already present on the dairy (usually spread from older animals to younger).

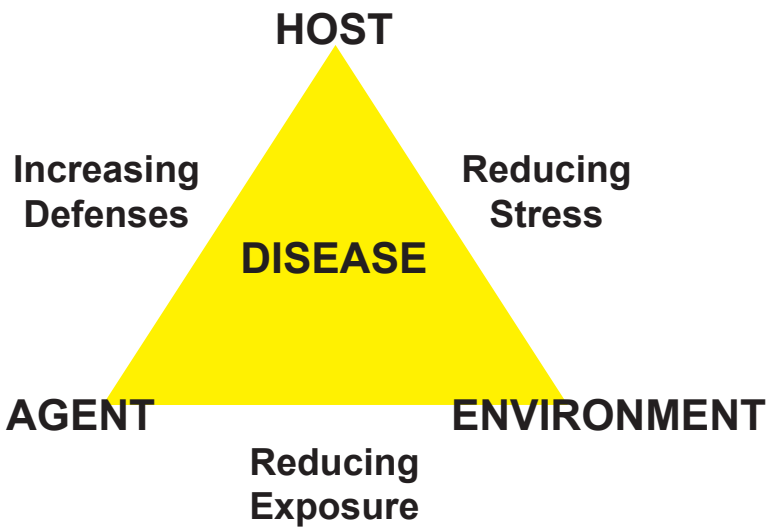


Figure 1. Disease Triangle

An important concept in infectious disease transmission is the "**disease triangle**" as shown in Figure 1. Disease transmission is not a simple process, but a complex interaction with the host (animal), agent, and environmental factors. Therefore, disease prevention strategies fall into three categories: 1) efforts to increase animal defenses; 2) efforts to reduce exposure to infectious agents; and 3) efforts to reduce environmental stress. For example, vaccination programs increase the animal's immune protection to ward off an infectious disease.

Another important concept is that infectious diseases are multi-factorial in nature. In other words, diseases result from several risk factors occurring simultaneously. Figure 2 shows four possible ways a calf can get E. coli scours. Each block is a "**component cause**" or "**risk factor**" and the collection of risk factors that results in the disease is known as a "**sufficient**

cause". In this example, there are four sufficient causes (designated with an "SC"):

- Calves with lack of passive transfer, that are stressed, and exposed to E. coli,
- Calves with lack of passive transfer, lack of proper nutrition, and exposed to E. coli,
- Calves exposed to a second agent, that are stressed, and exposed to E. coli, and
- Calves exposed to a second agent, a lack of proper nutrition, and exposed to E. coli.

As a veterinarian, I often hear, "Well, Doc, we've been doing things the same way for years. How come we have a problem now?" My response is that risk factors are like pieces of a pie and you need all the pieces to make the disease (the whole pie). In most years, you've been living on the edge (i.e., with 19 pieces of the 20-piece pie) and this year you got the last piece.

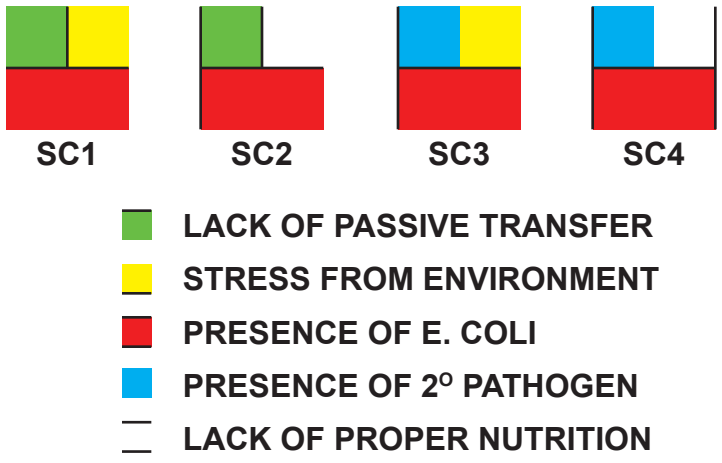


Figure 2. Four ways a calf can get E. coli scours.

There are several different routes of transmission depending upon the disease you are talking about. Transmission by **direct contact** occurs when there is contact with another animal. This could be by ingestion (i.e., licking another animal), venereal transmission, or passed to a calf in the uterus (in utero). **Fomite transmission** occurs when an animal comes in contact with an agent through a non-living (inanimate) object. Examples are ingestion (i.e., licking a gate) and injection (using the same needle on more than one animal). Finally, another common form of transmission is by **aerosol transmission** (breathing the agent that is in the air).

Conducting Risk Assessments

As mentioned previously, the idea of a risk assessment tool is to walk through the various parts of a dairy and identify potential places where infectious disease transmission might occur. Risk assessments should be standardized, written or computerized, and have a numeric score associated with the risk factors to allow prioritization of tasks. Risk assessments are generally broken down into various management areas and risk factors. Typical risk assessment sections are general dairy information and goals, current and desired dairy performance levels, current management practices, risk factor scoring, and a summary of risk factor scoring. Probably the most widely used dairy risk assessment tool is the risk assessment document used for USDA's Voluntary Bovine Johne's Disease Control Program. You can download this document at:

http://www.jd-rom.com/pdf_docs/Handbook for Vets and Dairy Producers final1.pdf

Figure 3 shows the herd information page from WSDA's Johne's disease risk assessment software. Dairy producers are asked questions about their inventory (the number of animals they have in different categories), the performance of the herd, the vaccination program used, where new animals come from, the herd's history related to Johne's disease, the number of disease cases, cows culled, and test positive in the last year, and how much Johne's disease the herd is estimated to have.

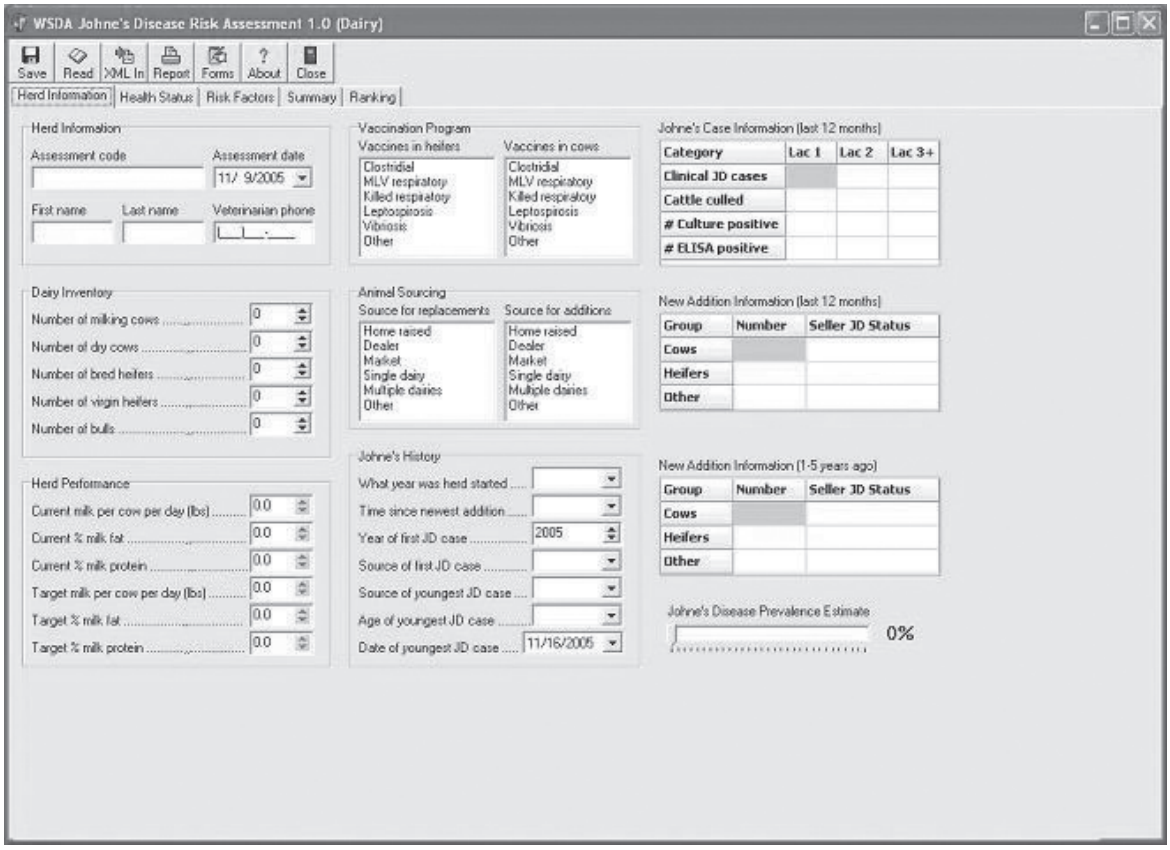


Figure 3. WSDA Johne's Disease risk assessment software

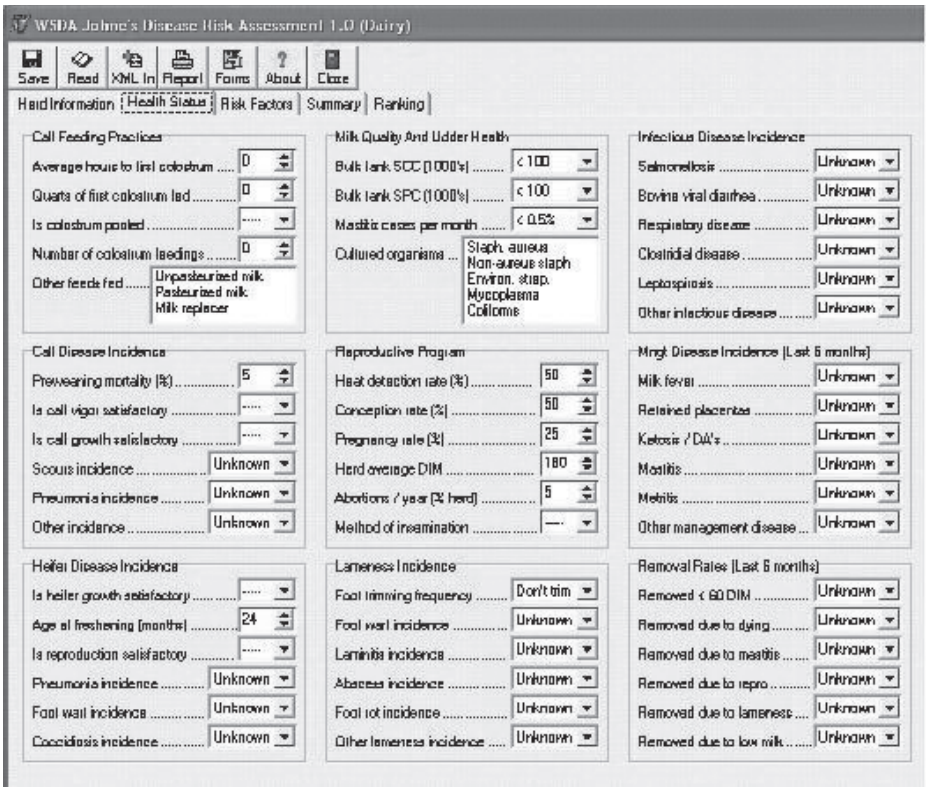


Figure 4. Health status page of risk assessment tool

The next section of the WSDA risk assessment is the health status page as shown (Figure 4). In this section, we are interested in the different management practices used and the health status of various types of animals on the dairy. This particular system scores disease incidence as "unknown, low, moderate, or high". A better system would score the incidence (rate) of the diseases on a 0 to 10 scale (10 being a severe problem). Notice that inputs are either numbers or choosing items from a list. If you are making your own risk assessment form, avoid allowing user to "write in" answers, but have them pick them from a list. This allows different dairies to be compared and allows you to compare the responses from one year to the next.

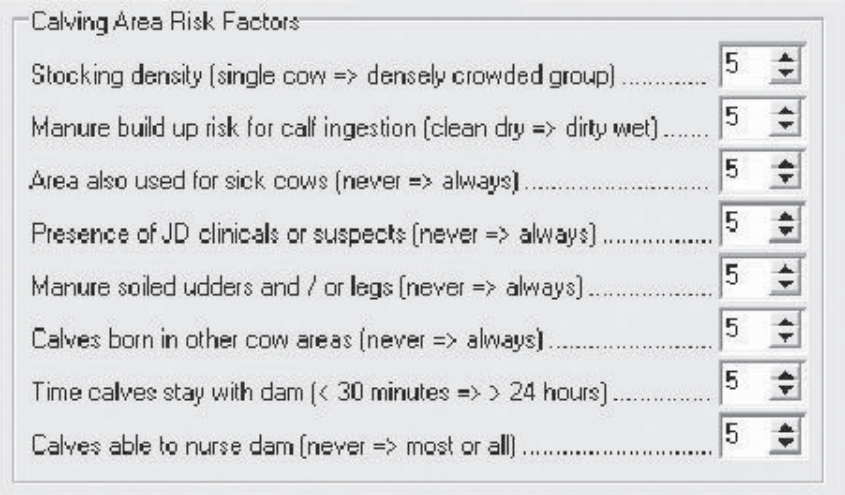


Figure 5. Risk factor scoring page

Figure 5 shows the risk factor scoring page of the WSDA Johne's disease risk assessment system. It shows the calving area risk factor scoring section. Dairy personnel are asked to score each item from 0 to 10 with 0 being no problem and 10 being a severe problem. For example, if we were scoring the stocking density of the calving area on a dairy, a zero would correspond to having only a single cow in the calving area at any point in time and a ten would correspond to having the calving area constantly full of cows. In Johne's disease, calves are at the highest risk of being infected, so scores in the calving area section range from 0 to 10 points. In other sections, the scores may range from 0 to 7 or 0 to 5. This allows us to "weight" risk factors that are more important than others. When we add up the points, herds with problems in the high-risk areas will have a higher overall score. Remember that risk assessments are like golf, we don't want high scores.

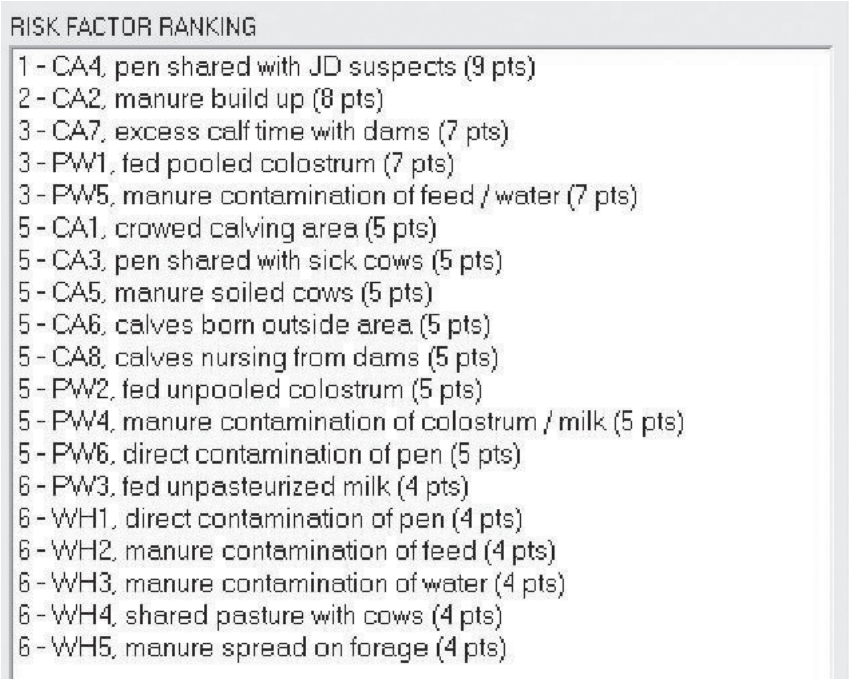
The WSDA Johne's disease risk assessment generate scores of: up to 60 points for pre-weaned heifers' risk factors, up to 35 points for post-weaned heifers' risk factors, up to 25 points for bred heifers' factors, and up to 60 points for risk factors related to new additions to the herd. From these scores, we generated a table with the risk factor scores added up for each risk factor area and identified what areas were the biggest problems. Figure 6 shows an example of a dairy that scored a 113 (40.9%) out of the worst possible score of 276. This is not bad for a dairy evaluating their level of Johne's disease control. The "% Max Score" column takes "Your Score" value and divides it by the "Max Score" column value. This indicates how bad each risk factor area was compared to the worst possible for that risk factor area. A more important column is the "% Herd Score" column, which takes the value in the "Your Score" column and divides it by the total in the "Your Score" column. This tells you how much of your total score is coming from a given risk factor area. In our example, the largest "% Herd Score" is 35.4% and comes from the calving area. Changes to the calving area management will have the biggest impact on preventing Johne's disease.

RISK ASSESSMENT SUMMARY

Risk Factor Areas	Max Score	Your Score	% Max Score	% Herd Score
Calving Area	80	40	50.0%	35.4%
Pre-Weaned Heifers	60	30	50.0%	26.5%
Weaned Heifers	35	20	57.1%	17.7%
Bred Heifers	25	15	60.0%	13.3%
Cows And Bulls	16	8	50.0%	7.1%
Additions / Replacements	60	0	0.0%	0.0%
TOTAL	276	113	40.9%	100.0%

Figure 6. Risk assessment summary page

The next step is to rank the risk factors from the highest point value to the lowest. This list is used to develop the Risk Management Plan. From this list, we will pick 3 to 4 risk factors we want to address this year. Figure 7 is an example risk factor ranking:


RISK FACTOR RANKING

1 - CA4, pen shared with JD suspects (9 pts)
2 - CA2, manure build up (8 pts)
3 - CA7, excess calf time with dams (7 pts)
3 - PW1, fed pooled colostrum (7 pts)
3 - PW5, manure contamination of feed / water (7 pts)
5 - CA1, crowed calving area (5 pts)
5 - CA3, pen shared with sick cows (5 pts)
5 - CA5, manure soiled cows (5 pts)
5 - CA6, calves born outside area (5 pts)
5 - CA8, calves nursing from dams (5 pts)
5 - PW2, fed unpooled colostrum (5 pts)
5 - PW4, manure contamination of colostrum / milk (5 pts)
5 - PW6, direct contamination of pen (5 pts)
6 - PW3, fed unpasteurized milk (4 pts)
6 - WH1, direct contamination of pen (4 pts)
6 - WH2, manure contamination of feed (4 pts)
6 - WH3, manure contamination of water (4 pts)
6 - WH4, shared pasture with cows (4 pts)
6 - WH5, manure spread on forage (4 pts)

Figure 7. Risk factor ranking page

The list shows the top 19 risk factors for the transmission of Johne's disease on our example dairy. The single biggest risk factor is sharing the calving area (designated "CA") with Johne's disease suspects (9 points). The second highest risk factor is the build up of manure in the calving area (8 points), followed by calves spending too much time in their dam after birth (7 points), and feeding pre-weaned heifers (designated "PW") pooled colostrum.

Animal Health Management

Now that you have selected a few risk factors to work on, the final step in the risk assessment process is to develop a health management plan for mitigating the risks selected from the risk factor ranking. The management plan for our example dairy might include:

1. Building a separate area to house Johne's suspect away from maternity cows;
2. Cleaning out the built-up manure in the calving area;
3. Assigning a person to check the calving area more often to remove calves from their mothers sooner; and
4. Stop feeding pooled colostrums to pre-weaned heifers.

It is important that Health Management Plans be written, have a person responsible for making sure each task is done, have a time frame associated with each task (i.e. the calving area will be cleaned of excess manure on a **daily** basis), and that compliance (whether the plan was followed) is monitored to avoid "procedural drift". Procedural drift is the concept that people will tend to not follow protocols over time and the best example of procedural drift is people not following New Year's resolutions.

Best Management Practices for Health Management

As we mentioned earlier, health management strategies are aimed at reducing infectious disease through one of three general approaches:

1. Improving animal defenses;
2. Reducing the exposure to infectious agents; and
3. Reducing environmental stress.

Reducing Antibiotic Use

Strategies that improve animal defenses are either enhancing immune protection through colostrum management and vaccination, ensuring proper nutrition including trace minerals and vitamins, and choosing appropriate therapies for disease conditions. Choosing appropriate treatment strategies is important for several reasons, but is especially important in the reduction of antibiotic use. The reducing antibiotics issue is a hot topic since the potential exists for antibiotic resistance in humans to develop if they consume meat or milk contaminated with antibiotic residues. Best management practices to reduce antibiotic use are:

1. Work with your veterinarian to optimize your disease prevention strategies (develop an Animal Health Management Plan);
2. Work with your veterinarian to develop a training program for workers who treat cows;
3. Limit the number of workers who treat cows;
4. Design standard operating procedure's for treating primary disease conditions on your dairy;
5. Base all treatments on an accurate diagnosis;
6. Continually monitor response to therapy and discuss changes to protocols with your veterinarian as needed;
7. Keep records of animals treated, treatment used, treatment dates, and withdrawal times;
8. Avoid the use of newer generation antibiotics that are used in human medicine;
9. Follow labeled instructions for dose, route, frequency, and duration;
10. Only use extra-label drugs on advise of your herd veterinarian; and
11. Store and handle all medications according to the label.

Animal Health Management

Reduce exposure to infectious agents

General strategies that reduce exposure to infectious agents are managing sick and incoming animals, managing incoming people and equipment, assuring proper hygiene and/or disinfection, assuring proper handling and storage of feed and water, and preventing manure exposure. When managing exposure to outside animals, remember that a herd is not closed if:

1. Cattle are purchased or boarded.
2. Cattle return to the herd after going to shows, community pastures, exhibits, or other premises.
3. Cattle use a pasture that shares a fenceline with cattle pasture on a different farm.
4. Bulls are purchased, borrowed, or loaned.
5. Cattle from the herd are transported by someone else in someone else's vehicle.

Prevent introduction of infected cattle to the herd

Best management practices related to preventing introduction of infected cattle to the herd include:

1. Only purchase animals from uninfected herds or herds with known health status;
2. Only purchase animals from herd with a known effective vaccination program;
3. Minimize the number of sources of new cattle;
4. Avoid purchasing commingled cattle;
5. Transport purchased animals in your own vehicle or have hired hauler disinfect their truck;
6. Isolate and monitor purchased cattle for 30 days;
7. Any isolated animal with signs of illness should be examined by a veterinarian;

8. Isolation facilities should be managed “all-in, all-out” (don’t move animals into the herd until all animals have passed the 30 day isolation);
9. Have separate clothing, boots, and equipment for the isolation area;
10. Test new additions for infectious disease prior to them joining the main herd; and
11. Test all calves from purchased cattle for persistent infection to BVD.

Best management practices for shows and fairs

Show animals are always a significant biosecurity risk as commingling animals increases the risk of infectious disease transmission. Show animals should be treated as newly acquired animals each time they return to the dairy. Fairs and exhibitions have significant potential for fomite transmission through grooming equipment and common pens. Best management practices for shows and fairs include:

1. Animals from different farms should never share feed or watering equipment at a show;
2. Clothing and equipment should be cleaned and disinfected prior to going home;
3. Provide as much separation as possible for animals from different farms;
4. The best biosecurity barrier is open space, followed by solid panels, then open panels;
5. Transport animals in your own vehicle – do not haul animals for other premises;
6. The show ring should be the only site for commingling;
7. Aisles should be kept clean with bedding, urine, and manure removed regularly; and
8. Animals should be isolated when returned home.

Animal Health Management

On-farm biosecurity practices

On-farm biosecurity practices to reduce infectious disease exposure focus on manure management, fomite transmission, and isolating animals from each other. Best management practices include:

1. Reduce manure contamination of water sources, feed sources, and equipment;
2. Require outside personnel (vets, hoof trimmers, etc.) to sanitize their equipment;
3. Limit exposure to other animals (rodents, birds, wildlife, etc.);
4. Use disposable equipment (e.g., AI sleeves, needles) once and discard;
5. Disinfect reusable equipment between cows after each use;
6. Isolate sick and "unresponsive to treatment" animals from main herd;
7. Have veterinarian necropsy any animal that dies from undetermined causes;
8. Dispose of any dead animals properly;
9. Utilize individual calf hutches for newborn calves and disinfect between each use; and
10. When selling animals, identify a separate location for animal pickup.

Managing visitors to the farm

Management of visitors is a challenge for every dairy. Ideally, no visitors would be allowed, but from a practical standpoint, this is unachievable. Because of this, dairies should:

1. Minimize visitors as much as possible;
2. Post warning signs asking visitors to stay out, give the phone number of the office, and ask valid visitors to check in at the office on arrival;
3. Require visitors to wear clean outerwear and footwear (provide these items if necessary);

4. Do not allow visitors to enter pens, touch feed, or touch animals unless necessary; and
5. Incoming vehicles should be clean, free of manure, have tires disinfected prior to arrival, and be allowed only in designated areas.

Fencing and gates are important tools for managing visitors. The following recommendations should be implemented regarding fencing and gates:

1. Create a space between external fencing and corrals to eliminate the opportunity for people passing by to throw items in;
2. Build high fences (e" 6 feet) to prevent people and animals from entering housing and feed preparation areas;
3. Remember each fence must have a gate or gates (plan accordingly); and
4. Train employees to watch for and report unknown visitors.

Disinfectants for disease control

Disinfectants are an important aspect of the control of infectious diseases transmitted by fomites. Remember that the effectiveness of a disinfectant depends on:

1. The type of contamination (organism);
2. The degree of contamination;
3. The amount of organic matter present;
4. The type of disinfectant – how it works;
5. The concentration of the disinfectant and the quantity;
6. The contact time and temperature;
7. The residual activity and effects on fabric / metal; and
8. Application temperature, pH, and interaction with other chemicals.

A significant source of fomite transmission is transmission via feed and water. Figure 8 shows how feed and water can become contaminated and infect susceptible animals.

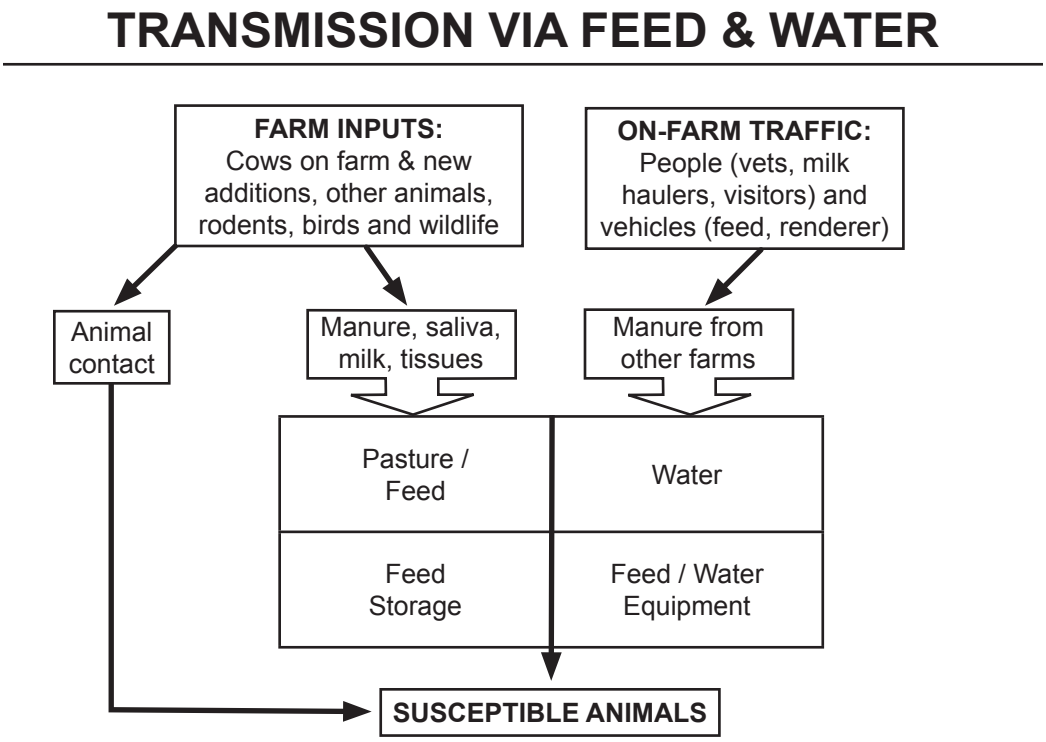


Figure 8. Transmission via feed and water

Contamination is divided into two sources: farm inputs (internal) and on-farm traffic (external). For example, rodents may contaminate feed through their manure, saliva, or tissues whereas people may contaminate feed and water through manure from other farms. Regardless, contamination of feed

Feed handling, equipment & storage

or water spreads infections to any susceptible animals that ingest the organism. Best management practices for feed handling, feed equipment, and feed storage include:

1. Asking your supplier about their quality assurance program;
2. Implementing practices such as pelleting, steam flaking, or roasting which can reduce bacterial numbers;
3. Properly labeling all chemical and pesticides and storing them in a separate location;
4. Ensuring all storage areas are cleaned out between batches of feed;
5. Ensuring feed delivery equipment is cleaned between deliveries and farms;
6. Making sure to never use manure handling equipment to handle feed;
7. Do not feed unpasteurized waste milk;
8. When feeding from silos or commodity barns, check feed for mold or spoilage;
9. Rotate inventory to minimize pathogens in feed;
10 Clean feed bunks on a regular basis, ideally daily; and
11. Give feed refusals to the oldest heifers within 24 hours of original feeding.

Feeding plans, records & labels

A second area of concern when managing feed is, feeding plans, records, and labeling. Best management practices include:

1. Properly storing medicated feeds and using them according to label only;
2. Have a feeding plan for each production class (calves, heifers, and cows);
3. Record feed intake on each pen / group of cattle; and
4. Routinely test all feeds and record analysis. Rebalance ration as necessary.

Processing Feed

Finally, care should be exercised with processing feed. Recommended practices are:

1. Protect feeds and feeding areas from animal carcasses and manure contamination;
2. Prevent access to feed by dogs, cats, wildlife, rodents, birds, and other animals;
3. Allow sufficient time between manure application and harvesting of forage; and
4. Ensure optimal conditions for harvesting, handing, and storage for each feed.

(For additional information, see Managing BSE-Related Feed Risks on page 43.)

Environmental Stress

The final area of infectious disease management is reducing environmental stress. We can do this by making sure there is adequate space for each animal, ensuring proper cow comfort, and protecting animals from weather stress by adequate heat abatement, adequate cold abatement, and adequate wind abatement. The old axiom that animals which are clean, properly fed, and dry produce the most milk applies as well today as it has in the past.

Animal Health Management

Core Best Management Practices

This section of the risk mitigation manual has provided many recommendations for best management practices for a wide variety of topics. In an effort to simplify your Animal Health Management Plan, the following can be thought of as "core" or minimum best management practices:

1. Maintain an accurate animal ID system and record all health events;
2. Use written standard operating procedures and monitor compliance;
3. Minimize the risk of disease introduction when animals are purchased or re-enter the herd;
4. Insist that all visitors and advisors have clean clothing and disinfect their boots;
5. Prevent manure from being ingested, especially by young animals;
6. Ensure that equipment used with animals, or their feed, is clean;
7. Manage manure to minimize run-off and ground water contamination;
8. Prevent antibiotic and chemical residues; and
9. Ensure low stress, well-fed, comfortable cows.

We can never totally eliminate the possibility of infectious disease spreading onto a dairy, but with a sound Animal Health Management Plan, we can significantly reduce the likelihood of a disease problem getting started, and if one does start, minimize its impact. The key is to put a plan in place before the disease starts, to make sure all dairy employees and advisors understand and implement the plan, and to make changes when necessary.

Notes

BSE-Related Feed Risks

Ruminant Feed Ban

What it means for the producer?

"Animal Proteins Prohibited from use in Ruminant Feed," Title 21, Code of Federal Regulations, Part 589.2000, became effective August 4, 1997 and is often referred to as the "ruminant feed ban". Ruminants are those animals that chew their cud. Ruminants include, but are not limited to: beef and dairy cattle, goats, sheep, buffalo, deer, and elk. This regulation applies to renderers and anyone feeding ruminants or manufacturing feed for ruminants. This rule may be updated by the Federal Drug Administration (FDA) in the near future. Please check FDA's Web site occasionally for updates:

http://www.fda.gov/cvm/bsetoc.html

How to Comply with the BSE Regulation?

1. Do not feed products labeled with the caution statement **"Do not feed to cattle or other ruminants"** to your ruminant animals.
2. Do not feed pet food to ruminants since pet food often contains prohibited material. Pet food is exempt from the cautionary labeling statement requirement above.
3. Keep copies of **ALL** purchase invoices for **ALL** feeds received that contain **animal protein.** This includes all animal feeds except pet food fed to pets.
4. Keep copies of labels for **ALL** feeds received containing **animal protein** products. This includes all animal feeds except pet food fed to pets. File one label to represent each different lot of feed on an invoice, and file labels for each new invoice.
5. Keep invoices and labeling available for inspection and copying for a minimum of one year from the receipt of the product. The purpose of these records is to provide a "safety net". They allow trace back from farms to suppliers to insure that product without the cautionary statement is properly labeled.

For **bulk shipments**, if the invoice lists all ingredients then keeping only the invoices is sufficient. If the only labeling is on a placard, keep a **placard for each shipment.**

For feed received in **bags or other containers** that have attached labels, **remove and retain a representative label from each different product.** Do this for each shipment.

If the labeling cannot be removed from the bag or other container, it is acceptable to retain a representative bag or transposed copy of the labeling information from a container that cannot feasibly be stored. Be sure to include the complete Ingredients Statement, Manufacturer, Lot Number or Date Code if available, and feed type.

Renderers, protein blenders, and feed manufacturers are required to label products containing prohibited materials with the cautionary statement:

"**Do not feed to cattle or other ruminants."** Pet foods are exempt from this labeling requirement and often contain prohibited materials. Therefore do not feed any pet foods to ruminants.

Feed for non-ruminant animals may contain materials that are prohibited for ruminants. Make sure there is no cross contamination of the non-ruminant feed with ruminant feed, such as could occur during transport, storage, or by using common feeding equipment.

BSE-Related Feed Risks

Prohibited Feed

- Animal Digest
- Animal Liver
- Animal By-Product Meal
- Glandular Meal
- Extracted Glandular Meal
- Fleshings Hydrolysate
- Meat
- Meat By-Products
- Meat Protein Isolate
- Meat Meal
- Meat Meal Tankage
- Dried Meat Solubles
- Meat and Bone Meal
- Meat and Bone Meal Tankage
- Bone Meal, cooked
- Bone Meal, steamed
- Cooked Bone Marrow
- Mechanically Separated Bone Marrow
- Hydrolyzed Hair
- Hydrolyzed Leather Meal
- Leather Hydrolysate
- Stock
- Unborn Calf Carcasses
- Dehydrated Garbage
- Dehydrated Food Waste

This list may not be all inclusive. Definitions of these ingredients are available on the WSDA Web site at: http://www.agr.wa.gov/FoodAnimal/AnimalFeed/Publications/ProhibMatDefs.pdf

Renderers, protein blenders, and feed manufacturers are required to label products containing prohibited materials with the cautionary statement "**Do not feed to cattle or other ruminants."** Pet foods are exempt from this labeling requirement and often contain prohibited materials. Therefore do not feed any pet foods to ruminants.

Feed for non-ruminant animals may contain materials that are prohibited for ruminants. Make sure there is no cross contamination of the non-ruminant feed with ruminant feed, such as could occur during transport, storage, or by using common feeding equipment.

BSE-Related Feed Risks

Purpose & Scope

This regulation is designed to prevent the establishment and amplification of Bovine Spongiform Encephalopathy (BSE), sometimes referred to as "Mad Cow Disease," through animal feed. This regulation prohibits the feeding of all protein products derived from mammals except for:

- Blood and blood products;
- Gelatin;
- Milk and milk protein products;
- Pure pork protein products;
- Pure horse protein products; and
- USDA inspected meat products, which have been cooked, offered for human consumption, and further heat processed for animal feed.

Poultry, marine (fish) and vegetable protein products are not affected since they are not from mammals. In addition the following products are exempt since they are not protein or tissue:

- Grease
- Tallow
- Fat
- Oil
- Amino acids
- Dicalcium phosphate

Requirements for ruminant producers with on-farm feed manufacturing & mixing operations.

These additional requirements apply to producers that mix total mixed rations for their operation as well as to those operations that have the large facilities that look like a commercial feed mill. A total mixed ration for ruminants includes concentrates and forages mixed together.

Ruminant producers feeding total mixed rations and those with on-farm feed manufacturing and mixing operations are "feed manufactures" under the rule. If these on-farm "feed manufacturers" mix feed for non-ruminants using any prohibited materials they are required to keep records sufficient to track the prohibited materials throughout their receipt, processing,

and distribution. These records must be retained for at least one year and be available for inspection and copying. These records must include:

- Dates of receipt or purchase of prohibited material or ingredients containing prohibited materials.
- Name and address of the business the prohibited material was purchased from.
- Identification of the product containing prohibited material and quantity of material purchased.
- All feed transferred from the feed manufacturing facility to each of your animal feeding operations including feed name, dates, and quantities.
- Any feed sold to third parties from your manufacturing facility. These records are required to include feed name, dates and quantities of deliveries and the name and address of both you as the seller and the third party as the buyer.

Feeds that you produce that contain any prohibited material that do not remain under your immediate control must be labeled “Do Not Feed to Cattle or Other Ruminants”.

Please note that your ruminant feeding operation also must keep the same records as those ruminant feeding operations that do not have an on-farm feed manufacturing and mixing operations associated with them. See page 43 for record keeping requirements for all ruminant feeding operations that feed prohibited materials to any animals on the farm.

An additional requirement of on-farm “feed manufactures” is that if prohibited materials are used, then there must be written procedures to prevent cross contamination. You may use separation (dedicated equipment), clean-out (sweeping, washing, pressurized air, flushing, sequencing), or any combination that effectively prevents cross contamination. The written procedures

should include the procedures followed from the time of receipt of incoming material until the time of distribution of the finished product, including all transportation that may take place. These procedures are to reflect what actually happens in your operation. An investigator should be able to easily identify operations that are described in the written procedures.

Documentation for clean-out must include a description of:

- How clean-out is implemented;
- Who is responsible;
- How clean-out is monitored and verified;
- How the volume of clean-out flush material was determined; and
- How clean-out flush material is handled.

A dated and signed written record verifying that clean-out was actually performed according to the established procedure must be completed each time clean-out is required. For more information, see Additional Resources on page see Additional Resources on page 159.

On October 6, 2005 FDA published proposed updates to the current ruminant feed ban. FDA is currently reviewing comments received on this proposal. If the rule is adopted as proposed all of the current requirements remain in place plus there are some new requirements. The most notably for dairy operators and other ruminant feeders are:

- There is a new restriction on the amount of impurities allowed in tallow fed to ruminants (0.15 percent insoluble impurities -vs- no specification under current rule).
- Brains and spinal cords of cattle 30 months and older will not be allowed to be used as feed for any animal.
- The entire carcass of cattle not inspected and passed (by USDA) for human consumption, unless the brains and spinal cord are removed, will not be allowed to be used as feed for any animal. This will affect the disposal of animals that die on the farm – especially calves.
- Renderers will be required to label product that is prohibited from being fed to any animals with “Do not feed to animals”. Therefore ruminant feeders should never feed materials labeled “Do not feed to animals” as well as those labeled “Do not feed to cattle or other ruminants.”

Farm Security Planning

Farm Security

Since 9/11, agroterrorism has garnered more national attention than ever before. Eighty percent of the farmers who responded to a 2002 Internet survey indicated that they expect some form of agroterrorism to occur in the United States.

Security is becoming an important issue for farmers. Even though the risk of an attack on your farm is minimal, you should at least consider your vulnerability to criminal acts such as the following:

- Theft of anhydrous ammonia for methamphetamine production;
- Theft of farm equipment or chemicals;
- Arson, poisoning of your well, or the deliberate opening of a valve on a chemical tank;
- Criminal mischief involving unsecured equipment and machinery;
- Destruction of confined animals, property, or products;
- Destruction of bioengineered plants;
- Intentional introduction or release of a contagious animal or plant disease; and
- General vandalism.

These multiple threats are real and must be addressed by all farmers. If an incident occurs on your property, do not tamper with potential evidence such as footprints, dead animals or plants; report the incident as soon as possible. When reporting the situation, ask yourself “What should I do while I wait for responders?”

WSDA is responsible for protecting the safety of our state’s food supply. Food safety and animal health staff are trained and ready to respond if a natural disaster, accident or terrorist act

contaminates crops, jeopardizes animal health or threatens the safety of food in the marketplace.

WSDA works with local, state and federal agencies and the food and agriculture industry to help Washington's food industry prepare for emergencies. We have developed and disseminated recommendations that can be used to protect crops, animals, farmland, manufactured foods and beverages, fresh produce and animal feed, as well as fertilizers and pesticides.

Acknowledgment: The Purdue University published a Rural Security planning guide, from which WSDA borrowed information and data for the following farm security guide

Cover the Basics

This publication will help you develop a farm emergency plan that includes a farm map, a building contents list, and contact numbers for use in emergency situations. It presents strategies to protect your assets and lower your risk of falling victim to vandals, extremists, and terrorists. Attacks on your farmstead may seem unlikely, but you have to be prepared today more than ever before. Relatively simple changes or updates on your part can make the difference between:

- Life and death;
- Protection and destruction of property; and
- Chemical containment and contamination.

There may be many ways to improve safety and security of your farm. Take from these pages, ideas that are applicable to—and make the most sense in—your particular situation.

Farm Security Planning

Before taking action, ask a professional law enforcement officer to help assess your security issues. Ask your insurance agent to walk your farm and assess your risk potential; then ask them to review your coverage and incorporate whatever changes are necessary to address your needs.

Crime and Pollution Insurance Coverage

Do you have insurance coverage that protects against theft, vandalism, pesticide spills, and/or terrorist attacks on your farm? **If you don't know, find out now**. Don't wait until you have a claim and be shocked to find that your coverage is limited or nonexistent. You need to know, now, what would happen if:

- Your property was vandalized.
- A methamphetamine lab or other evidence of drug activity was found on your farm.
- A disgruntled employee was to spike your well with a chemical.
- WSDA was to quarantine your farm because of an infectious animal or plant disease.
- A trespasser was injured on your property.

Your policy may or may not cover all of the above circumstances; or it may cover some or all of them, with exclusions. Some policies contain clauses that specify no coverage or reduced coverage under specific circumstances. For example, electricity is essential for dairy operations with milking parlors for which, your insurance company may require you to have generators in place to keep the operation up and running and the cows milked during an extended power outage. Also, some policies state a specific time frame during which you must report a loss—and beyond which the insurance carrier is under no obligation to pay the claim. Be sure that you understand your own responsibility to prevent or report a loss.

Make an appointment with your insurance agent to review your coverage. It is important to discuss specific descriptions, exclusions, and amendments. If you have high-value crops or animals, make sure that your policy covers them above and beyond fair market value. Ask if enhancing or installing security measures would lower your insurance premium. Get everything in writing because there is no such thing as verbal confirmation. Insurance agents are human. They may unintentionally misinterpret the way a company writes your policy; or they may misunderstand your inquiry, leaving you with inadequate coverage or none whatsoever.

Review all notices and amendments that you receive from your insurance company. It is easy to lay them aside to read later, but do you always get around to it? A premium increase is the most common change that your insurance company will make, but other changes might be more discreet. For instance, your premium may remain the same—so there's no red flag—but the notice that you don't read may be to inform you that a portion of our coverage is being decreased or canceled.

Farm Security Planning

Emergency Information Mailbox

A permanently installed, well hidden mailbox can serve as an emergency information box. It should contain:

- A detailed map of the farm;
- A list of emergency contact persons, with phone numbers;
- Locations and amounts of hazardous chemicals stored on the farm, and material safety data sheets (available from your dealer or on the Internet) for each chemical; and
- A list of the major contents of each building.

Your emergency information box will be very important to first responders if an emergency situation occurs on your farm, but only you and the authorities should know where it is. Have the location entered into the computer database at your local 911 dispatch center, and personally inform your local fire and police chiefs. This places responsibility on department heads rather than officers or fire fighters who may or may not be among those responding to your particular situation. It is a good idea to keep copies of all materials stored in the information box at a second site on the premises; the farmhouse, a farm office, or an outbuilding.

Pesticides in One Location

The storage of pesticides and other farm chemicals is of major concern to emergency responders, and the number one thing that you can do to help them is centralize your chemical inventory. Store everything in one building and mark it clearly on your farm map so that responders can tell exactly where your chemicals are stored. Pesticides should be stored in an isolated building that is secured against theft and acts of vandalism and terrorism, fire-resistant (i.e., concrete block) construction is preferable.

Dispatchers should have your chemical storage location and your farm emergency response plan on file and readily available to police, fire, and Emergency Medical Services (EMS) personnel.

Emergency Responders Tour

A visit to the farm by local responders is good training for everyone. Invite fire department, law enforcement, and EMS personnel to visit your farm and identify the unique challenges it poses. Show them the locations of the following:

- Water mains;
- Electricity control boxes;
- Fuel and chemical supplies;
- Your emergency mailbox;
- Livestock barns; and
- Milking parlors.

The more emergency response personnel who participate in your farm review, the greater the chances that one of them will be the first responder if you actually suffer an emergency. Encourage fire fighters to write an emergency “pre-plan” for your farmstead since they are often the first to arrive.

Responders who take the tour may offer valuable suggestions for enhancing your farmstead safety and security. As one responder recently said, “I just go away with a good feeling. I know the place better and the individuals know me better, which makes them more willing to call for help in the event of an emergency.”

Farm Security Planning

Emergency Documentation

What's Visible, What's Hidden, and Whom to Call

It takes three steps to complete an emergency document that will help you deal with any type of emergency:

- Draw a map of the farm.
- Develop a list of contact names and numbers.
- List the contents of each building.

3 Steps to Documenting Your Facility for Emergency Responders

Farm Security Planning

The Farm Map: What You Will See

Mapping the farm sounds complicated, but it can be a simple sketch of the farm layout that identifies the buildings and key points in the surrounding environment. The goal of mapping is to:

- Acquaint employees, family members, and emergency responders with the layout of the farm.
- Show hazards that might be encountered.
- Help responders decide the best way to tackle a problem.
- Assess vulnerable areas outside the farmstead that could be affected during an emergency.
- Document assets for insurance and reporting purposes.
- Identify crops and fields that may be targeted by agroterrorists.

Draw a Map and Identify Vulnerable Areas

Farm Security Planning

Buildings & Contents:

Where Things are Stored

In some counties, 911 responders ask farmers to number each building and display the number prominently on each and every door. Cross reference the building numbers (on your farm map) with the common names of the respective buildings. Mark or describe the following with respect to each building and its contents:

- A rough floor plan.
- Occupancy: Are people, animals, equipment, supplies,grain, hay, tobacco, etc., normally inside?
- Valuable equipment inside that would make it particularly important to save the building.
- Building dimensions (approximate).
- Building construction date.
- Type of building construction: Slab? Crawl space? Wood trusses?
- Type of roof, windows, and floors.
- Chemical storage areas: types and sizes of containers. Keep inventories current.
- Chemical mixing and loading areas.
- Propane tanks.
- Compressed gas.
- Drums and contents.
- Indoor drains and where they lead.
- Types of equipment: motorized? Gas? Diesel?
- Vehicles stored inside.
- Manure pits in buildings.

Farm Security Planning

The Mischief-Maker

Many farmers have had crops, animals, or other property damaged for no apparent reason. Limited access, “no trespassing” signs, strategic lighting, stepped up patrols, neighborhood watches, and careful placement of equipment left in fields all help deter vandals and mischief-makers.

The Trespasser

The jogger, the artifact collector, the mushroom hunter, the dog walker, the snowmobiler, and even your next-door neighbor may represent a risk to your farm. They may trample your crops or damage fences; they may dump contaminated trash; they may be at risk from hunters to whom you have given permission to hunt. Would you be held liable in a court of law? Perhaps.

Depending on the time of year and field production activities, the risk to your crops and other assets—including your wallet—may increase or decrease.

The Thief

The most common crimes on the farm are fuel theft and the heist of high-dollar items such as tools, computers, fertilizers, tractors, backhoes, and pesticides. It is important to identify, document, and secure valuable items that might tempt intruders. And, it is particularly advantageous to conduct periodic vulnerability assessments.

Keep tabs on your inventory. Maintaining accurate records will alert you to deficits that might otherwise go undetected. Conduct an in-depth audit to see what needs to be insured and secured. Record all vehicle identification numbers and license plate numbers. Videos, scanned documents, and photographs stored off-site can be extremely important in assessing the value of lost or damaged goods.

Farm Security Planning

The Narcotic Entrepreneur

Drug-related incidents such as theft of anhydrous ammonia from isolated nurse tanks have increased dramatically. While your actual monetary loss may be minimal, damage to the tanks and the consequences of an ammonia release can be significant.

Consult your local anhydrous ammonia supplier and devise a plan to minimize the time that you actually have anhydrous tanks on your farm. Always be on the lookout for signs of tampering, and call the sheriff's office to report anything suspicious. Getting law enforcement involved is critical if suspects are to be apprehended.

Drug makers often leave a trail of crude collection devices, lithium batteries, mason jars, chemicals, and other drug paraphernalia. This type of litter scattered across the ground or in barns and buildings may pose a real threat to human safety and cleanup can be costly. If it happens to you, do not attempt to clean up the mess yourself. Ask the state police for assistance. They have specially trained technicians to do the job, and there may be state or federal grants available to pay for remediation.

The Disgruntled Employee

A disgruntled former employee can be a serious threat to your farm security as well as the safety and well-being of others on the premises. His familiarity with the farm and its security strengths and weaknesses make it easy for him to access critical areas. Current employees might allow him to enter, not knowing that he is holding a grudge, or he may even have keys!

Any disgruntled employee should be considered a potential threat for workplace violence. Ask your insurance agent about an endorsement called "Employee Dishonesty Coverage" that can be purchased to cover losses caused by current or former employees. If you are concerned about a former employee, re-evaluate security and consider modifications such as changing locks and routine inspection times.

Hiring a New Employee

Anytime an employee voices a complaint, meet with him privately and listen closely and open-mindedly to his concerns. Even if you can't change the situation, listening goes a long way toward deterring retaliatory actions by a disgruntled employee.

In order to protect your assets and ensure a safe, secure work environment, you need to know more about a new hire than what he or she puts on an employment application. Make sure you:

- Complete a pre-employment background investigation on each applicant whom you consider hiring.
- Check criminal records back seven years for all counties of employment and residence.
- Trace his social security number to verify the number and places of residence.
- Check driver's license records if the employee will be driving your vehicles.
- Check his or her immigration status as determined by form I-9.
- If the employee will have access to money, computers, records, etc., a more detailed background check is necessary.

All background investigations must be in compliance with the Federal Fair Credit Reporting Act as amended by the Consumer Credit Reporting Reform Act of 1996. Outside firms can be hired to conduct these investigations in compliance with the law.

Farm Security Planning

The Computer Hacker

Computer terrorists can destroy years worth of your data in a matter of minutes. Cyber-terrorists can make it difficult for you to plan for the future by destroying your records of the past. But modern technology provides simple, inexpensive ways to back up your records as a safeguard against such a loss.

Work with your computer service provider to be sure that your computer has adequate protection, and back it up at least once a week, no exceptions! File hard copies of critical information and important records outside your home or office. Designate a safe place at a remote location and maintain it diligently so that it is always up-to-date.

The Homegrown Extremist

Extremists are not activists who protest by writing letters to the editor, push for legislative reforms, or assemble peacefully to protest government policies. Instead of working through appropriate channels to effect change, extremists resort to criminal acts such as trespassing, burning buildings, and releasing animals from captivity.

Extremists may plan criminal acts in the name of a cause, but they normally lack the skill to deal with well-planned security systems. They look for soft targets such as farms and facilities where there is little or no security, where fields or buildings are essentially out-of-sight, or where security measures are lax. Even where security exists, extremists sometimes will attack if they deem their intent worth the risk of getting caught. They tend to work in specific geographical areas and with specific types of production (dairy, poultry, swine, etc.). Review your operation with an informed county sheriff or state police officer to find out if your farm is at risk.

If you implement extra safety and security measures, ask your insurance agent for a premium reduction based on your efforts to protect yourself against loss—and your insurance company against having to pay a claim.

The Terrorist

The terrorist has political or idealistic goals. His focus is on accomplishing his mission, even if there is a good chance that he will get caught. His actions are planned and coordinated, which often are carried out by skilled, trained—and perhaps armed—adversaries. Security measures that normally deter vandals, petty thieves, and fringe extremists likely will not deter terrorists, so plan your security measures accordingly.

Terrorists are bent on doing extensive damage to agricultural production and processing facilities. Their goals are to undermine public confidence in the safety and reliability of the nation's food supply, to wreak large-scale economic havoc, and to generate political instability. While the direct physical risk to individual farm operations is low, the impact of an attack on a large region or the entire country could be devastating.

You can deter their efforts by using good judgment in conducting your farm operation, by being aware of visitors to your farm, and by scouting for unusual crop or animal disorders. Vigilance is imperative. The USDA Web site contains information on and images of symptoms of exotic plant and animal diseases (http://www.aphis.usda.gov).

In today's changed world, you, the farmer, must implement security measures to protect your farm, your family, and your neighbors. You must do your part through preparation and planning to prevent potential attacks.

Security Planning in a Nutshell

Minimum farm security is a must, and your first step should be to determine and understand the real threat to your property. Ask yourself, what needs to be protected? Then consider the Three Ls: Lock, Light, and Limit access—in that sequence. Don't make the mistake of installing a protection system and implementing security measures without identifying what is most at risk – doing so could prove costly, ineffective, and/or inadequate.

Prioritize Assets and Security

What processes and operations are essential to the survival of your farm? That is, what are your critical assets? What would be the consequences of losing them? Prioritize your critical assets and your application of security measures to protect them.

Farm Security Planning

Security Strategies and Measures

An effective physical protection system is based on three basic principles: **deterrence, detection, and delay**.

Deterrence

Lighting a dark area may deter the would-be intruder who is simply not bold enough to risk being seen. Motion-activated lighting provides an element of surprise and can catch a perpetrator off guard. Other deterrence strategies include the installation of gates, fences, and “no trespassing” signs.

Detection

The purpose of a detection system is to alert you when someone enters your property. Devices such as electronic sensors and cameras can be very effective. Also, visual surveillance by employees and neighbors providing heads-up observation and awareness are hard to beat.

Delay

Delay strategies are meant to slow and disrupt the perpetrator's attempt to access your property. Physical barriers such as locks, fences, doors, and distance from the road are effective in delaying the intruder, but it is important not to hinder access for emergency responders or routes for evacuation. Effective delay tactics allow enough time—between detection and access—for law enforcement officials to respond and catch the intrusion in progress.

Relative Cost of Security Measures

Operational security usually doesn't cost a thing. If you don't have a security plan in place, start by gearing procedures toward protecting your assets. Educate your employees and family members to always be aware of their surroundings and what is going on around them. Alert them to assets that an intruder might want to damage, destroy, or steal. Make security a part of everyone's job.

Electronic security systems—alarms, access controls, video surveillance, and motion sensors—can be expensive, but the cost is justified by the protection they provide. Physical security barriers such as fences, gates, locks, and security doors are relatively inexpensive by comparison, and they, too, are worth the investment.

Protecting Information and Counter-Intelligence Measures

- Protect sensitive business information.
- Do not put your name on the mailbox.
- Place some lights and televisions on timers.
- Inform local law enforcement agencies when you will be away for an extended time.
- Notify a trusted neighbor of a planned extended absence, and leave a phone number and an address where you can be contacted.
- Do not discuss or advertise what you grow.
- Do not buy chemicals, fertilizers, equipment, or livestock at reduced prices from people you don't know.

Farm Security Planning

Physical Protection Procedures

- Conduct an inventory of important assets. Review your inventory regularly.
- For valuable items without serial numbers—or with numbers that are easily defaced—add an identifying mark of your own in a discrete location. Photograph the mark and give it to your insurance carrier; keep duplicate copies with your own records.
- You or a designated, responsible employee should always be present when deliveries are made to your farm.
- In coordination with emergency responders, develop and participate in realistic security training exercises. Develop and enact exercises that test the ability of your physical protection system to deter, detect, and delay a simulated intrusion.
- Post “No Trespassing” signs along property lines and maintain them perpetually.
- Post signs announcing the presence of alarms, detectors, or surveillance devices.
- Lock or remove valves on pesticide or fuel tanks when not in use.
- Store important papers in locked, fireproof cabinets—but remember that fire-insulated cabinets designed to store paper records do not provide protection for computer discs.
- Conduct background checks on all employees.
- Establish a check-in point for all farm deliveries.
- Designate a vehicle parking area and an access area for outside contractors.

- Establish checklist procedures to ensure that access and authorization are terminated for employees who leave your employment.
  - Collect keys, credit cards, identification cards, and other means of access to your assets.
  - Change your Personal Identification Numbers (PIN) if necessary.
  - Change passwords or codes on alarm systems, locks, keys, etc.
  - If an employee is fired or quits without notice, notify the employee in writing, via mail that he/she is not to enter your property without your prior authorization or without an appointment.
- Move valuable equipment into a locked building at night or when not in use.
- Don't leave any equipment accessible to intruders for use to accomplish their mission: a forklift, a front-end loader, a crane, wenches, etc.

Lock & Key Control Procedures

Most farms depend on lock and key systems for access control, but the effectiveness of locks is dependent upon key control. Without effective key control, locks are useless.

- Keep a record of all locks and keys stating how many keys there are and who has the keys.
- Require employees to sign for keys, and inventory all keys periodically.
- Keep critical control records for keys and spare keys locked in a safe or another secure location.
- DO NOT HIDE KEYS!
- Issue keys to employees only as needed.

- Avoid or limit the use of master keys.
- Use high-security locks are pick-resistant, and keys that are embossed by the manufacturer with, “Do Not Duplicate.”
- Valuable items should be secured with a lock and a built-in, programmable keypad.
- High security padlocks should have case-hardened steel shanks, and they should be tamper-resistant.
- Cables are not high-security. They do not protect. They merely help ensure the integrity of the lock or locked access.
- Use the same brand-name lock throughout your lock system to make detection of unauthorized locks more apparent.
- Periodically inspect padlocks to ensure that replacement locks have not been introduced, and look for signs of tampering.
- Do not leave keys in unattended vehicles parked outside overnight or for extended periods.

Electronic Security: Alarms, Access Control, Video Surveillance

If recommended as a result of a credible security assessment, install electronic security devices to improve detection, delay, and response. Electronic systems and devices suitable for and applicable to farmsteads include the following:

- Switches activated by the opening of doors, gates, lids, etc.; motion sensors that light an area when movement is detected; video recorders that are activated by motion; and electronic access controls.
- Electronic card access controls, rather than keyed locks, should be used to restrict access where valuable assets

are stored. An important feature of electronic access is computerized control in selecting and assigning access levels and time when various cardholders' cards can be used.

- Video surveillance systems consist of cameras, monitors, and recorders. The most effective use of video is its integration with intrusion detection devices such as motion sensors.

Alarms can be monitored at the farm or at approved, off-site alarm monitoring stations. In addition to signaling a monitoring station and perhaps your computer, an activated alarm might trigger lights and sirens and/or place an automatic call to your cell phone.

Reporting Security Events to Authorities

Crimes do occur, and your goal and focus should be on preventing them.

Farm Security Planning

The following recommendations involve your actions relative to suspicious activities, crimes, and crime scenes:

- Keep employees up-to-date on any increased criminal activity within the community and in surrounding areas, and instruct them to report suspicious people or occurrences to you immediately. Notify them when you are expecting suppliers or visitors to the farm.
- Keep a record of all observations and reports of suspicious activities.
- Walk around buildings and along fence lines to look for signs of trespassing and unusual activity.
- When reporting a crime or suspicious activity to the police, report **WHAT** you saw, **WHO** you saw (description of persons involved), **WHEN** (date and time) you saw it, **WHERE** you saw it, and **HOW** the perpetrators might have accessed the area.
- After you contact the police, call your insurance representative to report any damage or loss resulting from the incident. Photograph damage to your property and take steps to prevent further loss.

The Security Conflict: Sharing Sensitive Information

Fire emergencies require full disclosure to responders, while the details of security measures in place to prevent criminal activities should be kept confidential. There is a fine line between informing emergency responders—via emergency mailboxes, labeling of buildings, detailed maps of the farm, etc.—and preventing intruders from gaining that same information.

After planning a physical protection program, conducting vulnerability studies, establishing procedures, designing and installing security systems, and documenting all of this information for possible use by emergency responders, it

would be frustrating and potentially catastrophic to have it compromised by falling into the wrong hands. Your main concern should be to avoid compromising your physical protection system while not impeding emergency response personnel.

Discuss the dilemma with your fire chief and law enforcement officials who have access to your security information (or would have in the event of an emergency). Ask that they safeguard critical security information to avoid compromising your assets. Your concern about exposing your physical security measures should be based on the relative risk that you face.

A solution to keeping your confidential information secure yet readily accessible to emergency responders is to purchase and install a Knox Box®. This is a specially designed, locked metal box which can be positioned at or near the entrance to your property. It can be opened only with a key that you provide emergency responders. The box itself would contain keys to all of your buildings. Be sure to include the exact location of your emergency plan along with the key that unlocks the respective building.

The Knox Box is weatherproof and can be equipped with an alarm if an intrusion alarm system is in place. A stand-alone alarm horn or strobe could be installed to sound or light the area when the box is opened by an unauthorized person. The Knox Box allows fire departments and emergency responders to gain immediate access to emergency information on farms and at businesses, factories, warehouses, etc., nationwide. A large Knox Box can be used in place of an emergency mailbox for secure storage of plans and other documents as well as keys.

Think seriously about your specific concerns. Which problems concern you the most? Do you want to protect your farm against emergencies such as fire? Do you want to reduce your vulnerability to vandals, extremists, and terrorists? These are not either or propositions.

Conclusion

Give serious thought to emergency preparedness and physical security on your farm. With just a little preplanning on your part, emergency responders can access information that will allow them to quickly, efficiently, and effectively deal with any emergency on your farm. But the efficiency of their response depends on the information that you make available to them: generally, the more, the better.

Quite simply, responders need to know what's there, what it can do to them, what they can do to reduce the risk, and how they can minimize further damage to your assets. The more information they have, the quicker they will be able to effectively reduce the risk to you, your family, your property, and your community.

Because of the potential danger posed by extremists and terrorists, farm security issues are of concern to farmers, agricultural associations, law enforcement officials, and federal agencies such as the United States Department of Agriculture, the Environmental Protection Agency, and the Federal Bureau of Investigation. Farm security awareness and education are critical components of our overall effort to shield the farm against criminal intent.

There are viable economic reasons for farmers to plan for emergencies and exercise measures to curb criminal activity

on the farm. Heeding recommendations in this publication will reduce your vulnerability, and the implementation of security measures to minimize your risk might also reduce your insurance premiums.

You've invested untold time and energy to make your farm profitable, so make a commitment to increase your margin of safety. Making a few modifications and planning for what could or might happen will guard the safety and future of your biggest assets of all: your family, your friends, and your farm.

Emergency Contacts
call 911 first!

	Contact Person	Day Phone	Evening Phone	Cell Phone
Family Members				
Employees				
Neighbors				
Friends				

Farm Security Planning

Emergency Contacts
call 911 first!

Fire Department: _____

Sheriff / State Police: _____

Local Emergency Planning Committee: _____

Physician: _____

Poison Control Center: _____

Local Insurance Agent: _____

Local Veterinarian: _____

State Veterinarian: _____

Attorney: _____

National Response Center: _____

Electric Company: _____

Telephone Company: _____

Water Company: _____

Gag / Diesel Supplier: _____

Propane Supplier: _____

Utility Location Services: _____

Dairy Supply Route Truck: _____

Hay & Grain Dealers: _____

Equipment Dealers / Repairs: _____

AI Services: _____

Pesticide Dealer: _____

Anhydrous Ammonia Supplier: _____

Drought Management

Introduction

Drought has always been a feature of Washington's climate and it appears to be occurring more frequently. The state experienced its second driest year on record in 2001—and in every year since, the state has encountered at least one season with unusually dry weather conditions.

Agriculture is the industry most heavily affected by drought. The state's food and agriculture industry support more than 180,000 jobs around the state and generates 13 percent of the state economy. Almost 70 percent of Washington's crop value ($3.6 billion) comes from the 27 percent of harvested crop land that is irrigated.

Declaring a drought emergency activates an emergency response by the Department of Ecology and other state agencies to help communities, businesses and farmers that will be affected by the drought.

When a drought is declared, everyone in the state is directly or indirectly affected. A drought can result in farms and manufacturing plant workers losing their jobs and farmers not being able to plant crops.

Drought Management

Frequently Asked Questions
Drought 2005

Q1: How can I get current information about drought conditions in Washington?

A1: The Department of Ecology has launched a Washington Water Supply Web site at: http://www.ecy.wa.gov/programs/wr/ws/wtrsuply.html. The site provides a wide overview of drought-and fire-related information including:

- Emergency water right activities by the Department of Ecology, U.S. Bureau of Reclamation, Yakima Nation and other entities.
- Other state and federal agency drought response actions.
- Current water supply conditions.
- Workshops and public meetings.
- Applications forms for drought permits.
- Water conservation – actions homeowners, businesses and farmers can take to use water wisely.
- Drought laws and regulations.
- Drought contacts at state agencies.

Q2: When was Washington's worst drought on record?

A2: 1977 was the state's worst recorded drought year.

Q3: Before 2005, how many times has Washington declared a drought emergency?

A3: We've had state-declared drought emergencies in 1977 (statewide), 1992 (regional), 1994 (regional) and 2001

(statewide). There have not yet been a federally-declared drought disaster in Washington State.

Q4: Were we better prepared for a drought in 2005 year than we were in 2001?

A4: Yes. Since the last statewide drought emergency in 2001, the state has invested millions of dollars in water storage studies, water-use efficiency projects, replacement of leaky water pipes and ditches with state-of-the-art systems to enhance water supplies where needed, and installation of systems to reuse treated wastewater.

Q5: What are the state's priorities in responding to a drought?

A5: Under the state's comprehensive emergency management plan, the Department of Ecology has the lead role for responding to drought. The department has developed a specific drought-contingency program that focuses on:

- Maintaining crucial energy supplies;
- Aiding state agriculture;
- Protecting public water supplies;
- Safeguarding stream flows for fish; and
- Preparing to fight fires.

Q6: What kinds of conditions does Ecology look at in deciding whether to declare a drought?

A6: It's important to distinguish between a "drought" and a "state drought emergency." Under state law, Ecology must apply a two-part test before a drought emergency can be declared:

- An area has to be experiencing, or expected to experience, less than 75 percent of normal water supplies; and
- An area must be expected to suffer undue hardships as a result of the dry conditions.

By early March, it was determined that both situations existed for much, if not all, of the state. On March 10, 2005 Gov. Christine Gregoire gave written authority for Ecology to declare a statewide drought emergency.

Q7: What are considered to be "undue hardships?"

A7: Hardships could include crop failures, low stream flows that could kill fish, and possible shortages of municipal water.

Q8: What types of hardships occurred in 2005?

A8: The severe water shortage in the Yakima River basin created a hardship for many farmers and other water users. Ecology worked with the state Department of Fish and Wildlife, U.S. Bureau of Reclamation, Yakima Nation, irrigation districts and other water users to help transfer water from senior to more junior water-right holders. This "water-right transfer group" made recommendations to a Yakima County Superior Court judge who has final say on surface-water transfers in the Yakima basin.

Q9: In a practical sense, what does a "declaration of drought emergency" *mean?*

A9: As the lead drought-response agency, Ecology can, in an expedited fashion:

- Authorize temporary transfers of water rights – to help redistribute water to more-critical uses.
- Permit previously-drilled emergency wells to be used.
- Permit new emergency wells to be drilled or allow the use of alternative sources of water.
- Issue temporary water permits to expand capacity on existing wells.
- Purchase and lease water rights.

Q10: Will every application automatically be approved?

A10: No. Water must be available, and we can't approve an application that would impair the water supply for a senior water-right holder. For the most part, we will manage the drought by transferring existing valid water rights rather than issuing permits for new water withdrawals.

Q11: What can I do right now to conserve water at my home?

A11: There are many things you can do to use water wisely. For example, here are some things you can do outside to save water around your home:

- Consider converting to low-water landscaping.
- Select the right plants for the right place and choose plants, shrubs, and trees that need minimal water.
- Consider drip irrigation for plants, shrubs, and trees.
- Water your lawn early in the morning or later in the evening and be mindful when it's windy. The water you're using may not be getting to your plants and garden.
- Limit the water you use to approximately one inch per week, including rainfall. For best results, moisten the soil between 4 and 6 inches deep with each watering.
- Here are some things you can do inside your home:
  - Take shorter showers.
  - Don't let the water run when you are shaving, brushing your teeth, or hand washing dishes.
  - Turn on the tap only when you need it.
  - Don't use faucets at full pressure.
  - Make sure you have a full load before running your washing machine or dishwasher.
  - Convert to water-efficient toilets, faucets and showerheads. Check with your local utility; some offer free or give out rebates toward the purchase of water-efficient shower heads and faucet aerators.

Q12: What can I do right now to conserve water at my business?

A12: There are many things you can do, for example:

- Update your cooling and refrigeration systems.
- Invest in water-efficient laundry equipment.
- Install water-efficient toilets and urinals.
- Move to low-water use landscaping and irrigation systems.

Q13: I live in an area where there are no public water suppliers. I get my water from a well. What do I do if my well has problems, like going dry, during the drought?

A13: Contact your local health department in the county the well is located for problems with wells or wells going dry. For problems with groups of wells, contact the state Department of Health.

Q14: Can farmers and cities start using the emergency wells they drilled during previous droughts?

A14: First they must submit an application to Ecology. The department will make a decision within 15 days. For each application, the department will have to determine whether withdrawing water from a particular well would impair the water supply for any senior water-right holders this year. Ecology already has approved more than 70 drought-related requests to reactivate an existing emergency well or have new ones drilled.

Q15: Why are low stream flows bad?

A15: Low levels of flowing water in our streams and rivers can:

- Restrict fish passage and degrade habitat.
- Raise water temperatures.
- Degrade water quality by concentrating pollutants.
- Affect recreational activities like fishing and boating.
- Impact farmers and other people who rely on taking water directly from a river or stream for irrigating crops and other uses.
- Indicate that underground (ground) water levels could be dropping, too.

Q16: Can low stream flows on the surface cause problems with levels of underground (ground) water?

A16: It can, depending on how underground water is replenished in a particular area. Many factors affect how ground water is recharged, including soil type, topography, the number of withdrawals by wells, how much an area depends on melting snow or rain to recharge an aquifer, etc.

Q17: Where can I get a rain barrel?

A17: Check with your local hardware store or nursery. Ecology does not provide rain barrels and does not keep information about where to get them.

Q18: **I've heard that to use a rain barrel on my property that I need to first get a water right from Ecology. It that true?**

A18: The Department of Ecology is not requiring that people obtain a water right for water barrels, especially if the captured rain will be used on an individual's property for outdoor uses such as watering landscape or a garden.

Q19: Are there any state grant programs to help businesses that have economic trouble because of the drought?

A19: The Department of Community, Trade and Economic Development (CTED) has a few loan and grant programs and other technical assistance that may be available to businesses and communities during a drought emergency. There are a lot of variables, so it's best to contact CTED directly if you have questions.

There are no grant programs available through the state Department of Agriculture to provide drought assistance to farmers.

Q20: Are there any federal funds available to help farmers or other types of businesses?

A20: If a federal disaster declaration is made by the President, farmers are eligible for federal low-interest loans. In that event, the U.S. Small Business Administration will also declare an associated "economic-injury disaster" and provide low-interest loans to other businesses affected by the crop losses.

Q21: Are there special unemployment programs for workers who lose their jobs because of the drought?

A21: Only if the President declares a disaster, which must be at the request of the Governor, will the Disaster Unemployment Assistance Program provide special assistance. Workers who lose their jobs as a result of the disaster can qualify for federal disaster benefits if they do not qualify for benefits under the state's regular unemployment insurance program.

- To learn more about the federal Disaster Unemployment Assistance Program, visit the federal Web site:

  http://ows.doleta.gov/unemploy/disaster.asp

- For more information about the state program, please contact your local Employee Security Department office or go to the state Web site:

  http://fortress.wa.gov/esd/portal/unemployment/

Human Health Risks

Mitigating Human Health Risks

Milk production has traditionally been a viable and important part of Washington State's economy and community. While it is possible to produce safe, disease and pathogen free milk, it is impossible to guarantee that such a state is achieved. Foodborne illness outbreaks associated with milk and milk products continue to occur every year. Strive to protect your milk from being involved with an outbreak through sanitary processing, maintaining proper cooling, not allowing others to remove milk from the farm without the proper license, and working with your Food Safety Officer to recognize potential hazards and address areas where contamination could occur.

Should the dairy industry be concerned about food safety? You bet, and here are several good reasons:

- Bulk tank milk contains several foodborne pathogens that cause human disease;
- Outbreaks of disease in humans have been traced to the consumption of raw;
- Unpasteurized milk and have also been traced back to pasteurized milk;
- Raw unpasteurized milk is consumed directly by dairy producers and their families, farm employees and their families, neighbors;
- Raw unpasteurized milk is consumed directly by a much larger segment of the population via consumption of several types of cheeses including ethnic cheeses manufactured from unpasteurized raw milk;
- Entry of foodborne pathogens via contaminated raw milk into dairy food processing plants can lead to persistence of these pathogens in biofilms and subsequent contamination of processed food products;
- Faulty pasteurization equipment or processes will not destroy all foodborne pathogens; and
- Pasteurization **MAY NOT DESTROY ALL** foodborne pathogens in milk.

Human Health Risks

WSDA understands that producing clean, safe food is as much your goal as it is ours. It is the goal of the WSDA Food Safety Program to help the dairy industry maintain a safe and clean, quality milk supply.

Milk Producer's Roles and Responsibilities

If you are a licensed milk producer in Washington State, then you are most likely very familiar with WSDA's Food Safety Program. If you are just starting up your dairy, you will need to work with this program when getting licensed. Licensing is required anytime the milk produced on your farm is sold or given away to anyone outside your immediate family including distributing, dispensing, delivering, supplying, trading, bartering, offering as a gift as in inducement for sale of, and advertising for sale in any media.

As a producer, your Food Safety Officer (FSO) is your main contact with WSDA. FSOs are assigned to geographical areas throughout the state. They are trained in the field of milk sanitation and production and are qualified to help identify problems that can affect the safety and quality of your milk. It is their responsibility to provide technical assistance when needed to help you remain in compliance with State and Federal regulations. Please keep in mind the following:

- Milk Producer requirements are in effect 365 day a year – not just during regulatory inspections. By performing self-inspections and maintaining your facility, you will help ensure you are within compliance.
- The consuming public is depending on industry to produce a wholesome, safe, high-quality product. You, as a producer, are the first step in this process.
- The WSDA Food Safety Program will work with you in a cooperative way to ensure the public interest is protected, and your products have unrestricted market access.

It's true, gone are the days of the basic, one-page application form. These new documents also need to be included when you apply for a license:

- **A farm diagram layout**. Farm diagram layouts will assist the FSO when determining the risks associated with your production and finding the proper wells, etc. Using the layout plans to create a map of product and foot traffic flow will help identify potential concerns of cross-contamination. This method is used for tracking human traffic through the facilities as well as animal traffic throughout the farm. This can be a great resource for on farm pathogen control.

- **Animal herd health testing results** (when applicable). The State Veterinarian establishes animal herd health testing requirements based on current animal health concerns. Many animal health issues have direct links to human health, as consumers and as employees. More information on the animal health testing can be found on page 34.

- **Water test results**. Water must be tested for total coliform counts prior to a license being issued. Additional information on water testing requirements and public health reasons are on page 92.

Routine inspections are typically conducted not more than every four months and not less than every six months. When a dairy producer's standards are consistent with or exceed the regulations, routine inspections evolve into a visit to the facility to help identify problems, which will help the dairy producer provide a higher quality product for their customers. Good dairy practices and trained employees should produce satisfactory inspection results and an excellent rapport between the inspector and the milk producer. The receptive and cooperative dairy farmer will discover that the FSO may have practical solutions to some of your vexing problems.

Human Health Risks

Foodborne Illness Prevention

Whenever a dairy product is involved with a foodborne illness outbreak, it affects the whole dairy industry. Learn how best to protect your farm as well as your neighbors by doing your part in preventing foodborne illnesses. Develop a Hazard Analysis and Critical Control Point (HACCP) plan with your FSO so that you can identify areas of risk and best controls for those risks. This may include developing a map of foot traffic to see where cross-contamination could occur or developing a no-tolerance policy for employees taking milk. Your HACCP plan will depend on your final market and does not need to be heavily detailed in order to be useful.

Microscopic view of E. coli

The origin of foodborne pathogens can be from excretion from the udder of an infected animal, or through direct contact with infected sources in the environment. Most foodborne pathogens inhabit the ruminant intestinal tract, and therefore, dairy cattle are considered a major reservoir of *Salmonella*, *Campylobacter,* and *Shigella-toxin* producing *E. coli*. *Listeria* species are widespread in nature and live naturally in plants and soil environments. Epidemiological studies have shown that cattle probably get infected through consumption of water and feedstuffs contaminated with feces and other cattle secretions/ excretions. Presence of foodborne pathogens in bulk tank milk seems to be directly linked to fecal contamination that occurs primarily during the harvesting of raw milk, however, some foodborne pathogens can cause mastitis in which the organism was directly excreted into milk. (Arizcun et al., 1998; Roberts and Wiedmann, 2003; Wong, 1998).

Human Health Risks

These are some of the human and animal pathogens that we are concerned about: Salmonella, Listeria monocytogenes, E.coli 0157:H7, Campylobacter jejuni and Staphylococcus aureus.

Salmonella: Human salmonellosis has also been linked to ingestion of raw milk contaminated with *Salmonella*. Patients reported signs and symptoms of illness, which included diarrhea, cramps, fever, chills, body aches, bloody diarrhea, nausea, vomiting, and headache.

Listeria monocytogenes: *Listeria* species are widespread in nature and live naturally in plants and soil environments. It can grow in a wide range of temperature and pH. This adaptability enables *Listeria* to grow in refrigerated raw milk and in low quality silage with a pH > 4.5. At high bacterial concentrations, *L. monocytogenes* can survive minimum HTST pasteurization (Bunning et al., 1988). It can cause mastitis in cows and it can be shed in milk of carrier asymptomatic cows. Human contamination occurs through consumption of raw milk or products manufactured with raw milk or through ingestion of processed food cross-contaminated with pathogens present in the food processing plant environment (Gravani, 1999). In cattle, *L. monocytogenes* can cause neurological disease, abortion, or no symptoms of disease. Healthy, but infected animals, shed *Listeria* in feces and fecal contamination of pastures or vegetables was incriminated as a source of contamination for humans and ruminants. Therefore, spreading of untreated manure onto pastures and cropland was regarded as a risk factor for *Listeria* foodborne disease.

E.coli O157:H7: While it does not make the animals that carry it ill, E. coli O157:H7 bacteria is believed to mostly live in the

intestines of cattle. Several reports indicated that cattle are a major reservoir of Shigella-toxin producing E. coli and feces was the main vehicle for contamination of raw food (milk and beef) produced on dairy farms. Identified as risk factors for infection and shedding of *E. coli* O157:H7 by cattle include diet, age of cattle, management of manure and fecal slurry, contaminated animal drinking water, and management of pre-and post-weaned calves. Especially important is the use of manure as a fertilizer or contaminated water to irrigate field crops. Contaminated manure and irrigation water were probable vehicles for the pathogen in many human disease outbreaks. E. coli O157:H7 causes a diarrheal illness that results in painful abdominal cramping, nausea, and bloody diarrhea. Five to ten percent of children who become ill with E. coli O157:H7 infections develop hemolytic uremic syndrome (HUS), a complication that can cause kidney failure as well as damage to the pancreas, liver, brain, and heart (see www.about-hus.com). Children with HUS can develop medical conditions such as high blood pressure or diabetes, and often require medical monitoring and treatment throughout the rest of their lives.

Campylobacter jejuni: Humans get infected through ingestion of untreated water, contaminated non-pasteurized milk, and milk not properly pasteurized (Evans et al., 1996; Fashey et al., 1995). *Campylobacter jejuni / coli* are excreted through feces and animal secretions and dairy cattle get infected through ingestion of water and feeds contaminated with manure. It can cause mastitis in cows and it can be shed in milk of carrier asymptomatic cows. Direct milk excretion of *C. jejuni / coli* by clinically healthy cows has been described and implicated in the etiology of human enteritis following consumption of contaminated milk (Orr et al., 1995). Large

outbreaks due to *Campylobacter* have been associated with drinking unpasteurized milk or contaminated water. Cow manure is a principal reservoir and farm practices using manure as fertilizer on cropland are considered a risk factor for occurrence of *Campylobacter* foodborne disease.

Children, the elderly and people who have compromised immune systems are the most susceptible to illnesses after exposure to many of these pathogenic organisms. Proper herd health, cleaning and sanitation measures and prevention of cross-contamination are important public health measures that prevent and reduce exposure. You play a key role!

Since most outbreaks occur in conjunction with illegal activities, learn the requirements and work with your FSO to meet them. The table on page 102 explains the various licenses required for selling your milk. Obtain all necessary licenses before you distribute any of your products.

Inspection Violations

WSDA milk producer licensing and inspection standards are based on Washington State laws and rules, and also relevant sections of the National Conference of Interstate Milk Shippers (NCIMS) Pasteurized Milk Ordinance (PMO). The milk producer inspection criteria and debit values have established points for each violation. The debit values range from one to five points and critical. The critical violations are those violations that: result in product adulteration that could cause injury or illness in consumers; or that have the potential to contribute to conditions resulting in such adulteration. There are five critical violations and knowing the public health concern behind the violations will help you understand better how to prevent them.

Human Health Risks

Critical Violations

Item 1A:
Abnormal Milk

Requirement: Cows secreting abnormal milk are milked last or in separate equipment.

Public-Health Reason: The health of your lactating animals is very important because a number of diseases may be transmitted to man through milk, including salmonellosis, staphylococcal infection and streptococcal infection. The organisms of most of these diseases may get into the milk either directly from the udder or indirectly through infected body discharges which may drop, splash or be blown into the milk. Bovine mastitis is an inflammatory and, generally, highly communicable disease of the bovine udder. Usually, the inciting organism is a streptococcus of bovine origin (type B), but the disease is often caused by a staphylococcus or other infectious agent.

Occasionally lactating animal's udders become infected with hemolytic streptococci of human origin, which may result in milk-borne epidemics of scarlet fever or septic sore throat. The toxins of staphylococci, and possibly other organisms in milk, may cause severe gastroenteritis. Some of these toxins are not destroyed by pasteurization.

Item 8b and/or 8c:
Water Supply

Requirements:

(8b) Complies with bacteriological standards.

(8c) No connection between safe and unsafe supplies; no improper submerged inlets.

Public-Health Reason: A polluted water supply, used in the rinsing of the dairy utensils and containers, may be more dangerous than a similar water supply, which is used for drinking purposes only. Bacteria grow much faster in milk than in water and the

severity of an attack of a given disease depends largely upon the size of the dose of disease organisms taken into the system. A small number of disease organisms consumed in a glass of water from a polluted well may possibly result in no harm. Whereas, if left in a milk utensil, which has been rinsed with the polluted water, bacteria may after several hours' growth in the milk, increase in such numbers as to cause disease when consumed.

These key areas should be reviewed for possible violations:

- The water supply system shall be constructed and maintained to prevent contamination.
- Cross-contamination can occur regardless of whether the system receives water from a groundwater source or from a surface water source. Sources of cross contamination are underground water leaks, submerged supply lines, gutters, feces, unsafe water in water troughs, and sanitizer injection pumps.
- Plumbing cross-connections are defined as actual or potential connections between a potable (drinkable) and non-potable water supply. Dairy farm water supplies can become contaminated by storage tanks into water lines.
- It is the responsibility of every dairy producer to be familiar with the dangers of cross-connections and to remove them from their dairy farm's water distribution system.

Water sampling schedule

Every three years:	Drill wells, Dug wells, Spring and Surface
Every six months:	Ricirculating and Reclaim
Every six month:	Buried well seal
Not needed:	City water and community water associations

Samples are screened for the presence of coliform.
Water samples needed for new installation or modification of current system.

Locations to watch for cross-contamination elimination:

- CIP (Clean In Place) / COP (Clean Out of Place)
- Boiler water make up
- Cooling water systems
- Mix / blend / tanks
- Chemical stations & tanks
- Livestock drinking water troughs

Devices are used for protection:

- Air gaps
- Reduce pressure zone devices
- Hose bib atmospheric vacuum breakers
- Pressure back-flow preventer
- Atmospheric vacuum breakers

For additional information refer to PMO Appendix D Standards for Water Sources

Item 10a and 11a: Cleaning & Sanitization

Requirements:

(10a) Utensils and equipment clean

(11a) All multi-use containers and equipment subjected to approved sanitization process.

Public-Health Reason: Milk cannot be kept clean or free of contamination if permitted to come into contact with unclean containers, utensils or equipment. Mere cleaning of containers, equipment and utensils does not insure the removal or destruction of all disease organisms which may have been present. Since many kinds of disease bacteria grow rapidly in

milk, even very small numbers remaining may grow to dangerous proportions. For this reason, all milk containers, equipment and utensils must be treated with an effective sanitizer before each use.

Sanitation requirements are addressed in the Good Manufacturing Practices (GMPs) and the PMO. You may obtain a full copy of these by contacting the WSDA Food Safety Program office at 360-902-1876 or e-mail foodsafety@agr.wa.gov.

Some sanitation considerations include:

- Properly clean the product-contact surfaces of all containers, equipment, and utensils used in the handling or storage of milk after each use.
- Sanitize all product-contact surfaces before each use.
- Decide what the best types of sanitizers are for your operation bases on your equipment, practices and risks.

Item 15e: Drug & Chemical Control

Requirement: Drugs properly used and stored to preclude contamination of milk.

Public-Health Reason: Animal drug or medications can result in adverse reactions in people sensitive to those residues and can contribute to the development of strains of drug resistant human pathogens. Whenever bacteria are exposed to antimicrobials (antibiotics), some survive by developing resistance. Resistance is affected by many different factors: type and amount of drug used, number of animals treated, and length of treatment. Antimicrobial resistance developed in

animals could potentially be exposed to humans. Producers must be committed to appropriate and judicious antibiotic use in order to:

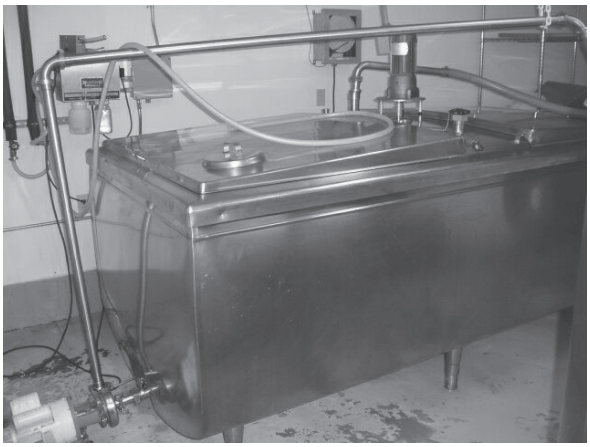
- Minimize the risk of antibiotic resistant bacteria in animals.
- Maintain the long-term effectiveness of antibiotics for humans and livestock.
- Protect future antimicrobial availability.

Additional guidance for judicious antibiotic use can be found in Dairyman's Reference Guide: Disease Management and Antibiotic Use on the Farm (see Additional Resources on page 161).

Item 18a: Cooling

Requirement: Milk cooled to 40°F or less within two hours after milking, except as permitted by PMO.

Public-Health Reason: Milk produced by disease-free lactating animals and under clean conditions usually contains relatively few bacteria immediately after milking. These can multiply to enormous numbers in a few hours unless the milk is cooled. However, when the milk is cooled quickly to 7°C (45°F) or less, there is only a slow increase in the numbers of bacteria. Usually, the bacteria in milk are harmless, and if this were always true there would be no reason to cool milk, except to delay souring. There is no way for the dairy producer or regulating officer to be absolutely sure that no disease causing bacteria have entered the milk. However, the likelihood of transmitting disease to consumers through your milk increases when the milk contains large numbers of disease bacteria. Therefore, it is extremely important for milk to be cooled quickly, so that small numbers of bacteria, which may have entered, will not multiply.



Depending on the size of your operation and the ultimate destination of your product, the size and type of equipment used for achieving quick and proper cooling can vary. Discuss your plans for equipment with your FSO before making purchases. Not all equipment is created the same.

Compliance & Enforcement

There are different stages of enforcement action the Food Safety Program will initiate when a producer is in violation of the requirements. The first level is a Notice of Correction (NOC). These are issued for the following non-compliant conditions:

- Failing inspection: critical violation(s) or score below 90 points.
- Unsatisfactory water sample test results.
- Milk sample results that test positive for antibiotics.
- Bacterial or somatic cell counts that exceed state maximum allowance levels.

For habitual, recurring non-compliance with state laws and regulations, WSDA issues violating operations a Notice of Intent to Degrade or Notice of Intent to Revoke License (NOI). The department may also issue Notice of Intent to Assess Civil Penalty as an enforcement action option.

If you receive a NOI you have the following options:

1. Request a hearing and contest the inspection findings.
2. Request a settlement option by requesting a hearing and seeking a re-inspection.
3. Waive your rights to a hearing and accept the degrade penalty.

If you have received more than one NOI in the current grading cycle (the past three-year period) a settlement option may not be available to you. Contact the WSDA Food Safety Program in Olympia at 360-902-1967 and ask for assistance whenever you are unsure which action to take.

General Dairy Operations Frequently Asked Questions

1Q: Can there be more than one license on a farm?

1A: Yes. Contact WSDA for additional information and practicality of situation.

2Q: Who's responsible for follow-up sampling if I have an unsatisfactory water sample result?

2A: It is the responsibility of the dairy producer to submit a satisfactory water sample test result to the WSDA Food Safety Program in Olympia within 30 days of the notice. A field representative from your co-op can assist in the collection of the water sample. The local county health departments can analyze the water sample.

3Q: Can antibiotic treated cows be milked into the traditional milk bucket?

3A: Yes, if the milk bucket does not draw its vacuum directly from the milk line. The vacuum must come off a separate line. If the milk line is also your vacuum line, this is not acceptable because overflow from the bucket will go directly into the milk line. Ultimately, the safest method is to have separate herds for treated cows and untreated cows. Milk the treated cows last with the line out of the milk tank or with completely separate equipment. Treated milk may not be sold off the farm.

4Q: What kind of pesticides can I use and store in the milkhouse?

4A: Use or store only pesticides with specific directions for the milkhouse. All pesticides must have an EPA registration number on their labels. No pesticide, including automatic intermittent dispensers, can be used during milking time. Protect all milk and milk contact surfaces during pesticide use.

5Q: Where should I store my milk filters?

5A: Protect strainer pads, parchment papers, gaskets, and similar single service articles against contamination. Store these items in a suitable, tightly sealed container or cabinet.

6Q: What are the requirements of an adequate hand wash station?

6A: The hand wash station must have hot and cold or tempered running water as well as hand-soap and single-service towels. It must be convenient to the milk house, milking barn, stable, parlor and toilet.

Human Health Risks

Employee Safety and Human Health

Employee well-being is a concern for all. Not having properly trained and supervised employees cannot only result in injuries; it could also mean loss of product and the spreading of pathogens or viruses throughout your farm. It is key that employees understand the importance of good hygiene, proper washing and sanitation, appropriate drug dispensation and safe chemical handling. To make sure that you are doing all you can to ensure the safety of your employees, consider the following:

- Are you meeting the requirements established by the Department of Labor and Industries?
- Have you considered your employees' experience with the equipment and substances they will be working with?
- Have you provided training that was successfully understood?
- Does your employee speak a different language?
- Have you provided training and posted signs in the appropriate languages?

Every person involved with processing activities needs to adhere to practices that would best minimize possibilities for contamination. Hands are easily exposed to contamination during the course of normal duties on the farm and frequently come into contact with clothing. Improper precautions allow for disease transmission and/or cross-contamination.

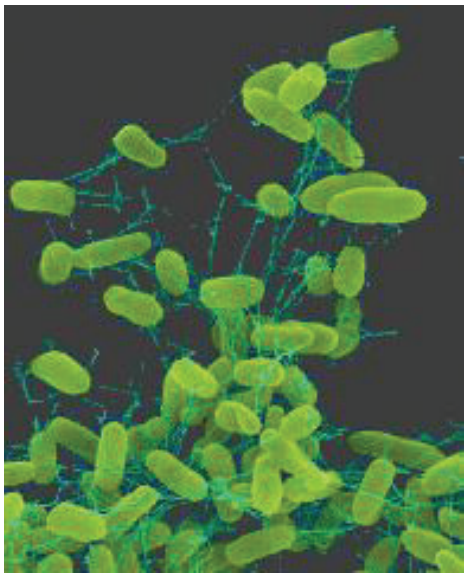
- Establish handwashing facilities located in convenient locations and near processing operations.
- Include soap or detergent, hot and cold, or warm running water, and individual sanitary towels. Utensil wash and rinse vats are not considered handwashing facilities.
- Keep fingernails trimmed short, avoid wearing jewelry during processing and wash hands often.

- Do not allow any ill person to milk or clean milking equipment when ill (e.g., diarrhea, vomiting, cold and flu symptoms).

Unnecessary or improper antibiotic administrating can lead to the reduction of effectiveness as well as antibiotic residue detection in tissue or milk. Guidance on judicious antibiotic use can be found in Dairyman's Reference Guide: Disease Management and Antibiotic Use on the Farm (see Additional Resources on page 161).

On-Farm Pathogen Control

While pathogens are naturally occurring on the farm, control of the spread and growth can lead to both a safer and higher quality products. It is likely that fecal and foodborne pathogen contamination occurs during the harvesting of raw milk (e.g., milking, collection, and storage) and the farm environment likely plays a major role in the presence of foodborne pathogens in bulk tank milk. Reducing the potential for contamination during harvesting of milk should result in the reduction of foodborne pathogens in raw milk. By developing the hazard analysis with your FSO, you identify areas of concern for potential cross-contamination.



Microscopic view of Salmonella

Strive for pathogen control through using good management practices for washing and sanitizing, rapid cooling, herd health management, employee training and cross-contamination reduction.

Human Health Risks

Selling Your Milk

Licensed milk producers may only sell their milk for further processing either through the general milk pool or directly to a processing facility. In order to sell raw milk anywhere else, including retail raw milk for human consumption or for pet feed, additional licensing is required. You will also need to obtain additional licensing if you decide to do any value added processing yourself, such as farmstead cheeses (see value-added on-farm processing on page 103).

Licenses and fees for producing and processing milk

Market	WSDA License Required	Fee for License
To Milk Market Pool	Milk Producer	No fee
Direct to licensed milk processor	Milk Producer	No fee
For Pet Food	Milk Producers via RCW 15.37 Pet Food Registration RCW 15.53 & WAC 16-252	$25 $22 for 2 years plus inspection fees based on tons distributed **or** $90 for 2 years depending on
Retail Raw for Human Consumption	Milk Producer Milk Processing Plant	No fee $55
Pasteurized Products (processed on farm)	Milk Producer Milk Processing Plant	No fee $55
Farmstead Cheese (processed on farm)	Milk Producer Milk Processing Plant	No fee $55
Farmstead cheeses and non-dairy food products (e.g., jams and jellies, juice, bread)	Milk Producer Milk Processing Plant Food Processor License	No fee $55 Waived if licensed as Milk Processing Plant

On-Farm Processing

Alternative Marketing Opportunities:

Value-Added On-Farm Processing

An additional area to explore for risk management is alternative marketing. We are seeing a growth in the "niche marketing" of milk products. Artisan cheese making and microdairies are becoming more common in the dairy landscape as a way to maintain financial security in a changing industry. Dairy farmers are looking for additional methods of not only increasing income, but also ensuring that they remain in business. In addition, a growing number of dairies in Washington State are finding financial security through transitioning to organic dairy production (see Organic Certification section on page 115).

Balancing production quantities and market demand is critical. Fluid milk consumption varies seasonally and also around the holidays. Utilizing fluid milk with on-farm processing ventures during those low-demand fluid milk periods helps you make good use of your overall milk production.

There are many things to consider when deciding to start on-farm processing of value-added dairy products. While the financial benefits can increase and the market indicates its worthiness, the liability and risk potential also dramatically increase. Since your milk will no longer be leaving the farm for further processing, you become the sole entity responsible for the consumers' safety from foodborne illnesses. Meeting the licensing requirements and understanding cross-contamination and pathogen control can greatly reduce the risk of selling a contaminated product. Markets can be easily swayed by outbreaks and reports of illness.

On-Farm Processing

Frequently Asked Questions

The following frequently asked questions and answers may help you determine if on-farm processing is something you would like to explore.

1Q: What licenses will I need to obtain?

1A: See table on page 102.

2Q: What should I know about sanitation?

2A: Sanitation requirements are addressed in the Good Manufacturing Practices (GMPs) and the Pasteurized Milk Ordinance (PMO). You may obtain a full copy of these by contacting the WSDA Food Safety Program for a license application packet at 360-902-1876 or e-mail foodsafety@agr.wa.gov.

Some sanitation considerations include:

- Properly clean the product-contact surfaces of all containers, equipment, and utensils used in the handling or storage of milk after each use. Milk cannot remain clean and free of contamination if allowed to come into contact with unclean containers, utensils or equipment.
- Sanitize all product-contact surfaces before each use. Cleaning alone does not insure the removal or destruction of all potentially present disease organisms.
- If reusing returnable service containers, proper cleaning and sanitation is especially important.

3Q: Are there any restrictions on the type of equipment I use?

3A: Use only equipment made of food grade material that is easily cleanable and has smooth, impervious surfaces. The design and material of certain containers and utensils can harbor accumulations that support undesirable bacteria growth:

- without flush joints and seams;
- without smooth, easily cleaned, and accessible surfaces; and
- not made of durable, non-corrodible material.

Singe-service articles, not manufactured and/or handled in a sanitary manner may contaminate the milk or milk contact surfaces.

ALWAYS check with your Food Safety Officer (FSO) before purchasing new equipment. Standards vary in countries and even different states. Equipment that works somewhere else may not work in the State of Washington.

General Milk Processing Equipment Construction Requirements

- 300 series stainless steel, some limited exceptions;
- Number 4 ground finish, free of pits and other blemishes;
- Smooth continuous welds (#4 finish);
- Radii standards, no 90 degree corners;
- Standards for coatings, bonded materials, solder and sanitary tubing, plastics and rubber;
- Easily cleanable and accessible for inspection with simple hand tools;
- Self draining design;
- Perforated metal for strainers and vents rather than woven wire;
- Sanitary thread standards, use threads only if absolutely necessary and not in product contact areas; and
- Proper pipe and lid fittings.

4Q: Why should I consider pasteurizing?

4A: Proper heating (pasteurization) kills illness-causing bacteria. Cows, and other milking animals, carry such bacteria even when they look healthy. These potentially harmful bacteria can pass on from the animal into the milk. Drinking fresh unpasteurized milk or eating foods made with unpasteurized milk can allow transmission of those bacteria into you and your customers. Raw milk cheese has been linked to several foodborne illness outbreaks. Some foodborne illness bacteria like Listeria monocytogenes, cause premature birth or spontaneous abortion. Certain types of Salmonella are antibiotic resistant so it cannot be easily treated with drugs. When those antibiotics don't work, consumers can become very ill and could even die. Pregnant woman, children, and the elderly are at the highest risk.

5Q: What other processes can I incorporate to help me produce a safe product?

5A: While there is no way to guarantee the safety of your farmstead products, you will reduce your risk by identifying steps that will assist you to produce it as safely as possible. Some of the most important points:

- Quick cooling;
- Thorough cleaning;
- Good herd health maintenance;
- Good hygiene control for employees; and
- Cross-contamination elimination.

Talk to your WSDA Food Safety Officer during your licensing process about developing a Hazard Analysis and Critical Control Plan (HACCP) to help you identify different areas of risk and their control points. HACCP is defined as a system to identify and correct errors as they occur throughout the flow of your food processing operation. HACCP is a process to help assure food safety. Since your value-added dairy products produced on farm are a 'ready to eat' food, use a risk-based inspection for identifying where Sanitation Standard Operating Procedures (SSOPs) can address areas of concern.

The most efficient way of achieving quick cooling of the milk is by using a water or ice bath. Do not plan on using refrigeration as your main coolant. It takes too long and your milk may never reach temperatures low enough to meet requirements. Effective agitation of the milk will also assist in reaching the cooling requirements. Milk must reach 40° F. within two hours of milking. Proper recording of temperature and time is needed to demonstrate that this requirement is met.

Cross-contamination controls include restriction of traffic through the processing areas and good hand washing habits. Empty and clean milk storage tanks within 72 hours of milking. A well-designed HACCP plan can identify areas where there is potential for cross-contamination.

6Q: What are some of the basics for construction?

6A: Although all farms vary in layout and design, keep in mind these basic requirements for all areas of operation:

- Concrete or other resistant material used for floors so that it is easily cleanable;
- Walls are washable and finished light in color;
- Doors and windows are tight fitting and screened when open;

- Adequate lighting and ventilation is provided;
- The space is large enough to handle maximum milk production and milk processing;
- Product contact areas are accessible for cleaning and inspection;
- Hot and cold water plumbed for hand washing and cleaning purposes; and
- Bare wood does not provide impervious or washable surfaces.

ALWAYS check with your FSO before beginning construction to avoid financial risks caused by costly mistakes.

7Q: Will there be new toilet requirements?

7A: All employees must have access to plumbed toilets that are convenient and maintained. You will also need a self-closing door to the toilet room. Composting toilets may be approved, but must first be approved by the county or state health officials (see Additional Resources on page XX). Portable toilets are not acceptable for meeting the requirements.

8Q: How many different facilities or buildings will I need to have?

8A: Although milk processing plants are located on the same site as the dairy farm, milk production and processing activities must remain separate from milking barn. This includes storage of milking production equipment and use of the milk processing plant for cleaning milk production equipment.

Milk processing rooms designed as processing plants can have a milk tank installed. Do all other traditional milk house activities separately (e.g., milking, equipment cleaning).

Adequate separation is required between the processing operations and the milking activities to reduce potential cross contamination. Upon approval from your FSO, a certain amount of time delay between milk and processing could create adequate separation. This will generally only apply to very small operations. Ask for technical assistance from your FSO to help determine the best option.

It is strongly recommended that you not use the milk house for storing or selling your value-added processed products. When you reduce foot traffic, you also minimize potential contamination of your food products. Other options for storage and selling include a small storefront or a refrigerator located outside in a covered and protected location.

On your milk processing plant license application, indicate the location and distance of the animal house areas, milk parlor and milk house from the milk processing plant.

9Q: Do I need to have special bottling equipment for production?

9A: Bottling and capping must be done in a sanitary manner by means of approved equipment and operations. This could mean one machine with integral filling and capping or as simple as hand poured through a funnel and hand-capped. Your Food Safety Officer will work with you to establish a safe and sanitary system. See question number 3 on page XX regarding equipment for other considerations.

On-Farm Processing

Note: If you are planning to bottle your milk using only hand-filling and hand-capping, the guidelines established in 21 Code of Federal Regulations (CFR), Chapter 1, Current Good Manufacturing Practice in Manufacturing, Packing, or Holding Human Food would apply. This covers such areas of concern as hand washing, protective clothing, employee health, and education and training.

Examples of items that will help keep your food safe:

- Do not work in plant facilities when you are ill (e.g., diarrhea, vomiting, cold or flu symptoms).
- Wash your hands twice after using the toilet – once in the restroom, and then again when you return to the processing area.
- Use gloves or utensils instead of bare hands when processing.
- Wash, rinse, and sanitize all equipment used for production with approved cleaners and sanitizers.

Retail Raw Milk Production

"Retail Raw Milk" is raw milk legally produced for human consumption within Washington State. If interested in selling raw milk for animal feed, a Milk Production for Animal Feed license is required and you should contact the WSDA Food Safety Program for additional information at 360-902-1876 or e-mail foodsafety@agr.wa.gov.

Due to the potential health hazards associated with raw milk and raw milk product consumption, the safe, clean and legal production is a must. This is particularly important with respect to children, the elderly or other immuno-compromised individuals who may have adverse health affects due to harmful

bacteria and virus found in raw milk such as Campylobacter jejuni, Salmonella, Listeria monocytogenes, and E. coli O157: H7. WSDA's interest is in the protection of the consumers, dairy producers and milk processors in our state by enforcing the rules and regulations designed for safe food production.

Frequently Asked Questions

1Q: What is a "Cow Share" and is it legal?

1A: Some farmers use cow shares or farm share agreements as a marketing approach to sell their cows' milk. The consumer purchases a "share" of a cow, goat, or sheep and in return receives a portion of the milk produced. The agency considers this a sale.

Legal cow shares can exist in the State of Washington as long as the producer obtains proper licensing with the Washington State Department of Agriculture (milk producer and milk processing plant license). Producers may not use a cow share agreement to avoid meeting state requirements.

2Q: When will you collect my milk and what tests will you do?

2A: We collect and perform retail raw milk testing approximately once a month. Legal test results must not exceed the standards listed below.

Bacterial Count	20,000/ml
Somatic Cell	750,000/ml (cow & sheep) 1,000,000/ml (goat)
Coliform	10/ml

WSDA also tests product for antibiotic residues and perform surveillance testing for pathogens and pesticides. Currently,

WSDA conducts surveillance testing for these human pathogens: Salmonella, Listeria monocytogenes and E. coli O157:H7.

You will receive a notice of non-compliance when the test results are above the standards listed above or positive for antibiotic residues, pesticides or contain strains of human pathogenic organisms. Only sample results from our laboratory are considered official. A private laboratory can test for quality purposes or for your own pathogenic test monitoring.

3Q: Must I label all containers and what is the 'warning label' requirement?

3A: Yes, you must label all retail raw milk containers. Foodborne illness outbreaks associated with raw milk or raw milk products occur every year. This is why properly labeled raw milk intended for human consumption is a requirement for any sale. All Retail Raw Milk products must bear this label:

- "***WARNING:*** *This product has not been pasteurized and may contain harmful bacteria. Pregnant women, children, the elderly and persons with lowered resistance to disease have the highest risk of harm from use of this product."*

- Additional labeling requirements include name and location of business, contact information, pull dates, product identity (use common name), and volume. Perishable packaged food products with a projected shelf life of thirty (30) days or less must state the pull date on the package label. The **pull date** must be stated in day and month, and in a style and format that is readily understood by consumers. Also, when products require refrigeration either before or after opening, such information must be on the label. It's up to you to determine a proper pull date. Also

consider how the milk will be transported and displayed at the point of sale to identify potential temperature abuse after it leaves your on-farm processing operation.

4Q: What types of raw milk products can a licensed Milk Processing Plant sell?

4A: The only retail raw milk products that a licensed Milk Processing Plant can sell are fluid milk, skimmed cream, and skimmed milk. The plant cannot use a separator, homogenizer or any other mechanical device to separate raw cream from raw milk. The Milk Processing Plant cannot use raw milk to produce other processed milk products such as yogurt, butter, puddings, or ice cream.

If you decide to begin processing other food products, you will need to obtain additional licensing and should contact your Food Safety Officer to discuss the process and potential hazards (see table on page 102).

5Q: Where can I sell my retail raw milk once I have completed the licensing process?

5A: You can sell your raw milk at the same locations you would any food product, as long as it is sold prepackaged to the end consumer only (e.g., grocery stores, farmers markets, on farm stores, or delivery). You may not sell your retail raw milk to restaurants and Federal regulations prohibit the selling of retail raw milk products across state lines. Check with your Food Safety Officer if you have concerns about your available retail raw milk markets.

6Q: What are some of the issues or concerns around raw milk consumption?

6A: Any person with a compromised immune system, children, and the elderly or pregnant women are especially at risk. Some organisms that cause foodborne illnesses associated with raw milk consumption are Campylobacter jejuni, Salmonella, Listeria monocytogenes, and E. coli 0157: H7. For certain pathogens such as E. coli 0157:H7, there may be no immunity, even for individuals who have consumed the raw milk product all their lives.

The United States product liability law allows people harmed by unsafe products, including food contaminated by bacteria and viruses, to take legal action to claim money damages for their injuries. Talk with your insurance agent or lawyer for more information on protection.

Alternative Marketing Opportunities: Organic Certification

By this time, it is likely that you know a dairy farmer that has either considered or began a transition to organic dairy production. Given the growth in the market for organic dairy products, organic milk is currently in short supply. About 10 percent of the licensed dairy producers in Washington are either certified organic or are currently under transition to certified organic dairy production.

While the growth in this sector of the dairy industry grows quickly, so do the questions that are received by the WSDA Organic Food Program office regarding certification. What does it take? Do my cows have to be out on pasture? What materials and medications can I use on my cows? How long will it take me to transition to organic? Where can I find organic feed? These are all very good questions, and the answers are not always simple or easy. While we have trained staff in the WSDA Organic Food Program that will gladly answer all of these questions, this section of the manual is being provided to you for further reference. This section of your manual will aim to answer many of these questions. The goal is to provide you, the dairy farmer, with a better understanding of the organic market, the National Organic Program and who is out there in the industry to help you with your technical questions.

Please remember that there are many facets to organic certification. If you ever have questions about certification, please do not hesitate to contact the WSDA Organic Food Program office at 360-902-1805 or e-mail organic@agr.wa.gov.

Organic Certification

The Basics of Organic Dairy Certification

1. Land must be free of prohibited materials for 36 months.

2. Dairy animals must be transitioned with organic feed for one year.

3. Certified organic animals must feed on 100% organic feed (does not include vitamins, supplements, minerals, etc.)

4. Ruminants must have access to pasture. They can be confined under certain circumstances, such as age or weather.

5. A preventative management plan for disease and health care must be established. (Vaccinations can be a very important part of many preventative plans).

6. Natural or non-synthetic medications are allowed for use. All synthetic materials must be listed on the National List of Allowed and Prohibited Substances.

7. Ivermectin is approved for use in an emergency situation, but the treated animal cannot be sold for beef.

Organic Certification

Why Organic?

Agriculture is the number one employer in the State of Washington, with dairy ranking as the second most valuable commodity, valued at $675,301,000 (11.7% of total agricultural production). According to the WSDA Food Safety Program, there are 584 licensed dairy farms (July 2006) in Washington, with Whatcom and Yakima counties leading the way. This number has decreased from the over 1,000 dairies that were licensed just over ten years ago in 1995.

Simultaneously, we are seeing a growth in the "niche marketing" of milk products. Artisan cheese making and microdairies are becoming more common in the dairy landscape as a way to maintain financial security in a changing industry. Dairy farmers are looking for additional methods of not only increasing income, but also ensuring that they remain in business. In addition, a growing number of dairies in Washington State are finding financial security by transitioning from conventional to organic production methods.

The demand for organic milk and organic dairy products is at an all-time high and is expected to continue to grow over the next ten years. Organic dairy farmers are receiving higher prices for their product than conventional dairy farmers, and, in general, find their net profit to be greater than when they were selling milk on the conventional market.

This section aims to provide you with the tools to assess whether a transition to organic certification can be a realistic option for ensuring financial stability as well as offering an option for continual access to a growing market.

Organic Certification

Specifically, this section of the Risk Mitigation resource manual addresses the following topics related to organic dairy production and the transition period that must precede organic certification:

- Conventional dairy rends
- Organic dairy trends
- Marketing your milk
  - Local labels
  - National labels
  - Direct Marketing
- Regulatory requirements
  - National Organic Standard overview (*in plain English!)*
  - Text of the National Organic Standards from the Federal Register
- How do I become a Certified Organic grower?
- Helpful resources

Conventional Dairy Trends

Over the last several years, there has been an overall decline in the number of licensed dairy producers. According to WSDA statistics, there were over 1,009 dairy producers in 1995, by 2006, the number had dropped to just 584 (see Figure 9)

However, during the same time period, USDA statistics indicate that there is little effect on the total milk production. There have been fluctuations in the yearly milk production, but the overall trend is that milk production is increasing in Washington State (Figure 10), while the number of dairy farms is decreasing.

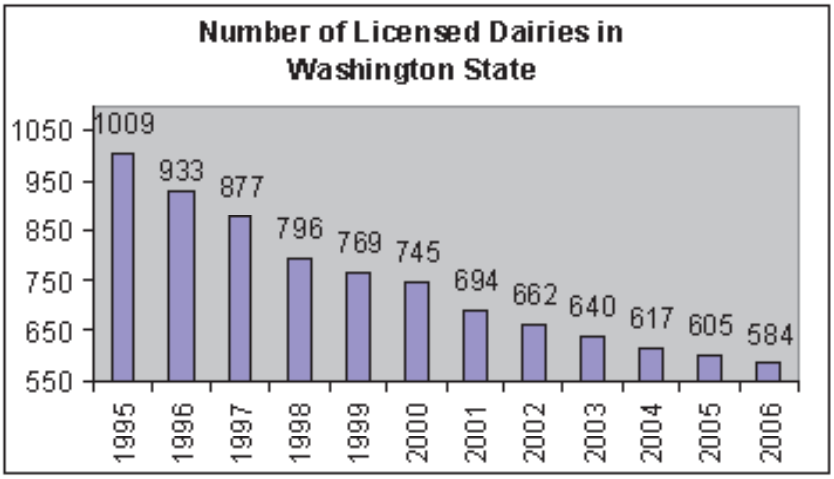


Figure 9. Number of Licensed Dairies in Washington State.

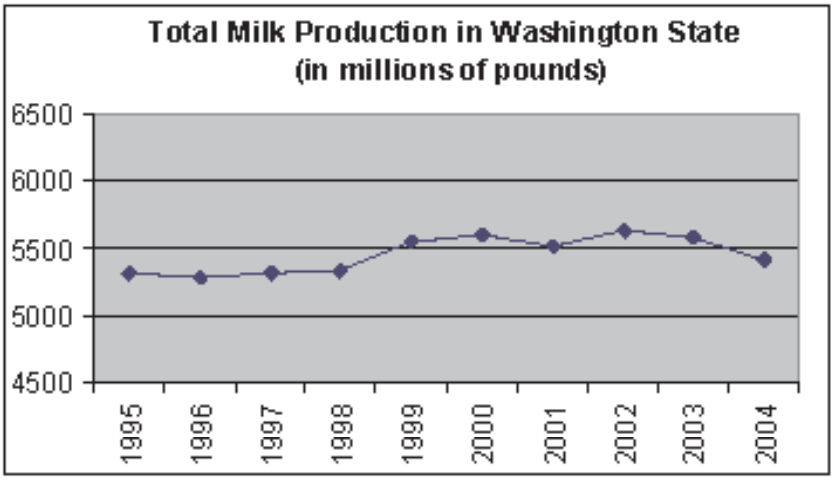


Figure 10. Total Milk Production in Washington State

Organic Certification

The largest loss in operations is in the category of dairy farms that have less than 100 head. USDA statistics break the dairies up into several categories: those with less than 29 head, those with between 30 and 50 head, those with between 50 and 99 head. Figure 11 illustrates the loss these categories of dairies have experienced.

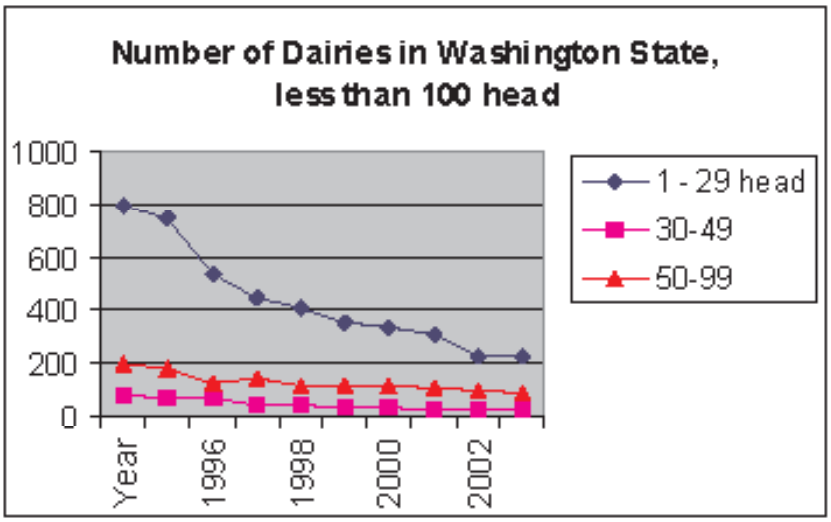


Figure 11. Number of Dairies in Washington State with less than 100 head

As illustrated above, the most dramatic loss in dairies is in the category of those farms with less than 29 head. Where have these small farms gone? Some dairy farms in Washington State have chosen to participate in the National Cooperatives Working Together (CWT) program which is a national program designed to mediate supply and demand imbalances that lead to depressed milk prices. By assessing dairy farms in Washington State, they are able to fund both a

herd retirement program and an export assistance program. The herd retirement program offers dairy farmers to bid to be paid for the volume of milk they are producing and send their dairy cows to slaughter. They are paid the market price for beef at the time the animals are sold. National CWT has conducted three rounds of herd retirements since 2002, with the third round occurring in 2005. During this third round, 19 dairy farms retired their herds, roughly 3 percent of the total number of Washington dairies. In the first and second rounds, Washington saw a total of 21 dairies retire their herds through the program (Angie Reed, CWT Program January 17 2006).

Organic Dairy Trends

Sales in the organic food industry have grown 20 percent annually since 1992, reaching 37 percent growth in 1997 (Lotter, 2003). More organic products are making it into the refrigerators and shelves of Americans than ever. An online poll of 1,000 U.S. households conducted during the week of Nov. 4, 2002, found that 58 percent had purchased a food item labeled organic. Of those participating, 32 percent said it was somewhat or very important that their food is organic, while 67 percent indicated organic food would become more common in the future. The majority of those buying organic products purchased them from their local grocer or a traditional supermarket chain, 29 percent cited a farmers' market as the source, and 21 percent bought organic products at a specialty grocer such as Whole Foods Market or Wild Oats. Also, 14 percent indicated they bought organic items at their local Wal-Mart or Target super center, reinforcing the fact that organic foods play a role in everyday American households. One in five said they would pay approximately 20 percent more for organic foods, while 67 percent said that price was a barrier to their buying these products (Organic Trade Association).

Organic Certification

The demand for organic milk and organic milk products such as cheese, butter and yogurt has been steadily rising since 1990. Between 1998 and 2003, organic dairy product sales grew 36.6 percent and increased their market share from 7.4 percent to 15.9 percent of all organic product sales (Lotter, 2003). This increase has caught the attention of large food corporations who look to cash in on the market potential. General Mills, Danon, Kraft and Coca-Cola have all entered the organic marketplace as major corporate competitors of organic produce and dairy products. Large grain companies such as Cargill have also gotten in the game, providing grain rations for beef, hogs, pigs and poultry.

Is there enough organic milk to meet the growing demand for fluid milk and milk products? An article in The New York Times in June 2005 spotlighted the supply of organic milk. The nation-wide demand for organic milk had finally outpaced the supply and the major marketers of organic milk and milk products, Horizon and Organic Valley, were unable to meet the demand. And there is little evidence that the growth will slow in the upcoming years. The Organic Trade Association (OTA) predicts a growth of 17.3 percent in the demand for organic dairy products between 2004 and 2008.

Where will the milk come from to meet this demand? Organic milk must come from organic cows and organic cows must be certified to the USDA National Organic Program (NOP) standards. The NOP accredits certification agencies around the world, with a total of 56 domestic Accredited Certification Agencies in the United States. Washington State Department of Agriculture Organic Food Program has been accredited since the implementation of the National Standards in 2001. With the growth in the market, more dairies are transitioning to

organic production and WSDA has seen a significant increase in the amount of dairies transitioning to organic production. As noted in the Figure 12 below, in 2001, there was only one organic dairy certified by WSDA in Washington State, this number has rapidly grown to 20 in 2005.

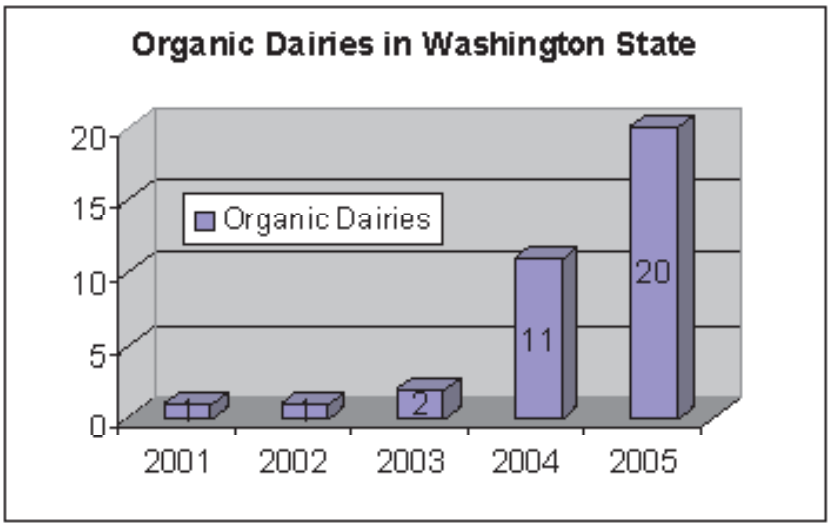


Figure 12. Organic Dairies in Washington State

Marketing Your Certified Organic Milk

Corporate Contract Sales - Domestically, Organic Valley and Horizon (owned by Dean Foods) are the largest processors of organic milk and milk products. Organic Valley, based in Wisconsin, is the largest organic farmer – owned cooperative in North America. The farm families that belong to Organic Valley produce dairy products, juice, eggs, meat, soy and produce for the same company that they own. Organic Valley began in 1988 with seven organic farms in Wisconsin. The

popularity of their cooperative business structure has grown now to include 700 farms across the United States. You can find out more details regarding Organic Valley, their cooperative and their products on their Web site at www.organicvalley.coop/.

Horizon Organic, based in Colorado, began in 1992 as a response to the lack of organic dairy products in the marketplace. Since that time, they have expanded to become one of the leading competitors in the organic dairy industry. In addition to operating their own dairies, they purchase milk from over 350 producers and cooperatives. Their products include, milk, butter, cheese, eggs, infant formula, juice and produce to name a few. You can find more about Horizon on their Web site at www.horizonorganic.com.

Local Labels – There are many local labels that market organic milk throughout the United States. Currently, there is no local label in Washington State for certified organic milk, most of the organic milk produced is either marketed through Organic Valley or Horizon, or is used for on-farm processing. The potential for a local label in Washington is a niche that could be filled and would provide a marketing source for Washington organic dairy farmers.

Artisan Cheese Industry - Artisan cheeses are a growing market. Nationally, consumption of specialty cheeses has grown five times faster than total cheese consumption over the last decade. According to the WSDA Small Farms and Direct Marketing Program, Washington State is number three in national cheese consumption (see Value-Added On-Farm Processing on page 103).

Organic Certification

The 1-2-3 of Becoming Certified Organic

1. Request an application by calling WSDA Organic Food Program (360) 902-1805 or via e-mail organic@agr.wa.gov.

   Specify what type of operation you are (e.g., grain producer, dairy, hay producer, corn producer)

2. Carefully review the information in the application packet and Certification guide, especially the National Organic Standards.

3. Complete and submit the application to the WSDA Organic Food Program.

4. Your application will be reviewed and you may be asked to submit additional information to the WSDA Organic Food Program office.

5. Your inspection to verify that you meet the National Organic Standards will occur and an inspection report will be submitted to the WSDA Organic Food Program office for review.

6. You may be asked to submit further information regarding your operation.

7. Once sufficient information has been received to demonstrate compliance, a certificate will be issued and your operation will be considered certified organic!

Organic Certification

Regulatory Requirements Made Easy

The National Organic Standards contain the requirements for certified organic food production and processing. There are many different aspects of the rule that relate directly to an organic livestock operation. Organic dairy producers must comply with the regulations concerning crop production as it relates to pastures and any feed crops that are in production. If there are any vegetable or tree fruit crops that will be sold as a certified organic product, these also must comply with the organic regulations specific to crop production.

The regulations for livestock production are separate from the rules specific to crop production. These include regulations regarding livestock living conditions, feed and health care. In addition, if your operation includes some sort of processing like cheesemaking, you also must comply with the regulations specific to processing and handling. These rules are not included in this section. For more information about organic handler and organic processor certification contact the WSDA Organic Food Program at 360-902-1805, e-mail organic@agr.wa.gov or visit the Web site: http://agr.wa.gov/FoodAnimal/Organic/default.htm.

This section summarizes the National Organic Standards, in language that is more readily understood.

> **Please note**: The summary below DOES NOT include the entire rule – it has been edited to include portions applicable to dairy producers. There may be additional sections of the rule that apply to your operation.

The final rule is available on the National Organic Program Web site at http://www.ams.usda.gov/nop. A hard copy can also be obtained by calling the Federal Register at 202-512-1800.

Organic Certification

National Organic Program Summary

Who has to be certified?

Anyone that is labeling or representing their products as "organic" or "made with organic ingredients" must be certified by a USDA Accredited Certification Agency. This includes a single product, like an apple, a processed product, like ketchup, and everything in between. Specifically for livestock producers, organic certification would be required for pasture, any feed that is grown and the final product, such as milk or cheese. However, the National Organic Program (NOP) allows for exemptions and exclusions from certification as well. See information below for types of operations not required to be certified. While some operations may not have to be certified, they still have to comply with regulations and may be inspected.

Section 205.100 What has to be certified.

- Requires all organic production and handling operations to be certified unless they are exempt or excluded from certification.
- Businesses that are exempt or excluded must meet the criteria listed below.
- Knowingly selling a product as organic that is not in compliance with the NOP may result in a $10,000 civil penalty.

Section 205.101 Exemptions and exclusions from certification.

Exemptions

- Producers and handlers that sell less than $5,000 worth of organic products are exempted from organic certification requirements.
- Organic products from exempt producers and handlers may not be used in processed organic food products.
- Retail food stores are exempt from organic certification requirements.

Organic Certification

Section 205.102 Use of the term "organic."
Agricultural products sold, labeled, or represented as "100 percent organic," "organic," or "made with organic ingredients" must be produced and handled in accordance with the NOP standards.

What are the requirements for certifying my pastures & feed crops?

The standards under this section are specific to anything that is cultivated on your farm (doesn't include livestock). These standards would apply to any grain, silage or hay crops which are produced on your operation.

Section 205.200 General.
Organic production practices (for crop and livestock operations) must maintain or improve the natural resources of the operation, including soil and water quality.

Section 205.202 Land requirements.

- Requires organic crops to have had no prohibited materials applied within three years of harvest of the crop.
- Requires distinct boundaries and adequate buffer zones to prevent drift.

Section 205.203 Soil fertility and crop nutrient management practice standard.

- Requires organic producers to select tools (e.g., tillers, plows) and practices that maintain or improve soil quality and minimize soil erosion.
- Producers are required to utilize crop rotations (which can include the rotation of animals throughout various pastures or within a single pasture), cover crops and plant and the application of animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water.

- Defines 'compost' as a material that contains manure, has an initial C: N ratio of between 25:1 and 40:1 and is turned a specific amount of times, depending on the composting method (e.g., windrow, aerated pile).
- Requires compost to reach specific temperature parameters for specific time periods. Any material that contains manure and does not meet this standard is considered 'raw manure' and must follow a specific application schedule if it is being applied to crops intended for human consumption. This does not apply to pasture or grain crops for animal feed.
- Allows for pasture of field applications of mined substances of low solubility.

Section 205.204 Seeds and planting stock practice standard.

- All seeds used for grain or hay crops must be organic unless organic seeds are commercially unavailable. Producers have to choose an "equivalent" organic seed variety that was commercially available. The term, "equivalent," indicates that two seed varieties have similar performance attributes, such as resistance to drought and insects, and production traits, including yield, size, and shape of the commodity.
- Seeds treated with fungicides or other prohibited materials are not allowed.

Section 205.205 Crop rotation practice standard.

- Crop rotation is required. There is a requirement for cover crops for land that may grow annual crops such as corn or beans.
- Habitat is required in perennial crops to provide for pest management.
- Crop rotation can also include the rotation of your animals around your fields (i.e., intensive grazing).

Section 205.206 Crop pest, weed, and disease management practice standard.

The producer must use practices to prevent crop pests, weeds, and diseases in pastures and fields. These practices include animal rotation, sanitation measures, and cultivation practices. Producers may use other preventative practices including beneficial insects and natural habitat enhancement.

What are the requirements for certifying my livestock?

Section 205.236 Origin of livestock.

- Slaughter stock (e.g., beef cattle, pigs, sheep) must be under organic management since the last third of gestation.
- Dairy animals must be under organic management for at least one year prior to the production of organic milk, except when:
  - Breeder stock may be brought onto an organic farm from a nonorganic operation prior to the last third of gestation. Breeder stock must be under organic management during the last third of gestation.
- The producer must maintain records that preserve the identity of all organic animals.

Section 205.237 Livestock feed.

- Organic livestock must be fed organic feed (e.g., pasture, haylage, silage, grain).
- Organic feed may contain feed additives and feed supplements that are allowed on the National List. Approved feed supplements include nonsynthetic substances (i.e., fish meal) and synthetic milk replacers for emergency use only (must not contain antibiotics or be from a BST treated animal) and nonsynthetic. Approved feed additives include trace minerals and vitamins.

- Prohibits use of animal drugs to promote growth.
- Prohibits feed supplements or additives in amounts in excess of basic nutritional needs of the animal species.
- Prohibits plastic pellets for roughage, urea, manure, or mammalian or poultry by-products in feed.

Herd Health Management

Key to a Successful Program:

Prevent, Prevent, Prevent!

Section 205.238 Livestock health care practice standard.

The producer must establish preventative health care practices such as:

- Selection of species and types of livestock with regard to resistance to disease and parasites.
- Providing quality feed;
- Establishing living conditions that minimize occurrence and spread of disease;
- Provide conditions that reduce stress;
- Perform physical alterations (i.e., dehorning) as needed to promote the animal's welfare. Tail cropping is not included in allowable physical alterations; and
- Administer vaccines and veterinary biologics.

When preventative practices are not adequate to prevent sickness producers may use synthetic medications allowed on the National List. Approved medications include:

- Aspirin;
- Chlorohexidine for surgical procedures and teat dip;
- Electrolytes;
- Glucose;
- Glycerin as a teat dip;

- Iodine;
- Hydrogen Peroxide;
- Magnesium Sulfate;
- Oxytocin for postparturition;
- Copper Sulfate for external use; and
- Mineral Oil for external use. Ivermectin may only be used on breeder stock prior to the last third of gestation and dairy stock at least 90 days prior to milk production when preventative measures fail. Ivermectin is prohibited for use in slaughter stock, so any dairy animal that have been given Ivermectin will not be allowed to be sold for certified organic beef.
- Antibiotics and hormones are prohibited
- It is prohibited to administer any medication or drug in the absence of illness.
- Hormones are prohibited.
- It is prohibited to withhold medical treatment to a sick animal in an effort to preserve its organic status.

Section 205.239 Livestock living condition.

- Producers must establish living conditions that accommodate the heath and natural behavior of the animals, including:
- Access to the outdoors, shade, shelter, fresh air as suitable to the species.
- Access to pasture for ruminants.
- Appropriate clean, dry bedding. If the bedding is consumed it must be organic.
- The producer may provide temporary confinement because of inclement weather, the animal's stage of production (e.g., young birds, finishing cattle), risk to the animal's health or safety, or risk to soil or water quality.

- The producer must manage manure in a manner that does not contribute to the contamination of crops, soil or water with pathogenic organisms, heavy metals or plant nutrients. Producers must also optimize the recycling of nutrients through their handling of manure and other nutrients.

What type of records do I have to keep?

Records are a key component of your organic system, a fact that often can be intimidating and daunting to many organic producers. However, there are many resources for the organic producer which will help to keep records in a manner that will demonstrate compliance (see page 163).

Section 205.103 Recordkeeping by certified operations.
Records must be maintained that fully disclose all activities of the certified operation, must demonstrate compliance with the Act, and must be available for inspection. Examples of these records can include, but are not limited to, the following:

- Material application records for crop and pasture land (e.g., manure application records, fertilizer application records);
- Feed receipts;
- Organic Certificates of the suppliers of all purchased feed;
- Receipts for any purchased animals;
- Receipts for any animals that are sold at the sale barn, particularly if they are sold due to administering of a prohibited material such as antibiotics or prohibited wormers;
- Records for all applications of medications administered – including allowed materials;

- Harvest records for all harvested crops (e.g., number of hay bales, tonnage of silage);
- Calving records;
- Health records; and
- Vet receipts or copies of vet check paperwork.

For samples of recordkeeping forms that can be used to verify compliance with National Organic Standards, contact the Organic Food Program at 360-902-1805 or e-mail organic@agr.wa.gov. You can use these records, but if you already have a recordkeeping system in place that captures the same information, please continue to use your system. You are not required to use a specific recordkeeping system, but you have to provide records that contain the information noted above. Some producers choose to hire a consultant that is knowledgeable with the National Organic Standards to help set up an adequate recordkeeping system. There are several links to consultant lists in the Additional Resources section on page 163.

What materials am I allowed to use on my animals & my crops?

The National Organic Standards requires that organic producers have a preventative plan in place in regards to the management of their crops and livestock. You have to develop methods to prevent diseases in your crops and livestock prior to applying any materials to your land or animals. For instance, if you are experiencing an outbreak of pink eye in your herd, you first have to demonstrate that you have attempted to prevent the problem in the first place before you apply any allowed materials. This can include such practices as moisture control in your barn, fly control or having adequate space in your loafing shed to help control the spread of the disease. If these methods are not sufficient to control the disease and

you are seeing cases of pink eye in your herd, then you are allowed to use a material to control the outbreak. However, you must only use allowed materials. The application of a prohibited material will require the removal of that animal from your organic herd. The next section covers specific materials approved for organic crop and livestock production.

The National List of Allowed & Prohibited Substances

Under the NOP all nonsynthetic substances (natural materials) are allowed unless they are specifically prohibited. Conversely, all synthetic substances are prohibited unless specifically allowed. The National List of Allowed and Prohibited Substances, lists the synthetic materials that are allowed for use. There are two sections that list the materials that are allowed. One list is specific to synthetic materials that are allowed for use on crops and the other list is specific to synthetic materials allowed for use on livestock. Remember that all natural materials are allowed. This includes herbal remedies, microbial products (non-GMO), or other natural products.

Section 205.601 Synthetic substances allowed for use in organic crop production.

This section contains a list of **synthetic materials allowed** to be used for pest control, weed control, disease control and soil management. This list is specifically for your crop production. **Do not use this list for materials that you may apply or provide to your animals.**

As algicide, disinfectants, and sanitizers, including irrigation system cleaning systems:

- Alcohol:
  - Ethanol; and
  - Isopropanol.

- Chlorine materials: Except, that residual chlorine levels in the water should not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act;
  - Calcium Hypochlorite;
  - Chlorine Dioxide; and
  - Sodium Hypochlorite.
- Copper Sulfate: For use as an algicide in aquatic rice systems, is limited to one application per field during any 24 month period. Application rates are limited to those which do no increase baseline soil test values for copper over a timeframe agreed upon by the producer and accredited certifying agent;
- Hydrogen peroxide;
- Ozone gas—for use as an irrigation system cleaner only;
- Peracetic acid—for use in disinfecting equipment, seed, and asexually propagated planting material; and
- Soap-based algicide/demossers.

As herbicides, weed barriers, as applicable.

- Herbicides, soap-based - for use in farmstead maintenance (roadways, ditches, right of ways, building perimeters) and ornamental crops;
- Mulches;
  - Newspaper or other recycled paper, without glossy or colored inks; and
  - Plastic mulch and covers (petroleum-based other than polyvinyl chloride (PVC).

As compost feedstocks.

Newspapers or other recycled paper, without glossy or colored inks.

As animal repellents.

Soaps, ammonium - for use as a large animal repellant only, no contact with soil or edible portion of crop.

As insecticides (including acaricides or mite control).

- Ammonium carbonate - for use as bait in insect traps only, no direct contact with crop or soil;
- Boric acid - structural pest control, no direct contact with organic food or crops;
- Copper Sulfate - for use as tadpole shrimp control in aquatic rice production, is limited to one application per field during any 24-month period. Application rates are limited to levels which do not increase baseline soil test values for copper over a timeframe agreed upon by the producer and accredited certifying agent;
- Elemental sulfur;
- Lime sulfur - including calcium polysulfide;
- Oils, horticultural - narrow range oils as dormant, suffocating, and summer oils;
- Soaps, insecticidal; and
- Sticky traps/barriers.

As insect management. Pheromones.

As rodenticides.

- Sulfur dioxide - underground rodent control only (smoke bombs); and
- Vitamin D3.

As slug or snail bait - None.

As plant disease control.

- Coppers, fixed - copper hydroxide, copper oxide, copper oxychloride, includes products exempted from EPA tolerance, Provided, That, copper-based materials must be used in a manner that minimizes accumulation in the soil and shall not be used as herbicides;
- Copper sulfate - Substance must be used in a manner that minimizes;
- Accumulation of copper in the soil;
- Hydrated lime;
- Hydrogen peroxide;
- Lime sulfur;
- Oils, horticultural, narrow range oils as dormant, suffocating, and summer oils;
- Peracetic acid - for use to control fire blight bacteria;
- Potassium bicarbonate;
- Elemental sulfur;
- Streptomycin, for fire blight control in apples and pears only; and
- Tetracycline (oxytetracycline calcium complex), for fire blight control only.

As plant or soil amendments.

- Aquatic plant extracts (other than hydrolyzed) - Extraction process is limited to the use of potassium hydroxide or sodium hydroxide; solvent amount used is limited to that amount necessary for extraction;
- Elemental sulfur;
- Humic acids - naturally occurring deposits, water and alkali extracts only;

- Lignin sulfonate - chelating agent, dust suppressant, floatation agent;
- Magnesium sulfate - allowed with a documented soil deficiency;
- Micronutrients - not to be used as a defoliant, herbicide, or desiccant. Those made from nitrates or chlorides are not allowed. Soil deficiency must be documented by testing;
- Soluble boron products;
- Sulfates, carbonates, oxides, or silicates of zinc, copper, iron, manganese, molybdenum, selenium, and cobalt;
- Liquid fish products - can be pH adjusted with sulfuric, citric or phosphoric acid;
- The amount of acid used shall not exceed the minimum needed to lower the pH to 3.5; and
- Vitamins, B1, C, and E.

As plant growth regulators.
Ethylene gas - for regulation of pineapple flowering.

As floating agents in postharvest handling.
- Lignin sulfonate; and
- Sodium silicate - for tree fruit and fiber processing.

As synthetic inert ingredients as classified by the Environmental Protection Agency (EPA), for use with nonsynthetic substances or synthetic substances listed in this section and used as an active pesticide ingredient in accordance with any limitations on the use of such substances.
- EPA List 4 - Inerts of Minimal Concern; and
- EPA List 3 - Inerts of unknown toxicity - for use only in passive pheromone dispensers.

Section 205.602 Nonsynthetic substances prohibited for use in organic crop production.

This section contains a list of natural materials prohibited for use as pest control substances or soil amendments.

Prohibited natural materials list includes:

- Strychnine;
- Sodium Fluoaluminate (Cryolite);
- Tobacco dust (Nicotine);
- Arsenic; and
- Ash from manure burning.

This section also includes restrictions on the use of sodium nitrate (only for up to 20 percent of nitrogen inputs) and potassium chloride (mined sources only).

Section 205.603 Synthetic substances allowed for use in organic livestock production.

This section contains a list of synthetic materials allowed as feed additives, feed supplements, paraciticides, disinfectants and medicines in organic livestock production.

Synthetic substances allowed for use in organic livestock are:

- Ethanol and Isopropanol alcohols for disinfecting;
- Aspirin;
- Inert ingredients listed on EPA List 4;
- Vaccines;
- Chlorohexidine for surgical procedures and as a teat dip if other alternatives are not effective;
- Chlorine materials for disinfecting;
- Electrolytes that do not contain antibiotics;

- Glucose;
- Glycerine;
- Hydrogen Peroxide;
- Iodine;
- Magnesium sulfate;
- Oxytocin for postparturition therapy;
- Ivermectin only allowed as an emergency treatment and not allowed for use on animals that will be slaughtered;
- Phosphoric acid allowed as an equipment cleaner;
- Copper sulfate;
- Lidocaine;
- Hydrated lime for external pest control;
- Mineral oil for a lubricant and topical use only;
- Procaine;
- Milk replacers without antibiotics;
- DL – Methionine for poultry use only;
- Trace minerals; and
- Vitamins.

Please note that there are some restrictions on the materials listed above, and you should refer to the text of the regulations to ensure that you use the materials in compliance with the rule.

Section 205.604 Nonsynthetic substances prohibited for use in organic livestock production.

This section contains a list of natural materials that are **prohibited** for use in organic livestock production. The list is limited to **strychnine**.

Organic Certification

What are the steps to becoming a certified organic dairy producer?

Section 205.201 Organic productions and handling system plan.

This section requires all producers and handlers to have an organic system plan that must include:

- A narrative or descriptive format that identifies the practices and procedures performed. Practices include:
  - The method for applying manure, fertilizers, or pest control materials;
  - The mechanical and biological methods used to prepare and combine ingredients;
  - The methods used to package finished products; and
  - The measures taken to exclude pests from a facility.
- Examples of procedures include the protocols established for locating commercially available organic seeds, and procedures for informing neighbors about the organic status of the fields.
- The plan must include a list of all materials that will be applied to the land or within the handling facilities.
- The plan must also address how the application of these materials meets other requirements of the NOP (i.e., how their plan will prevent any manure applications from contributing to water contamination).
- The plan must include a description of the monitoring practices used to evaluate the effectiveness of the organic plan.
  - Monitoring practices could include soil tests to monitor of plan for maintaining or improving soil quality.
  - Production objectives such as pounds of product produced per acre or number of organic apples distributed; or results of pesticide residue tests.

- The plan must include a description of the recordkeeping system used to track a product from harvest through sale; or receiving through shipping; or identifying each animal in production.
- Split operations must describe the management practices and physical barriers that have been established to prevent commingling or contamination of organic food products.

Certifying agents may require additional items to be included in the plan to determine if an operation meets the organic requirements.

Section 205.400 General Requirements for certification.
Persons seeking to receive or maintain organic certification must:

- Comply with the standards;
- Establish and implement an organic production and handling system plan;
- Update the plan on an annual basis;
- Permit on-site inspections;
- Maintain records for five years; and
- Pay annual application fees.

Certified operations are required to immediately notify the certifying agent concerning any application, including drift, of any prohibited substance.

Section 205.401 Application for certification.
An application must be submitted to an accredited certification agency and must contain organic production and handling system plan and appropriate fees.

Section 205.402 Review of application.

- The certifying agent is responsible for reviewing the application and responding to applicant within a reasonable amount of time.
- The response to the application must communicate whether the applicant appears to comply with the organic regulations.
- The certifying agent must schedule an inspection to determine whether the applicant qualifies for certification.
- The applicant may withdraw application at any time.

Section 205.403 On-site inspections.

- Initial inspection must be conducted within a reasonable period of time.
- Inspection must be conducted when the land, facilities, and activities that demonstrate compliance or capacity to comply can be observed.
- Initial inspection must be conducted within 6 months of application or time of renewal.
- Additional announced or unannounced inspections may be conducted at the discretion of the certifying agent.
- All inspections must be conducted with an authorized representative who is knowledgeable about the inspected operation.
- The inspection must verify that the operation is in compliance or has the capability to comply with the organic regulations.
- The inspection must verify that the organic production and handling system plan accurately reflects the practices used by the applicant.
- The inspection must verify that no prohibited substances have been applied.

- Inspectors must conduct an exit interview with an authorized representative who is knowledgeable about the inspected operation. The purpose of the exit interview is to discuss known issues of concern regarding their application for organic certification.
- The certifying agent must provide a copy of the inspection report to the inspected operation within a reasonable time frame.

Section 205.404 Granting certification.

- The certifying agent must review the on-site inspection report within a reasonable timeframe and grant certification if the operation is in compliance with the organic regulations.
- The criteria for granting certification are:
  - The applicant's operation is in compliance with the organic standards; and
  - The applicant is able to conduct operations in accordance with its organic system plan.
- Once certified, a producer's or handler's organic certification continues until it is suspended or revoked by the State Organic Program, or voluntarily withdrawn from the program by the applicant.

For more information review the Additional Resources section on page 163.

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Organic Certification

Notes

Direct Marketing

Alternative Marketing Opportunities:

Direct Marketing

Marketing is the study of what to sell, where to sell it, who to sell it to, and what price to charge. The more you know about marketing, the more money you will generate by making better-informed decisions.

Direct marketing of milk and milk products is a highly profitable method of selling your product. While more effort and energy must be placed in the actual sales of the products, the financial reward can be significant. Any type of direct marketing depends on the building of relationships. You must be willing to interact directly with your customers; you essentially provide the "face of the farmer." Farmers markets are growing rapidly in Washington State, with approximately $25,000,000 in sales in 2005, superseding the 2004 record of $22,000,000 (Washington Farmers Market Association). Whether you have a booth at your local farmers market, sell to restaurants or engage in on-line sales of your products, you can expect to spend a significant amount of time talking not only about your final product, but your method of farming and your animals as well.

Tips for Successful Marketing

- Before embarking on a new marketing strategy, talk with other farmers who use it or have tried it. Different strategies work for different folks. You will find that your most valuable information comes from other farmers.
- Remain consistent with the quality of your product, and customers will return again and again.
- Don't undersell yourself. Determine the cost of producing your product, set the price, and stay there. By offering bargains, customers will come to expect low prices and may be turned off when they have to pay more next time.
- Don't undersell your neighbor. By lowering prices, you may sell more products, but you set a low price

standard. If farmers wish to be paid higher prices, they need to work together to establish a higher standard.

- Keep a connection with your customers. Maintain an e-mail or mailing list of customers to remind them of current products, issues, and opportunities.
- Be attentive to changes in market trends. Consult magazines or periodicals for ideas and updates about gourmet foods, food trends, etc.
- Always strive to deliver on time a product of the quality you promised.
- Be organized. A multitude of organizational qualities will help you to present yourself as a professional.
- Pay attention to the marketing techniques used to sell all kinds of products. Creative packaging, advertising, signs and a unique product are examples of these techniques.
- Remember, **"If you build it, they will come - BUT ONLY IF THEY KNOW YOU ARE OUT THERE!"** There are many inexpensive ways to advertise your farm business. Radio ads, flyers posted at targeted places, newsletters mailed to lists of customers, and business cards will help you build your clientele.

USDA Marketing Assistance Programs

The USDA marketing assistance programs assists farmers, agribusinesses, and state agriculture departments by increasing commodity production through financial assistance, research and promotion, and market stabilization. Information is available on variety of topics such as product loss assistance, loan programs, exporting, marketing improvement, and research and promotion programs. There are also direct marketing resources available, marketing publications, action plans, & farmer's markets information.

Direct Marketing

Community Supported Agriculture

Community Supported Agriculture (CSA) is a member driven marketing format. The farm offers shares in its harvest to its members. A share purchased before the start of the planting season provides cash to the farm much earlier than the sale of produce at harvest. The farmers diversify their crops to provide a broad spectrum of produce and may partner with local bakeries, meat producers, or other specialty producers. The diversity of crop reduces risk to the farmer and makes membership more valuable. This can be an excellent strategy for farms located near densely populated metro areas.

Communicating with Shareholders is Important

It is not uncommon for a shareholder to refer to the CSA in which they belong as “their farm”. Maintaining good communications with customers is very important. One aspect involves communicating clearly the seasonality of crops to the shareholder. Knowing that they will not receive tomatoes in June, or that the early spring deliveries will be less diverse than those in the fall, will help avoid disappointments that result in a decrease of participation in the program. Weekly newsletters that contain farm updates, descriptions and recipes for unusual crops, and other farming information are useful for not only communicating with customers, but for enhancing consumer awareness of agricultural production. Many CSA farms host farm tours, work parties, or other activities to involve their shareholders.

Farmers Markets

Farmers markets are a rapidly growing resource for farm and food processors. The Washington State Farmers Market Association (WSFMA) lists over 90 members throughout the state. It has established farmer-oriented standards for the markets, provides educational opportunities for market managers and vendors, and offers low cost liability insurance to members.

Direct Marketing

Treat Farmers Markets like a Storefront
Selling through a farmers market can be a good choice for many producers and food businesses. Remember, however, that it is a retail operation. You need to think of it as a storefront. It needs to be attractively laid out, signs need to be clearly written and lettering large enough to read from a short distance. Whoever represents you at the market must be comfortable working with the public.

Farmers Markets are Opportunities to Learn and Profit
There are about 100 farmers markets statewide. Farmers markets provide a large customer base for farm products, a training ground to develop marketing skills and customer preferences, the opportunity to network for other types of direct marketing (CSA programs and direct-to-restaurants), and some of the best prices and return on produce.

Farmers Markets are a Good Place to Start
Farmers markets are the most common place for producers to get their start in direct marketing. By participating at a farmers market you can learn about customer expectations and the nuances of successfully marketing your product. Many experienced farms also make use of farmers markets. It is not unusual for farms to attend several different markets each week.

Specialty Markets

Being able to sell your products in specialty or niche markets greatly increases your profits.

Agri-tourism
Also known as “entertainment farming”, agri-tourism is becoming a popular way to attract customers and bring more income to the farm. Tourists today are considered “knowledge seekers” and

many are visiting places closer to home. They are seeking authentic experiences of farm life. Cultural heritage and eco-tourism are the fastest growing sectors of the tourism industry. All these trends lend themselves to the success of agri-tourism activities.

Internet Marketing and Mail Order

Mail order marketing through catalogs and/or the Internet is a good way to reach a broad-based audience. Research conducted by USDA in 2001 on the use of the Internet for marketing farm products showed that the return in sales was greater than the investment costs for developing a Web site. However, you should not rely solely on marketing through a Web site.

Web sites are great for providing information about your farm and facilitating sales once your customer is already familiar with your products. Mail order marketing is best used for products that have a long shelf life and are easily packaged for shipping.

Direct-to-Restaurants and Retail

Many restaurants and grocery retail stores are looking for your value-added dairy products. Like any other business you want to get the best prices available. It pays to get to know the retail establishments and learn marketing techniques to help you get higher prices.

Start with Local Restaurants and Grocery Stores

When seeking restaurant and grocery accounts, start with independently owned businesses that boast that the food they prepare or sell is organic or locally grown. Inexpensive and franchise restaurants, accustomed to wholesale produce and prices, may not be able to give you a competitive price. However, don't feel this market is too limited. Recently, larger restaurant chains in the Northwest have purchased local foods, illustrating the potential growth of this market.

Notes

Insurance & Financing

Insurance

Insurance is often one of the most overlooked pieces of running a farm business. In today's controversial culture, it is wise to have adequate coverage for all your farm activities. Insurance coverage can be found for nearly any activity in which you wish to engage. However, the cost of coverage may not be economically viable for your farm. Shop around for the insurance that best suits your needs, and carefully balance this into your farm business plan.

If your farming operation is very small, you may be able to simply add coverage to your homeowner's policy. Larger operations may require a farm policy that includes property coverage as well as liability coverage for physical injury and ingested food products. A farm policy can also cover a roadside stand, whether or not it is on your property, and may be extended by endorsement to cover a farmer's market stand. Farms that process foods or sell primarily flowers or other non-edibles may require a Commercial General Liability policy.

Adjusted Gross Revenue Lite

In the past, many small-scale operations that produce a wide variety of crops found crop insurance to be unavailable for many of their crops. However, in 2005, Washington producers gained access to a crop insurance program called Adjusted Gross Revenue Lite (AGR-Lite). This program covers revenue losses due to natural disaster or market downturns for agriculture commodities produced during the insurance year (based on your tax schedule F).

Advantages of AGR-Lite Crop Insurance

AGR-Lite crop insurance allows a producer to cover multiple types of crops under one umbrella. Most farm raised crops, animals and animal products are eligible for protection

including many commodities not individually covered under crop insurance plans. It provides reimbursement for lost revenue, depending on the level of coverage chosen. A portion of the premium may be paid by the government, and this coverage can be combined with other Federal crop insurance programs.

Locate Your Nearest Insurance Agent

For information about federal crop insurance or AGR-Lite contact your insurance agent. For a list of insurance agents in the State of Washington visit your local Farm Service Agency office at your local USDA Service Center or see the Insurance Provider Directory on the USDA Risk Management Agency Web site:

http://www3.rma.usda.gov/tools/agents/companies/

Financing Your Business

Prior to approaching any person or organization for financing, a business plan and financials should be in place. This is true even when approaching family and friends for financial assistance. The financial statements generally include actual or projected balance sheets, profit and loss statements, cash flow projections, break-even analysis, sources and uses of funding, tax returns, schedule of existing indebtedness and, if a privately-held company, personal financial statements of principals.

Conventional Financing

Financing for start-up businesses comes primarily through personal loans. Your local financial institutions (commercial banks, savings and loans) can talk to you about options you may have at your disposal. This may include personal funds, loans from private investors (family, friends, business associates and suppliers), home equity loans, refinancing

of real estate, credit card lines of credit (American Express Corporate Card, VISA, MasterCard), cash value on life insurance policies and co-signing possibilities.

SBA Guarantees

The Small Business Administration (SBA) may be an additional source of financing through their Low Documentation Program and 7(a) Bank Loan Guarantee Program. The Low Documentation Program is a quick and easy lending program for small business loans of no more than $150,000. SBA guarantees up to 90 percent of the loan. The 7(a) program provides loan guarantees to small businesses for working capital or fixed asset purchases.

Revolving Loan Funds

Revolving Loan Funds (RFLs) are available in many areas throughout the state. Each fund has its own policies and guidelines.

Farm Credit Services Loans

Northwest Farm Credit Services is a cooperatively owned agricultural lender specializing in financing to farmers, ranchers, agribusinesses, commercial fishermen, timber producers, and country home owners in Idaho, Montana, Oregon, Washington, and Alaska. Farm Credit offers a broad range of flexible loan programs and specially tailored financial services to the agricultural, timber and fishing industries and rural areas. Short, intermediate and long term financing at variable, fixed and adjustable interest rates is available. Farm Credit also provides leasing services, appraisal services, and life, mortgage, disability, and crop insurance programs.

Insurance & Financing

Ag Vision Loans

AgVision is designed to meet the needs of customers with at least one of the following characteristics:

- 35 years of age or younger;
- Less than 10 years agricultural experience;
- Recognized minority: African American, Native American, Alaskan Native, Hispanic, Asian, and Pacific Islanders; and
- Producer with farm production less than $250,000 annually.

USDA Rural Development Business Loans

USDA Rural Development works in partnership with the private sector and the community-based organizations to help fund businesses that create or preserve quality jobs and/or promote a clean rural environment. The financial resources of USDA Rural Development are often leveraged with those of other public and private credit source lenders to meet business and credit needs in under-served areas. Recipients of these programs may include individuals, corporations, partnerships, cooperatives, public bodies, nonprofit corporations, Indian tribes, and private companies.

Investors/Equity Financing

Equity financing requires that you sell an ownership interest in the business in exchange for capital. The most basic hurdle to equity financing is finding investors who are willing to buy into your business; however, the amount of equity financing that you undertake may depend more upon your willingness to share management control than upon the investor appeal of the business. By selling equity interests in your business, you sacrifice some of your autonomy and management rights. Most small or growth-stage businesses use equity financing in a limited way. As with debt financing, most of the time additional equity comes from non-professional investors such as friends, relatives, employees, customers or industry colleagues.

Additional Resources

Animal Health Management Resources

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Additional Resources

Animal Health Management Resources

North Carolina State Animal Response Team. 2000. *Animal Burial Guidelines During A Declared Emergency.*

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Stallings CC, et al., Dairy Science Extension, Virginia Tech. 2002. *Farm Security – "Treat it Seriously," Security for Animal Agriculture: Prevention.*

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USDA APHIS VS CEAH - Center for Animal Health Monitoring. *NAHMS Dairy Reports.*

http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/dairy.htm

Wallace RL; College of Veterinary Medicine, University of Illinois. 2001. *Biosecurity and Animal Health Protocols During Dairy Herd Expansion.*

http://il-traill.outreach.uiuc.edu/biosecurity/papers/herd_expansion.htm

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Additional Resources

BSE-Related Feed Management Resources

69 Small Entities Compliance Guide for Feeders of Ruminant Animals With On-Farm Feed Mixing Operations. http://www.fda.gov./cvm/guidance/guidance69.pdf

70 Small Entities Compliance Guide for Feeders of Ruminant Animal Without On-Farm Feed Mixing Operations http://www.fda.gov./cvm/guidance/guidance70.pdf

BSE information is available on the WSDA Web site, http://www.agr.wa.gov/FoodAnimal/AnimalFeed/BSE.htm

Farm Security Resources

Agricultural Bioterrorism Protection Act of 2002 Questions and Answers: Possession, Use and Transfer of Biological Agents http://www.aphis.usda.gov/programs/ag_selectagent/ag_bioterr_Q&A.html

Extension Disaster Education Network: http://www.agctr.lsu.edu/eden

FBI Awareness of National Security Issues & Response (ANSIR): http://www.fbi.gov/hq/ci/ansir/ansirhome.htm

Fertilizer Institute: http://www.tfi.org

National Biosecurity Resource Center for Animal Emergencies (Purdue Homeland Security Institute): http://www.biosecuritycenter.org

Rural Crime Prevention Task Force – California: http://www.crcptf.com/index.htm

Rural Security Planning: Protecting Family, Friends and Farm – Purdue University: http://www.btny.purdue.edu/Pubs/PPP/PPP-64.pdf

Additional Resources

Farm Security Resources

State Public Health – Demographics, Directories & Data: http://www.statepublichealth.org

Terrorism Threat Vulnerability Self Assessment Tool (North Carolina Dept. of Agriculture & Consumer Services): http://www.ncagr.com/industry_self-assessment.doc

USDA Animal and Plant Health Inspection Service: http://www.aphis.usda.gov

United States Department of Agriculture Homeland Security: http://www.usda.gov/homelandsecurity/materials.html

US Department of Homeland Security: http://www.dhs.gov
US Department of Homeland Security, Federal Emergency Management Agency (FEMA): http://www.fema.gov/areyouready/index.shtm

US Food and Drug Administration - The Bioterrorism Act of 2002: http://www.fda.gov/oc/bioterrorism/bioact.html

Washington State Department of Agriculture, Food Security, Safeguarding Pesticides and Fertilizers: http://agr.wa.gov/FoodSecurity/PesticideFertilizerdefault.htm

Books & Publications

The Complete Book of Pesticide Management: Science, Regulation, Stewardship and Communication. Wiley & Sons. 2002. Ordering information: www.btny.purdue.edu/PPP/

The Complete Federal and State Compliance Guide for Hoosier Businesses. 2001. 440 pages. Order from Purdue University Press at (800) 933-9637 or via the Internet: www.btny.purdue.edu/PPP/

Single copies of Purdue Pesticide Programs' publications can be obtained for $1 (except as noted) from the Purdue University Media Distribution Center (765-494-6794), or on the Internet: www.btny.purdue.edu/PPP/

Additional Resources

Human Health and On-Farm Processing

American Cheese Society, 304 West Liberty St., Ste. 201, Louisville, KY 40202, Phone: 502-583-3783; Fax: 502-589-3602, Web site: www.cheesesociety.org

American Dairy Goat Association, 209 West Main Street - P O Box 865, Spindale, NC 28160, Phone 828-286-3801; Fax 828 287-0476, e-mail: info@adga.org, Web site: www.adga.org

Cheese Reporter, www.cheesereporter.com

Dairy Practices Council, 51 E. Front Street, Suite 2, Keyport, NJ 07735, Phone. 732.203.1947; Fax. 732.203.1947
e-mail: dairypc@dairypc.org, Web site: www.dairypc.org

Dairy Sheep Association of North America, Carol Deacon, Phone: 803-328-8450, e-mail: threedog@flashlink.net, Web site: www.dsana.org

Dairyman's Reference Guide - Disease Management and Antibiotic Use on the Farm: Animal Health Practices on Washington State Dairy Farms Project, http://www.tpchd.org/files/library/5704bde1bb0a51a3.pdf.

Food Innovation Center – Oregon State University & Oregon Dept. of Agriculture, 1207 NW Naito Pkwy, Portland, OR 97209, Phone: 503-872-6680; Fax: 503-872-6648, e-mail: fic@oregonstate.edu
Web site: http://fic.oregonstate.edu

US Food and Drug Administration, 22201 – 23rd Drive SE, Bothell, WA 98021-4421
Phone: 425-483-4953, e-mail: Stephanie.Magill@ora.fda.gov, Web site: www.cfsan.fda.gov/label.html

Univerisity of Idaho, Boise State and Idaho State, http://www.techhelp.org/client_food.html

University of Nebraska, Food Processing Center, "The Specialty Cheese Market" Web site: http://www.farmprofitability.org/cheese.htm

Additional Resources

Human Health and On-Farm Processing

Washington County Health Jurisdictions, Web site: http://www.doh.wa.gov/LHJMap/LHJMap.htm

Washington Dairy Products Commission, 4201 - 198th St. SW, Lynnwood, WA 98036 – 6751, 425-672-0687, www.havemilk.com

Washington State Dairy Federation, PO Box 1768, 575 E. Main Street, Suite #2, Elma, WA 98541-1768
Phone:360-482-3485; Fax 360-482-4069, www.wadairyfederation.org

Washington State Department of Agriculture
Licensing Services
P.O. Box 42560, 1111 Washington Street SE, Olympia, WA 98504-2560
Phone: 360-902-1876; Fax 360-902-2087
e-mail: foodsafety@agr.wa.gov
Web site: http://agr.wa.gov/FoodAnimal

Washington State Department of Agriculture
Technical Assistance

NW Washington - Scott Fox, Food Safety Supervisor
Phone: 360-794-9260; e-mail: Sfox@agr.wa.gov

King County - Bob Armstrong, Food Safety Supervisor
Phone: 253-529-0102; e-mail: Barmstrong@agr.wa.gov

SW WA & Olympic Peninsula – Lucy Severs, Food Safety Supervisor
Phone: 360-273-6777; e-mail: Lsevers@agr.wa.gov

Eastern Washington – Gena Reich, Food Safety Supervisor
Phone: 509-546-2977; e-mail: Greich@agr.wa.gov

Washington State Department of Ecology, Technical Resources for Engineering Efficiency & Waste Reduction
Lynn Coleman, Phone: 360-407-6738, Email: lco1461@ecy.wa.gov,
Web site: http://www.ecy.wa.gov/programs/hwtr/tree

WSU College of Agriculture, Center for Sustaining Agriculture and Natural Resources

Additional Resources

Organic Certification Resources

Agri-Dynamics - Agri-Dynamics grew out of sincere desire to offer the livestock producer natural alternatives to synthetic additives, pharmaceutical drugs and inferior supplements. www.agri-dynamics.com

ATTRA: National Sustainable Agriculture Information: Your source for the latest in sustainable agriculture and organic farming news, publications, events and funding opportunities.

Crystal Creek: dedicated to providing livestock producers with the very best, natural, effective and environmentally safe livestock supplements and programs possible. http://www.crystalcreeknatural.com

Dettloff, Paul , D.V.M. *Alternative Treatments for Ruminant Animals.* Drawing on 36 years of veterinary practice, Dr. Paul Dettloff presents a natural, sustainable approach to ruminant health. Copiously illustrated chapters “break down” the animal into its interrelated biological systems: digestive, reproductive, respiratory, circulatory, musculoskeletal and more. Also includes a chapter on nosodes, with vaccination programs for dairy cattle, sheep and goats. This manual is packed with information from a renowned vet and educator.

Ekarius, Carol. 1999. *Small Scale Livestock Farming*. The author’s natural, organic approach to livestock management produces healthier animals, reduces feed and health care costs and maximizes your profit. This book will help you: choose suitable livestock, understand housing, fencing and feeding, learn about reproduction, investigate cutting-edge market strategies and create a complete financial and biological farm plan. Available from Back 40 Books. 1-866-596-9982 or www.back40books.com. Cost is $18.95.

Karreman, Hubert J. D.V.M. 2000. *Treating Dairy Cows Naturally*. This book includes treatments for common dairy cow diseases using biologics, botanical medicines, homeopathic remedies, acupuncture and conventional medicine, and discusses organic dairy farming, conservation principles, grazing, and comparison of DHIA data between organic and conventional herds. Available from Penn Dutch Cow Care: www.penndutchcowcare.org

Additional Resources

Organic Certification Resources

Organic Farming Compliance Handbook: A Resource Guide for Western Region Agricultural Professionals. http://www.sarep.ucdavis.edu/organic/complianceguide/

Penn Dutch Cow Care: www.penndutchcowcare.org

Shaeffer, C. Edgar V.M.D.. *Homeopathy for the Herd: A Farmer's Guide to Low-Cost, Non-Toxic Veterinary Cattle Care*, this new information-packed book will tell you what you need to know to get started in the use of homeopathic medicines with cows. Using case studies and practical examples from both dairy and beef operations, Dr. Shaeffer covers such topics as: creating a holistic operation; organics and homeopathy; prescribing; mastitis and fertility-related problems; and the Materia Medica, keynotes and nosodes. Also includes a convenient section that lists specific conditions and remedies.

Washington State University Center for Sustaining Agriculture & Natural Resources (CSANR): e-mail: csanr@wsu.edu, Web site: http://csanr.wsu.edu

Marketing Resources

Marketing at Farmers Market: WSU Extension, King County. http://king.wsu.edu/foodandfarms/documents/FarmersMarket.pdf

Nation, Allan. 2002. *Farm Fresh: Direct Marketing Milk and Meat.* Explains how to prepare a business and marketing plan, name products, set prices, add products, find and keep customers and how to prosper as a niche market. Available from Acres, USA. 1-800-355-5313 or www.acresusa.com. Cost is $30.00.

Washington State Department of Agriculture
Small Farm & Direct Marketing, Fred Berman, Program Coordinator
360-902-1884
e-mail: smallfarms@agr.wa.gov , Web site: http://agr.wa.gov/Marketing/SmallFarm

Additional Resources

Marketing Resources

Marketing Plans:

http://www.morebusiness.com/templates_worksheets/bplans/printpre.brc

http://www.entrepreneur.com/howto/mktngplan/0,5977,,00.html

http://www.websitemarketingplan.com/Free/FreeSampleMarketingPlan.pdf

http://www.unzco.com/basicguide/c2.html

http://www.morebusiness.com/running_your_business/marketing/

http://www.sba.gov/managing/marketing/100ideas.html

Agribusiness:

http://www.nal.usda.gov/afsic/sbjmktec.htm

http://www.ams.usda.gov/

http://www.nass.usda.gov/wa/

http://impact.wsu.edu/Wasuppliers/

Business Planning Resources

Small Business Association

Spokane Branch Office, 801 West Riverside Avenue, Suite 20
Spokane, WA 89920
Phone: 509-353-281, www.sba.gov/wa/spokane

Seattle, WA District Office
1200 Sixth Avenue, Suite 1700
corner of Sixth and University
Seattle, WA 98101-1128
206-553-7310
www.sba.gov/wa/seattle

Additional Resources

Business Planning Resources

Small Business Development Centers (SBDC) Thomas Dorr, Director, , 119 N. Commercial St., Suite 195, Bellingham, WA 98225-4455, Phone: 360-733-4014, e-mail: tom.dorr@wwu.edu, www.wsbdc.org

SCORE – "Counselors to America's Small Business" www.score.org

State of Washington Department of Community Trade & Economic Development, Washington State Economic Development Counsels, 128-10th Avenue SW, PO Box 42525, Olympia, WA 98504-2525, Web site: http://www.cted.wa.gov

Insurance & Financing Resources

Building a Risk Management Plan: http://www.rma.usda.gov/pubs/1998/barmp/index.html

Business & Cooperative programs: http://www.rurdev.usda.gov/rbs/

Calculate your crop insurance premium: http://www.rma.usda.gov/tools/

Financial Resources for Farmers: http://king.wsu.edu/foodandfarms/documents/Financial.pdf

Insurance Providers Directory for 2006 http://www3.rma.usda.gov/tools/agents/companies/

Insurance Resources for Business: http://www.lni.wa.gov/ClaimsIns/Insurance/default.asp

nsurance Resources for Farmers: http://king.wsu.edu/foodandfarms/documents/Insurance.pdf

SBA Loan Checklist: http://www.greenriver.edu/businesscenter/Documents/SBALoanChecklist.pdf

Understanding Your Financial Statements: http://www.sba.gov/managing/financing/statement.html

USDA Risk Management Agency (RMA) Agent Locator List for 2006 http://www3.rma.usda.gov/tools/agents/companies/

Notes

Additional Resources

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