Inspired by a Smelly Sweater: Exploring Agricultural Connections of Animal Fibres

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Introduction

My sweater smelled like an animal - a sheep to be precise. As a new knitter, I had completed my first sweater and had just begun to block it into shape, when I noticed the smell of steamed sheep in the room. And it was coming from my sweater. I had seen the label in the yarn store and knew it was wool. I knew wool came from sheep. But having grown up in the city, I couldn't remember the last time I had actually seen one, never mind smelled it. I had been working with this yarn for the past 2 months, and yet now, it felt like I was holding something very foreign in my hands. I realized that I had never bothered to consider where my sweater actually came from, in the same way that I never thought much about where my food came from beyond the grocery store. But now, my curiosity had been piqued: somewhere, there were animals raised for fibres and I wanted to know about them.

In his essay, "The Pleasures of Eating," Wendell Berry (1990) argues that people are becoming increasingly distanced from the land and ignorant of their dependence on farms. He states that "by what is included or excluded we teach the young that they are part of, or apart from, the natural world". For him, education that fails to address this agricultural connection is necessarily incomplete. Berry goes on to describe the ideal mindless consumer of food, who is passive, uncritical and totally dependent. This consumer ignores questions of quality, where it was produced, how and in what manner it was produced, and buy it because they have been told they like it. Although his focus was food, that same could be said for our textiles classes. All natural fibres are part of the agricultural system yet we seldom recognize the concept of fibres as an agricultural product. Berry describes this trap as "the ideal of industrialism: a walled city surrounded by valves that let merchandise in but no consciousness out." Our only escape, he says, is to voluntarily restore one's consciousness of what is involved, and reclaim responsibility for one's own part.

Therefore the purpose of this unit is to enable students to see fibres as an agricultural product, to encourage students to move from passivity to question, and to assist them to make connections and to "think of themselves as participants in agriculture" (Berry). This concept would be revolutionary for a child raised in the city, who may never have even considered they could have a role in agriculture when they've never been to a farm. Canadian poet James Reaney once said "the feeling of place is a power within us." The more we can make students aware of their role in agriculture and the more we can show them how they are tied to the land, the greater their sense of responsibility, belonging and empowerment in the world.

Berry, Wendell. (1990) The Pleasures of Eating. www.ecoliteracy.org/publications/rsl.wendell-berry.html

Project Synopsis:

This unit traces the path animal fibres take from farm to textile product. This includes raising animals for fibres on BC Farms, to shearing the animal, to washing, carding and spinning the fibre into yarn, to dying the yarn, and eventually producing a textile item for example knitting or crocheting the yarn into a scarf or creating a felted hat or bag. In the process, students expand their understanding of what constitutes an agricultural product. A field trip to a farm where animals are raised for their fibres or arranging a guest from a local weavers and spinners guild is also recommended to enhance student's learning about the relationship between textile studies and agriculture.

This unit will highlight fibres from four animals that are raised specifically for their fibres in BC: goats, sheep, llamas, and alpacas. In drawing students' attention to local agriculture, it is hoped that they will in turn begin to understand the importance of their role in agriculture, enable them to make informed choices and decisions and realize the power and responsibility that accompanies a sense of place and belonging in the natural world.

IRP Connections

Textile Studies 12
Curriculum Organize: Textile Processes
Prescribed Learning Outcomes:

- produce a yarn from a fibre
- produce a fabric from a yarn
- describe the processes involved in producing fabric from fibre
- compare textile processes used in industry and the home
- describe technological changes in textile production
- design textile items using traditional and computer-assisted design techniques

In Preparation for this unit you will need to:

1. Contact BC Agriculture in the Classroom Foundation www.aitc.ca/bc and order:
   - copies of the ***Agriculture Fish & Food in BC*** **poster sized maps** (if you get 6 to 8 maps then you can use them for group work)
   - a black and white 8 1/2 copy of the map that can be photocopied as a student handout
   - a copy of ***What is Agriculture?*** Brainstorming sheet and information sheet that can be photocopied as a student handout
   - a copy of ***"Grow BC" A Guide to BC's Agriculture Resources*** (there may be a copy in your school library)
   - a copy of **All About Food Farm Visit Guide**

2. Collect pictures of the animals that provide fibres used in textile production. The four main ones raised in BC are sheep, goats, llamas, and alpacas (see references for web based sources).

3. Collect pictures and actual items made from wool from sheep, goats, llamas, and alpacas. Samples of the fleece, roving, or yarns would also be useful (see reference list for BC sources).

4. Investigate the possibilities for a field trip to a local farm that raises animals for fibre (see resource list).

5. Investigate local weavers and spinners who may become guest speakers.

6. Find a source of wool fleece (needs to be washed), batt (shaped like a pancake) or roving (rope like) for students to learn carding, spinning.

7. Locate carders, either hand paddle type or a hand crank machine. If these are not available in your school you can see if there is a spinning/weaving club in your area that may be available for a field trip or willing to come in as a guest speaker.

8. Collect the supplies for the CD drop spindles.
   - two old CD's per student (good way to recycle outdated, old CD's)
   - one piece of wooden doweling per student
     dimensions: 12" or 30 cm of 5/16 or 8 mm wooden doweling (try to get these cut at point of purchase, e.g., at Home Depot)
   - one rubber gasket per student
     size: (inner diameter 3/8" or 9.5 mm and outer diameter 3/4" or 19 mm) – get these at an electronic supply shop, e.g., Radio Shack.
9. Gather the supplies for the Making a Textile Item Stations

Topic 1

An Introduction to Agriculture in BC And Animal Fibres as Agricultural Products

Objectives

Students Will Be Able To:

- Identify which fibres comes from which animals
- Identify commonalities and differences in production of fibres from different animals
- Locate where these animals are raised in BC

Materials

1. Handouts: ***"Grow BC" A Guide to BC's Agriculture Resources*** photocopy p.60-61 Sheep, pp. 54-55 Llamas and 48-49 Goats and the Information Sheet on Alpacas included with this lesson.
2. Copies of the ***Agriculture Fish & Food in BC*** **map** and a class set of the small black and white version of this map from ***"Grow BC" A Guide to BC's Agriculture Resources*** p. 9.
3. Handout: What is Agriculture?
4. pencil crayons or highlighters in three different colours
5. Sweaters, yarn or textile samples from a variety of sources
6. blank 8 1/2 by 11" paper (1 sheet per student)

Activities

1. Have students brainstorm **"What is Agriculture?"** using the "What is Agriculture?" brainstorming sheet. Have students compare their answers with the "What is Agriculture?" handout.
2. Ask - **"What does Agriculture have to do with Textiles?"**
    a. Compile students' answers on board or overhead. Check: did they consider animal fibres as one of the products? If not ask what animal fibres are used in textile production? What animals are raised in BC?

3. Divide the class into small groups and give each group a large copy of the ***Agriculture Fish & Food in BC*** **map.** Hand out the individual copies of the black and white version. Direct students to colour code their maps as follows:
    a. Highlight in red anytime they see the goat symbol
    b. Highlight in yellow all the llama and exotic animal symbol
    c. Highlight in blue all the symbols of sheep and lamb production

d. Discuss their findings:
    i. Did they notice a pattern?
    ii. What factors affect where a certain animal can be raised?

Fibres of BC Jig Saw. Set up 4 Learning Stations around the classroom. Label the station, sheep, goats, llamas, and alpaca. At each station put the pictures and samples you have collected and the corresponding information pages from Grow BC on Goats, Sheep and Llamas and the one on Alpacas included with this lesson. Make use that each group has 4 people. Have the students number off 1,2,3,4. Assign the number 1's sheep, 1's goats, 3's llamas, and 4's alpacas. Their task is to learn as much as they can about the production of fibres from these animals, record the information on their **Fibres of BC Jig Saw – Record Sheet** and be prepared to return and teach their group. To ensure individual accountability you can state that you will pick one sheet per group at random for a group mark.

Extension, Follow up or Variation

Have students design an information pamphlet about fibres grown in BC. They may do the four main fibres or choose one to highlight.

Pamphlet should answer these questions:

1. Where in the world does this animal originate?
2. Where can this animal be found in production in BC?
3. How many do we produce in BC?
4. How are they produced?
5. What fibres do they produce?
6. How are the fibres from this animal used?
7. Are there different breeds of this animal?

Pamphlet should be the size of one 81/2 by 11 sheet of paper, folded into thirds and should include pictures of your animal.

---------Alpacas----------

Interesting Facts

Alpacas played a central part in the Incan culture that was located on the high plateaus and mountains of South America. Alpacas have been domesticated for some 5,000 years. Alpacas produce fine, luxurious cashmere like fleece, once reserved for Incan royalty as an indication of wealth and nobleness. These amazing animals provided the food, fuel, clothing, and transportation for a civilization that thrived in an otherwise hostile environment. The alpaca was almost annihilated when the Spanish conquered the Incas. They survived only because of their importance to the indigenous people and their incredible ability to live at altitudes and under conditions that cannot sustain the life of other domestic animals. Alpacas are now being successfully raised and enjoyed throughout North America and abroad.

What are alpacas?

Alpacas are members of the camel family, along with llamas, vicunas, and guanacos, and come from the high plains of the Andes Mountains in South America. There are two breeds of alpacas – the Huacaya: the most common (accounts for 90% of the world's alpaca population), has a very crimpy fleece that gives them a "fluffy" appearance and the Suri (accounts for 10% of the world's alpaca population): more rare, having very silky hair-like fiber which grows in tight spirals and drapes down into tight spirals and locks. Alpacas come in variety of colours, including white, black, brown, grey, fawn and any combination of these colours. They have the widest assortment of colours of any fibre-bearing animal. The fibre is prized for its unique silky feel and superb handle, alpaca fibre is highly sought after by the large textile manufacturers of Europe and Asia.

Where are they produced in BC?

Alpacas were first imported to the North America in 1984 and can be found throughout BC. You will find them mainly in the Okanagan, Lower Mainland, and Vancouver and Gulf Islands. Alpacas are extremely hardy and adaptable to most climates, elevations and conditions.

How many alpacas do we produce?

Canada is home to approximately 7,000 alpacas. How many there are in BC is difficult to determine as many alpacas are kept on small hobby farms or as pets. They are raised as breeding stock, fibre stock and working stock for stress management therapy.

How are alpacas produced?

Alpacas are one of the easiest, gentle, intelligent, clean, and profitable animals to raise. They are easily handled and are safe around children. Caring for them is not difficult. As long as they have some fresh hay and clean water, they are very content. They require little space making them an ideal small acreage livestock. They are easy on pastures as their feet are padded. A three-sided shelter is all they require to get them out of the worst weather but normally they prefer to be outside. Alpacas are herd animals so they have to be kept in groups of two or more. Other than shearing and the usual de-worming and vaccinations, alpacas require little else. Toenails and teeth may occasionally need trimming. They are easily transported in a pick-up, van or trailer and usually lie down in traveling.

How are alpacas used?

Alpaca are raised mainly for their fibre but are also kept as pets. The alpaca fibre is very high in demand by the textile industry worldwide. It is as fine as cashmere, soft, silky and much warmer and stronger than sheep's wool. Alpacas are shorn once a year yielding 5 – 10 pounds of exquisite fleece. The fibre, virtually grease-free, can be hand spun directly off of the animal. Alpacas are also used as show animals and as part of 4-H clubs.

What happens after alpacas leave the farms?

The alpaca industry in BC is growing. The alpaca producers do much of the marketing of alpacas. The market for the fibre is quite diverse. Various woollen mills in BC and across Canada offer custom processing of alpaca fibre - carding, blending, dyeing and processing into many products. Sweaters, blankets, mitts, socks, shawls, hats, duvets can be purchased through various home-based businesses.

What challenges do alpaca farms face?

Importing alpacas can be difficult as there are strict quarantine laws if the animals are coming from countries where diseases exist that have been eliminated in Canada.

Who's involved in producing alpacas?

- Alpaca producers
- Feed producers
- Shearers
- Spinners and weavers

Contacts and other resources:

BC Llama and Alpaca Association
Fraser Valley Llama and Alpaca Club

Fibres of BC Jig Saw – Record Sheet

Name of Animal Hair/Fibre _____ Description of the Fibre _____ _____ Characteristics of the Fibre _____ _____ Uses of the Fibre _____ How much fibre an animal produces in One year_____ Careers related to raising and harvesting the fibres of this animal _____	Name of Animal Hair/Fibre _____ Description of the Fibre _____ _____ Characteristics of the Fibre _____ _____ Uses of the Fibre _____ How much fibre an animal produces in One year_____ Careers related to raising and harvesting the fibres of this animal _____
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Topic 2:

Field Trip to a Farm That Raises Animals for Fibre

NOTE: This topic consists of some suggested Pre-Trip Activities, Activities for During the Field Trip, and Post Field Trip Activities. What is possible will vary from farm to farm. Teacher will need to make arrangements with a farm in their area and follow the school policy regarding field trips.

Objectives	Students Will Be Able To: • Ask and get answers to 10 questions they generate about the farming of animal fibres in BC • Articulate what they learned on their field trip to the farm so it can be shared with others
Materials	• List of possible farms to visit (see resource list) • Excerpt from *All About Food* Farm Visit Guide • Cameras. Disposable cameras (1 per student). Many students have their own digital cameras. Some schools have digital cameras or even video cameras that can be borrowed. • Students should bring writing materials with them to the farm to take notes if necessary
Pre-Trip Activities	• Have students generate a list of 10 questions about the raising animals for fibre (ie: care of the animals, the origin of the animals, challenges faced, steps in production of fibres, the nature of farming, use of the fibres, etc) • Advise students they will be preparing a reflection after their field trip and will be need a notebook to record the answers to their questions as well as other information and notes on the pictures that they take. This could also be designed as a group project, with one student responsible for taking photos, one for generating questions, another for interviewing farmer with questions, etc., and all working together to compile results in the same reflection-style booklet.

Activities During the Field Trip 	• It is helpful to let the farmer know what your objectives are and determine what activities will be appropriate. Depending on the size of the class it might be useful to divide the class into groups. It is not necessary that all students do or see everything as they can share the information when they get back to class. One group could be interviewing the farmer, one group might be taking pictures, etc. • Students can collect images, quotes and any other materials and/or artifacts that help them to articulate their experience to be included as part of their reflection

Post-trip activities	• Have students prepare a Reflection on: "What I Learned at the _____Farm" to showcase what they learned while visiting the farm. This can be done in hard copy or as a video or power point presentation. It will be composed of:
	  ○ A titlepage
	  ○ Their write up on the field trip
	  ○ Their interview with the farmer
	  ○ Reflections on what they learned during the field trip
	  ○ Photos they took with accompanying commentary
	  ○ Any other information, items, samples, they were able to gather
	• Have the students write a thank-you letter to the farmer.

Extension/Follow up	• While at the farm, look into purchasing animal fibres for the next topic which is spinning the fibres into yarns. • If the farm is unable to sell these to you directly, see resource list for possible sources, for example, Birkeland Bros. in Vancouver has wool batts available for purchase.

Topic 3:

Preparing the Wool for Carding the Wool & Making Spindles

Objectives

Students Will Be Able To:

- Explain the steps in transforming a fibre to a yarn
- Identify how technology has changed the process of carding and spinning wool
- Card wool and spin their own yarn

Materials

- Internet access and a LCD projector to view the carding video available at http://www.birkelandwool.net/ (under videos)
- Handout on Washing Fleece download from http://www.birkelandwool.net/ (under articles)
- Wool batts, fleece, or rovings
- Hand-cranked carding machine (more than one if possible)
- Set of hand carding paddles (again, more than one set if possible)
- Handout: **Making Your own CD Drop Spindle** and all the materials – 2 CD's per student, 12" of 5/8" wooden dowelling per student, one rubber gasket per student, one small cup hook per student.
- Handout: **Spinning With A Drop Spindle** download from http://www.earthguild.com/index.htm
- If you choose to do the **Kool-Aid Dying** then you will need copies of the handout as well as the materials – quart sized canning jars, kool-aid in various flavours, and a large saucepan or dutch oven.

Activities

- Go through the steps in preparing the wool once it has been removed from the animal. Wash the fleece they obtained at the farm (use handout on washing fleece).
- Introduce concept of carding the wool, discuss:
  - Why it is necessary?
  - How has technology changed this process?
  - Demonstrate how to use hand carding machine and paddles
  - View the video on carding from Birkeland Bros. website. Discuss the difference between hand and machine carding.
- Equipment permitting, have students try carding
- If equipment is limited organize the class so students

	who are not carding are constructing their drop spindles following the directions on the **Making Your own CD Drop Spindle** handout. • Teach student how to use the drop spindle using the **Spinning With A Drop Spindle** handout.
Extension, Follow up or Variation	• Once students have completed carding and spinning their yarn, they have the option of dyeing it with kool-aid. This option could either be explored in class (access to a stove is necessary) or students could explore the process at home and share the experience with the class. See the **Kool-aid Dying Direction Sheet**. Note that using koolaid as a dye only works with protein fibres so it is perfect for animal fibres.

Making Your own CD Drop Spindle

Materials

2 **CDs** (good way to get rid of old ones)
1 12" or 30 cm length of 5/16 or 8 mm **wooden doweling**
1 **rubber gasket** (inner diameter 3/8" or 9.5 mm and outer diameter 3/4" or 19 mm) – get these at an electronic supply shop, e.g., Radio Shack
1 small **cup hook**

Directions

1. Holding the two CD's together so that the center holes line up, insert the rubber gasket into the center holes.
2. Insert the piece of wooden doweling into the center hole of the rubber gasket. Push the dowel through so that it sticks out the other side about 1 inch or 2 cm.
3. To make a bottom-whorl spindle screw the cup hook into the longer end of the dowel. HINT: if you don't have a cup hook you can make a notch in the dowel about 1.5 to 2 cm from the end (a small saw, pruning sheers or a carving knife will work. You may have to sand the notch to make it smooth.)

Kool-Aid Dying

These direction are for doing one colour. You can do several colours at once. How many will depend on how many jars will fit into your large sauce pan or dutch oven.

Materials:

A quart sized canning jar

1 pkg. regular Kool-Aid (no sugar)

10 grams pre-washed fibre — white or light colour

1 old wooden spoon or chopstick

Large saucepan or dutch oven

Paper towels or an old towel

Directions:

1. Fill canning jar, half to three quarters full with hot water.

2. Add Kool-Aid, mixing well.

3. Wet the pre-washed fibre and squeeze out the excess water gently.

4. Add the wet pre-washed fibre to the Kool-Aid mixture in the canning jar. Stir with a chopstick or old wooden spoon to mix well and to make sure all the fibre is coated with Kool-Aid.

5. Fill the large saucepan or dutch oven with four to five inches (12 cm) of water. Place jar(s) in the pan and place on the stove on a medium heat burner.

6. Wait approximately ten minutes. All dye from the Kool-Aid will be absorbed by the fibre and the water in the canning jar will be clear or milky.

7. Remove from heat. Let fibre cool in dye water. Squeeze out water and lay out on paper towels or an old towel to dry

These simple directions were modified from Mount Lehman Llamas website:

http://www.mountlehmanllamas.com/

Topic 4: Spinning Fibres into Yarn

Objectives

Students Will Be Able To:

- Spin fibres into yarns
- Identify the differences between spinning on a drop spindle vs. spinning on a wheel

Materials

- Handout: **Spinning With A Drop Spindle** download from http://www.earthguild.com/index.htm
- Carded wool
- A length of yarn (about 18 inches long) for each student
- Guest speaker/demonstrator from the local spinners/weavers guild (see resource list)

Activities

• Demonstrate how to use the CD Drop Spindle the students have made using the directions on the handout and following these basic steps:

a) Tie the length of yarn onto the spindle (the wooden dowel) near to the CD (the whorl) on the long end.

b) Spiral the yarn up the dowel (spindle shaft)

c) If your spindle has a hook, catch the yarn with it. If you have a notch, make a half hitch to hold the yarn in the spindle.

d) Practice using your drop spindle. Hold the yarn with your upper hand and the spindle with your lower hand. Give the spindle a twist. Practice until you can get the spindle to turn smoothly.

e) Now practice pulling fibres out from your carded wool. Take a handful of wool and gently pull some of the fibres away from the mass and twist the fibres in one direction with your fingers (this is called drafting) until you get a piece about 10 inches (24 cm long). Practice so that you can pull and twist in a smooth motion. If the twist is too loose the yarn will fall apart. If it is too tight you won't be able to draw out more fibres.

f) Now join your fibres to the piece of yarn (called a leader) on your spindle. Fluff out or feather your leader and the end of the fibres you have pulled and twisted. Hold the fluffed out ends together with one hand and twist the spindle clockwise with the other hand.

g) After you have made the join stop the spindle (if you are sitting down you can hold it between your legs). Slide the hand you use to twist the

spindle above the spindle and pinch the leader and draft out some fibers. Then twist the spindle. Continue this until the yarn is longer than your arm. At this time stop and wind your yarn around the spindle.

h). Repeat the pinch, draft, whorl, stop until you have a mass of yarn that fills the spindle. Then wind the yarn off into a skein (the easiest way to do this is to loop the yarn around the back of a chair until the spindle is empty).

• If possible arrange for a guest speaker from the local spinners/weavers guild to come and demonstrate how to use a spinning wheel. Let them know what you are interested in, for example:

- The history of wheel spinning
- To observe them spinning
- A chance for the students to try out using the wheel
- Their experience of drop spindling vs. wheel spinning
- If they could possibly bring some different projects they have completed using yarn they have spun themselves

Topic 5: Making Textile Products from Animal Hair Fibres

Objectives	Students Will Be Able To: • Produce a Textile Item
Materials	• Supplies for the Knitting Station (see separate direction sheet) • Supplies for the Crocheting Station(see separate direction sheet) • Supplies for the Weaving Station (see separate direction sheet) • Supplies for the Felting Station (see separate direction sheet)
Activities	• As students finish spinning and winding their yarn, they can choose how they want to use their yarn. The teacher sets up four stations with various ways of combining fibres into textile items OR the teacher can choose one project and have all students do that project.
Extension, Follow up or Variation	• Students could choose more advanced patterns pending teacher approval

•

Knitting Station

Materials:
- 7.5 mm knitting needles (you can have students make their own knitting needles by using 5/16" wooden dowels – if you by the dowels at Home Depot one piece of dowelling will make two sets of needles if cut into 4 pieces. Use a pencil sharpener to sharpen one end and wrap a bit of masking tape at the other end so that stitches will not slide off. You may want to sand the wood a bit or rub it with beeswax).
- the yarn students have made with their drop spindles (and other purchased or scavenged yarns)
- handouts with directions for basic knitting and purl stitch
- internet access, a computers so students can go to:
http://www.knittinghelp.com/knitting/basic_techniques/
where there are video demonstrations casting on, knitting, purling and binding off which explain techniques in a very clear and straightforward format.

Directions:
1. Cast on 20 stitches.
2. Knit as many rows as it takes to make a square.
3. Cast or bind off the stitches.
4. You can use this square as a sample or fold in half and stitch up the sides to make a small pouch for your cell phone or Ipod.

Once you have mastered the basics you may want to learn and practice the purl stitch.

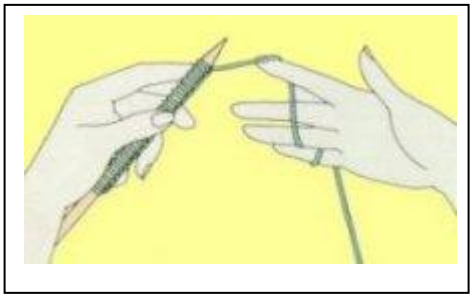
If you already know how to knit you can consider making something more complex. Consult your teacher.

Name_____
Block/Table____Date_____

The Knit Stitch

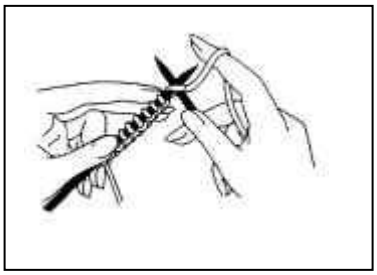
The knit stitch, or knitting is the action of inserting your needles through the bottom of a loop and pulling a new loop down and through the first loop. There are 2 basic methods: the English and the Continental method. Each method has its benefits and drawbacks, but for beginners, the English method is a little easier to pick up and that is the method that is demonstrated below.

1)



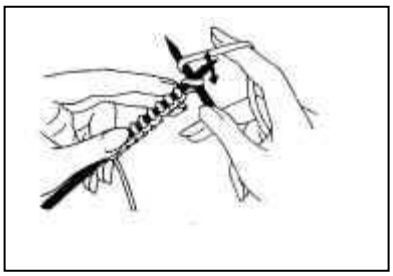
- Hold the needle with the cast on stitches in your left hand.
- wrap the yarn over your index finger, under your middle and ring fingers and around your baby finger. This creates the right tension while you are knitting

2)



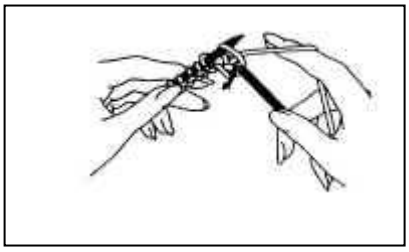
- insert the right needle from the front to the back through the first stitch on the left needle
- you will see that the needles form an 'X', the right needle under the left needle

3)



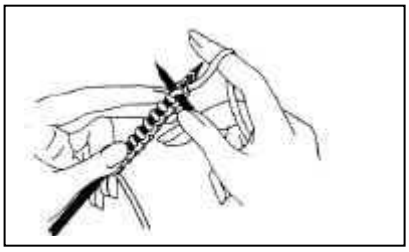
- wrap the yarn around the needle, from back to front so it rests on between the two needles

4)



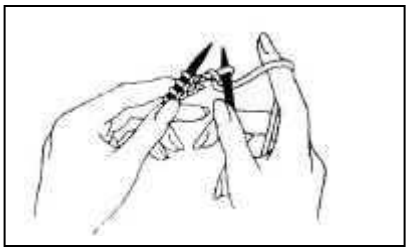
- hold the yarn in place on the right needle, except for the stitch that you are working with so they do not slide off
- guide the right needle through the centre of the stitch

5)



- the right needle should now be on top of the left needle

6)



- slip the stitch you were working with off the left needle. Remember to only slip one stitch off.
- you will have the newly created stitch on the right needle

* Repeat the above steps for each stitch on the left needle. Notice at the beginning and end of each stitch the yarn is at the back of the work. Switch the needle with all the stitches over to your left hand and the empty needle to your right hand*

when looking at a pattern, knit is usually abbreviated as 'k'. (ie. if you have to knit 3 stitches it will be abbreviated as 'k3')

HERE IS A LITTLE RHYME THAT YOU CAN SAY TO YOURSELF TO HELP REMEMBER ALL THE STEPS

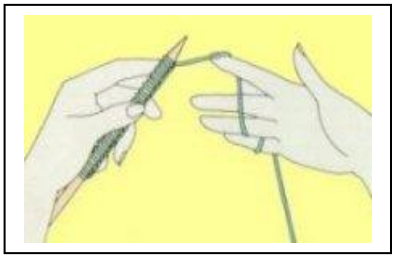
"In through the front door,
Around through the back,
Hop through the window,
Off jumps Jack"

Name_____
Block/Table_____Date____

The Purl Stitch

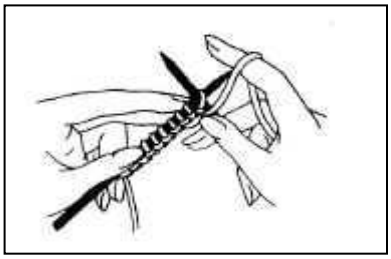
The purl stitch is the reverse of the knit stitch. In forming the purl stitch, its movements are the reverse of the knit stitch. The needle enters the front of the stitch from back to front. The yarn is held in front of the work and is cast from back to front. Again, the method shown below is the English method

1)



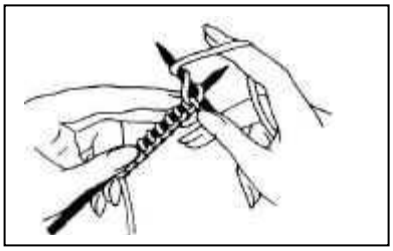
- Again, this is a reminder of proper way to hold the yarn. It is good to start good habits early. This helps maintain proper tension
- wrap the yarn over your index finger, under your middle and ring fingers and around your baby finger.

2)



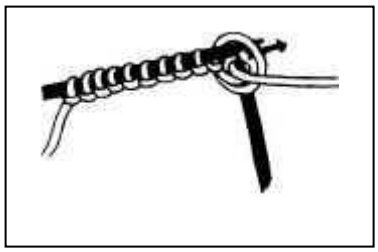
- Insert the right needle from back to front through the stitch on the left needle.
- the needles will form an 'X' with the right needle on top of the left needle. Make sure the yarn is in front of the needle

3)



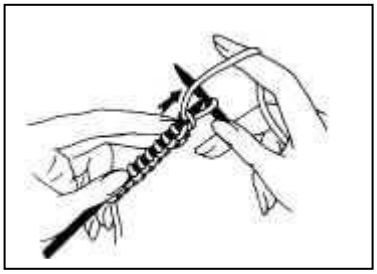
- wrap the yarn around the front of the needle, counter clockwise, from the back and bringing the yarn around and in front of the needle

4)



- hold the yarn in place with your hand on the right needle except for the stitch that you are working with so they do not slide off
- slide the right needle down and bring the tip from the front to the back through the stitch bringing the yarn with it

5)



- pull the remaining yarn off the left hand needle pulling the right hand needle to the right so that newly formed stitch slides off the left needle on to the right needle

* Repeat the above steps for each stitch on the left needle. Notice at the beginning and end of each stitch the yarn is at the front of your work. Switch the needle with all the stitches over to your left hand and the empty needle to your right hand*

* when looking at a pattern, purl is usually abbreviated 'p' (ie. when you have to purl 2 stitches, it will be abbreviated 'p2)*

STOCKINETTE STITCH

Now you know how to knit and purl, if you alternate a knitting row and a purl, you will be working in the most common stitch, the stockinette stitch.

RIB STITCH

A rib stitch consists of vertical rows of knit and purl, and will stretch in a crosswise direction. This quality is ideal for use on garment edges.
Depending on how thick you want the ridges in the ribbing you can alternate 'k1,p1' (for small ridges) or 'k3p3' (for large ridges).
Remember when doing ribbing you must first decide the size. If you decide you want to alternate k2,p2, you must take the number of stitches in the row and divide by 2. The number must be odd.

Crocheting Station

Materials:

- crochet hooks (larger sizes are easier to work with – 4mm or larger)
- the yarn that students have spun with their drop spindles (and other purchased or scavenged yarns)
- handouts with directions for chain stitch, single and double crochet

Directions

Step 1 - Hold crochet hook in right hand and make a slip knot on hook and chain 20 stitches.

Step 2 - Single crochet for several rows until you have created a square.

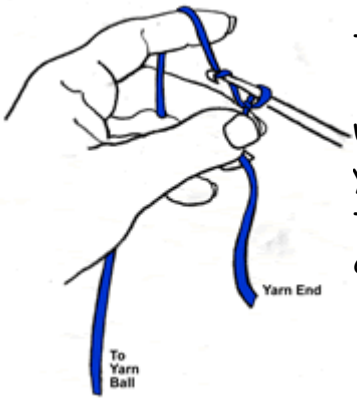
Step 3 - Cut the yarn from the skein, leaving a 6" end. Draw the hook straight up, bringing the yarn through the remaining loop on the hook.

Name_____
Block/Table____Date_____

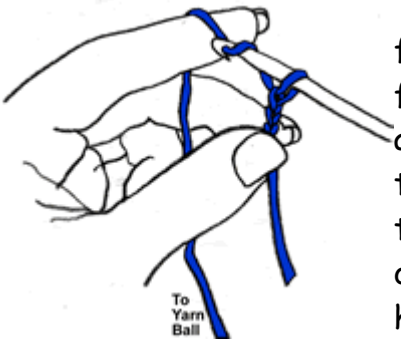
Crocheting- The Chain Stitch

The chain stitch (ch) is an integral part of crocheting. It is used to create the base or foundation chain, form the first stitch in a new row, or separate stitches within a design to form a space

1) Place a slip knot on the crochet hook

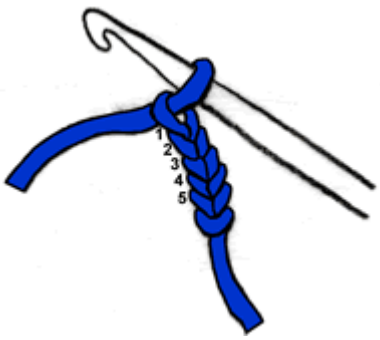
2) 

- hold the bottom of the slip knot between the thumb and middle finger of your left hand
- hold the yarn in your right hand as you would if you were knitting (wrap the yarn over your index finger and around your baby finger) to create the proper tension while you are crocheting

3) 

- bring the working yarn (yarn coming from yarn ball) around the hook, starting from the back of the shaft of the hook down and around the front ending at the back of the hook. Draw this new yarn loop through the loop of the slip knot. You have now made one chain stitch and one loop remains on the hook

4) Continue making chain stitches in the same manner. Keep your left thumb and your middle finger close to the hook while you work by continually moving your grasp up the chain as the chain lengthens. This will help you attain an even tension and gauge.

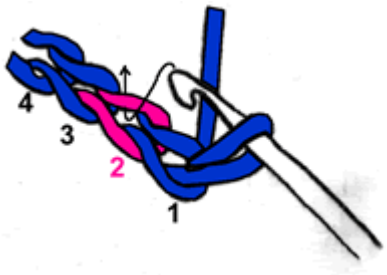
5) 

- to determine the number of stitches in the foundation row of chain stitch, count the number of stitches in the row as illustrated. Do not count the loop on the hook when counting stitches

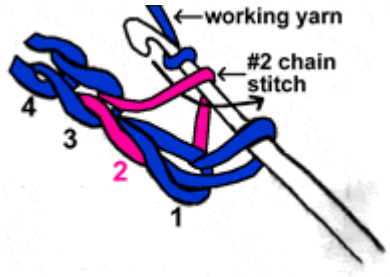
Name_____
Block/Table____Date_____

Crocheting- Single Crochet

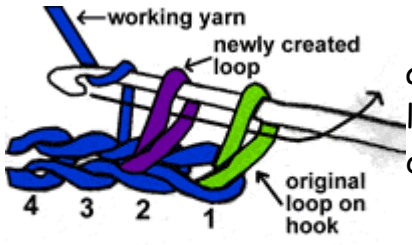
The single crochet (sc) is the shortest in height of the four basic stitches (single crochet, double crochet, half double crochet, and triple crochet). It makes a firm flat fabric

1) 

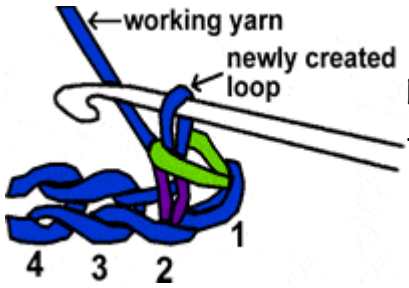
- insert the hook through the loop of the second chain stitch from front to back

2) and 

- Loop the working yarn over the hook draw the working yarn through the chain stitch only.
You now have 2 loops on the hook (you have just made one loop in addition to the original loop on the hook)

3) 

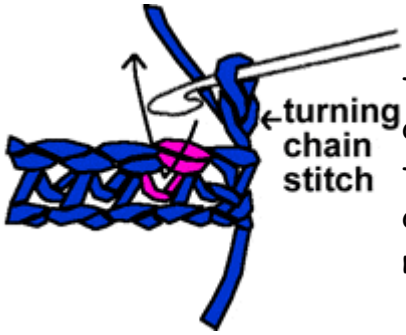
- loop the working yarn over the hook again and draw the hook through both of the loops (both the loop you just made and the original loop)

4) 

- you have just made one single crochet and have one loop remaining on the hook

- continue making single crochets into each of the remaining chain stitches in the foundation row in the same manner as above.

- Make sure the foundation chain is kept flat and does not rotate or get twisted while you are working. When you come to the last stitch in the foundation chain, work a last single crochet into this stitch and then CHAIN one stitch into the newly created loop. This is called the turning chain and is made in order to add the necessary height to begin the next row

5) 

- after making the turning chain, turn the work around horizontally so the length of the work extends out to the left. Notice the turning chain stitch is located at the top of the last single crochet stitch that you made in the previous row

6) Skip the first hole (first stitch) and single crochet into the next stitch by working under the top 2 loops of th stitch. If you do not skip the first stitch you will have 2 stitches coming from the first stitch. Work a single crochet into each of the remaining stitches across the row, working through the top 2 loops of each stitch. Work the last single crochet under the top 2 loops of the last stitch of the previous row. Make another turning chain and rotate the work.

Name_____
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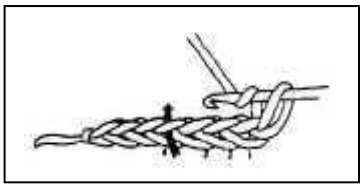
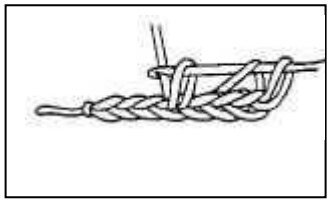
Crocheting- Double Crochet

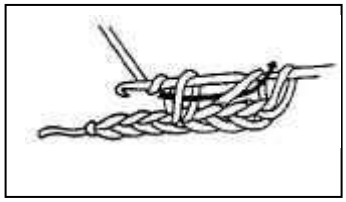
The double crochet (dc) stitch is twice the height of the single crochet stitch and less compact. It forms the basis of many pattern stitches

1) 

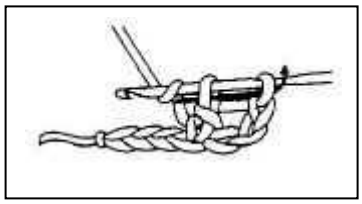
- wrap the yarn once around the hook (yarn over)
-count back four stitches. Do not count the loop on the hook.
- insert the hook through into the fourth chain

2) 

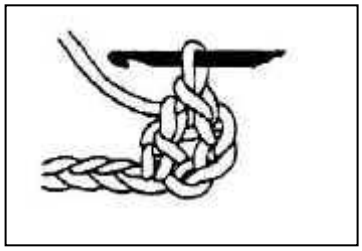
- catch the working yarn and draw it through the chain.
- 3 loops are now on the hook

3) 

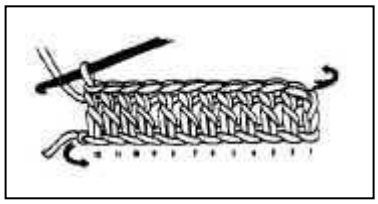
-catch the yarn and draw it through 2 loops.
- 2 loops now remain on the hook

4) 

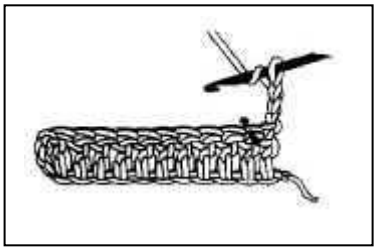
- catch the working yarn and draw it through the remaining 2 loops on the hook
- 1 loop remains on the hook

5) 

- You have now completed one double crochet (dc)

6) 

- Repeat steps 1-5, working the double crochet in each chain until you reach the end of the row do not let the chain twist while you are working

7) 

- at the end of the row, chain 3 stitches to achieve the desired height
- the turn chain counts as the first double crochet on the next row, so the first double crochet is actually worked in the SECOND stitch

Felting Station – Making a Felt Ball

At this station students will make a felt ball that can be used as a juggling balls, a cat toy, a Christmas ornament, or a pin cushion.

Materials:

- old panty hose or knee highs
- washed and carded wool batts or roving for the inner part of the ball
- bar of Ivory soap (make a gel by grating 1/4 of a bar into a litre of water of hot water and stir until dissolved then let cool)
- rovings in different colours
- pieces of home made yarns or other yarns that are of natural animal fibres
- access to hot water
- Ping pong balls or old tennis balls or plastic practice golf balls, bells (optional)
- rubber gloves (optional)

Directions:

1. Start by taking about 1 ounce of the wool batt or roving for the inner part of the ball. If you want the ball to be hollow, you can use a ping pong ball, old tennis ball, or plastic practice gold balls as the very center. If you want to you can cut a small slit in the ball and put a bell in the center then tape it shut. Split the roving into 4 long strips lengthwise and begin by wrapping one of the thinner strips as you would wind a ball of yarn or string. Use up all 4 of these thin long strips and keep winding the ball of roving until it is at least 1/3 larger than you want the finished ball or pin cushion to be.

2. Stuff a ball of unprocessed wool into the toe of a pair of panty hose. This will be the inner part of the ball. Work the fleece down tightly and tie a knot in the panty hose at the top of the ball of fleece to secure it in a ball shape.

3. Felt the inner part of the ball by Dunk it in hot water and then squirt it well with soap gel. Rub gently at first and then with increasing pressure until fibres begin to creep through the hose (about 5-10 minutes).

4. Once the inner part of the ball is somewhat felted cut the panty hose and remove the ball. Tie a knot in the end of the leg of the pant hose so it can be used again.

5. Wrap coloured fibres from dyed rovings and yarns around the inner ball and stuff the ball carefully back into the leg of the panty hose and tie another knot to hold it in place. Again dunk the ball in hot water, squishing gently to allow water to penetrate the entire ball. Add more soap gel and rub between cupped palms with increasing firmness as time goes on. When fibers or small pills of fiber begin to form on the outside of the hose, carefully cut off the knot and peel the hose off.

Be careful not to cut into the fiber of the ball if possible. If that happens, apply a generous amount of soap gel to the damaged part and rub gently to smooth the surface. The hose may be partially attached to the ball, but just pull gently to remove it. Add more a little more soap gel and continue rubbing and rolling until the ball is firm and hard.

6. Rinse and allow to dry or put in tumble dryer with a load of clothes to dry and harden the ball.

Weaving Station – Using a Shoebox Loom

Materials:

One shoebox per person (the lids from the boxes can also be used)
String to use for the warp threads.
Multi-coloured yarns for the weft threads.
Rulers
Scissors
Masking tape

Directions:

1. If necessary cut off any flaps on the top of the box.

2. On the opposite ends of the shoe box using a ruler mark spaces 1cm to 2 cm (if your yarn is thick use the wider spacing) apart and cut slits about 1 cm deep at each mark using a pair of scissors.

3. String the warp by tying a knot on one end of a piece of string. Slip the knotted end into the first slit on the top of edge of the loom and gently pull to secure it. Wrap the yarn around the box bringing it through each of the slits (under and back around) until all the slits have been used. Tape the end to the box.

4. Weave by inserting a colored piece of yarn through the warp: under one, over one, and so on, repeating a pattern. Change yarn color or add more yarn by tying a new piece onto the end of the old piece, making sure to hide the knot within the weaving.

5. When done, turn the box over to the unwoven side and cut the warp threads. Tie each one off at the slits to form fringe (Trim if desired).

These weavings can be used as wall hangings. They are usually thick enough to be used as hot pads. They can be folded in half and sewn at the side to make small handbags or depending on the shape of the box a cell-phone or Ipod or CD case (enclosure can be a piece of Velcro, a zipper, or a button and a button loop; a strap can be made by braiding yarns).

Extension or Follow Up Activities

• students can go on to more difficult textile projects e.g., knitting a scarf or shrug or hat, creating a felt wall hanging or a hat or a purse, crocheting a hat, bag, or blanket, weaving on a table loom, etc.

• students could attend local events for example Fall Fairs, Agricultural Exhibitions, 4-H events where fibre animals are displayed and local items made from locally produced fibres are on display

• students could research the “value added” products produced at farms raising fibre animals

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Resources

Websites:

http://www.farmissues.com
an interactive site designed for teachers and students, specific to Canada, but not necessarily BC. Provides a virtual farm tour that allows students to tour a working farm and learn how the animals live, the duties of the farmer. Has a hot topics link that helps to incorporate current events into your unit and provides a link to photos that can be used in the classroom, with multiple images of each animal.

http://www.knittinghelp.com/knitting/basic_techniques/
an excellent website to recommend to students if they need extra help. They can log on and watch available demonstrations, which explain techniques in a very clear and straightforward format. Features videos for casting on, knitting, purling and binding off. Also has a selection of free patterns available for the student to choose from if they wish to do something slightly more difficult for their final project.

http://www.interweave.com/
Source of literature, magazines, books on fibre arts.

http://www.ext.colostate.edu/pubs/livestk/01400.html
Website of Colorado State University Cooperative Extension has a Glossary of Wool Terms

www.agf.gov.bc.ca/sheep/publications/documents/hair_sheep_breeds.pdf
There is a Fact Sheet on Characteristics and General Production Parameters of Hair Sheep Breeds that is very detailed and includes pictures.

www.aitc.ca/bc
BC Agriculture in the Classroom Foundation website has a wealth of material and links on Agriculture in BC.

Print:

Berry, Wendell. (1990) The Pleasures of Eating.
www.ecoliteracy.org/publications/rsl.wendell-berry.html
A worthwhile read your class would enjoy. This article is sure to spark discussion of consumerism, agriculture and food systems that can easily be extrapolated to the clothing industry.

Casey, Maggie. (2005, Fall). Spinning Basics: Spinning on a Wheel. *Spin-Off*. 30-32.

Casey, Maggie. (2005, Summer). Spinning Basics: Spindle Spinning. *Spin-Off*. 46-47.

Chadwick, Eileen, (1980), *The Craft of Hand Spinning*. New York: Scribner's. While it is a bit dated, this book includes very detailed information, including descriptions of which animals produce which fleeces, the history of spinning, and drop spindling and wheel spinning how-to.

Croci, Melissa. (1999, Spring). CD Spindles. *Spin-Off*. 40-41.

MacKenzie McCuin, Judith. (2006, Summer*). Spin* Basics: The Art of Plying. *Spin-Off*. 30-34.

Rhoades, Carol Huebscher. (2005, Winter).Spinning Basics: Drafting for Woolen and Worsted-Style Yarns on a Spindle. *Spin-Off*. 30-32.

Strick, Candace Eisner (2004) Beyond Wool: 25 Knitted Projects Using Natural Fibres Woodinville, WA: Martingale and Co.
Strick features patterns in a variety of yarns, including silk, cashmere, linen, cotton and hemp, but more importantly and very useful to the teacher, with each pattern she includes a description of the animal from whom we get the yarn.

Sources of Fibre:

Many of the farms that raise animals have fleece, batts, roving, and yarn for sale.

Birkeland Bros: http://www.birkelandwool.net/
73 Main Street, Vancouver BC V5V 3N4 [See Map]
604 874-4734
Regular Hours: 9 to 5:30 Monday to Saturday. Open Sundays from Noon to 4:00 from September to April.
C**arry a wide range of wool batts, wool yarns, specialty yarns, and other supplies for knitting, weaving, spinning, and quilts.**

Weavers and Spinners Guilds in BC:

Vancouver, BC
Greater Vancouver Weavers and Spinners Guild
Website: http:anwg.org/bc/vancouver
Contact: Janice Griffiths
E-mail: jmgriffiths@shaw,ca

Contact: West Point Grey Community Centre , 4397 West 2nd Avenue, Vancouver, BC V3H 3 W2

Merritt, BC
Sagebrush Spinners & Weavers
Contact: Sheila Kirk, 3053 Petit Creek Road, Merritt, BC V1K 1N8
E-mail: silk@telus.net

Castlegar, BC
Selkirk Weavers and Spinners Guild
Contact: Dot Dore, 1463 Emerald Crescent, Castlegar, BC V1N 4W2
Contact: Dar McDowell, P.O. Box 116, Robson, BC V0G 1X0
E-mail: n/a

Campbell River, BC
Midnight Shuttles Spinners and Weavers Guild
Website: www.northwestweavers.org/guilds/bc/midnight2004.ht
Contact: Ruth Nuttall , PO Box 372 , Campbell River , BC V9W5B6
E-mail: nuttall1@telus.net
Contact: Lynn Hilton, PO Box 372, Campbell River, BC V9W5B6
E-mail: rolly_hilton@telus.net

Chilliwack, BC
Chilliwack Spinners & Weavers Guild
Website: geocities.com/chilliwackspinners_weavers
Contact: Louise O'Donnell, 45899 Henderson Ave, Chilliwack, na V2P 2X6
E-mail: chilliwackspinners_weavers@yahoo.ca
Contact: Louise O'Donnell, 50894 Yale Road, Rosedale, na V0X 1X0
E-mail: chilliwackspinners_weavers@yahoo.ca

For a list of possible guest speakers on Fibre Art try
http://www.gibsonslandingfibrearts.com/instructors.htm

Field trip possibilities:

Alpaca Acres at Arrowsmith
Susan & James Werbowy
304 770 Poplar ST, Nanaimo BC V9S 2H6
Tel: 250-248-7117
Email: swerbowy@shaw.ca

Alpaca Farm BC - Koksilah Acres
Arden Jenkins
Box 39 - 3450 Kingburne DR, Cobble Hill BC V0R 1L0
Tel: 250-743-7177
Email: alpacafarmbc@shaw.ca

Website: www.alpacafarmbc.com

Blue Stone Alpacas B & B, Gift Shop and Tours
David & Sonia Kydd
310 Bonsai Place, Qualicum Beach, BC V9K 2A6
Tel: 250-752-0970
Email: info@bluestonealpacas.com
Website: www.bluestonealpacas.com

Canoe Creek Alpacas
Stu & Kathy Bradford
2400 40 ST NE, Salmon Arm BC V1E 1Z3
Tel: 250-832-9506
Email: info@buyalpacas.com
Website: www.buyalpacas.com

Celtic Moon Fibreworks
26289 96th Ave
Maple Ridge, BC
Canada
V2W 1K3
604-462-8539
mailto:rebecca@feltdesigns.com
www.feltingmachines.com/
Raise llamas, card fibres, and distribute felting machines.
Located in Maple Ridge, BC, Celtic Moon raised llamas, offers custom carding of fleeces and exotic fibres and distribution of felting machines.

Crimpy Critters Alpaca Farm
Linda Prowse and Jim Duncan
1000 McClay Way
Gabriola Island, BC V0R 1X3
Tel: 250-247-0009
Email: info@alpacabuybc.com
Website: www.alpacabuybc.com

Dovecote Llamas & Alpacas
Ken Frost and Gail Vance
198 Bluenose RD, Coldstream BC V1B 3E7
Tel: 250-545-3015
Email: dovecote@telus.net
Website: www.alpacabc.com

Eva Springs Horses
Mickey and Jan Rockwell
RR2, S21, C4
Chase BC V0E 1M0

Phone: 250 679-3027
Raise Barbados Blackbelly Hair Sheep

Fibre Finders Alpaca Marketing/Turning Tide Ranch
Stew & Barbara Lang
4065 Shtlam RD, Duncan BC V9L 6K3
Tel: 877-3ALPACA
Email: barbara@alpacasincanada.com
Website: www.alpacasincanada.com

The Gulf Islands Spinning Mill
Box 707, Ganges Post Office
351A Rainbow Road
Salt Spring Island, BC V8K 2W3
Phone: (250) 537-4342
Email: spinningmill@saltspring.com
Website: www.GulfIslandsSpinningMill.com
Gulf Islands Spinning Mill is a cottage industry co-operative that can offer custom processing of small batches of fibre: wool, alpaca, llama, mohair and blends.

Kensington Prairie Farm
James Dales and Catherine Simpson
1736 - 248 ST Langley, BC V4W 2C3
Tel: 604-626-4395
Email: info@kpfarm.com
Website: www.kpfarm.com

Koksilah Acres
Box 39
3450 Kingburne Dr.
Cobble Hill, BC
Canada, V0R 1L0
p: 250-743-7177
f: 250-743-1517

The Llama Farm
Tony and Connie Seale
RR 2, 1510 McLeod Road
Armstrong , BC V0E 1B0
Canada
[250] 546-3038
[250] 546-3038 {fax}
Email: llmafarm@junction.net
Website: http://www.tocoltd.bc.ca/Lamafarm.html
http://camelid.webis.net/LLFarms/TLF/index.html

Maple Lane Alpaca Farm
Wayne & Noreen Johnson
6820 Sumas Prairie Road, Chilliwack BC V2R 4K1
Tel: 604-823-6640
Email: maplelanealpaca@shaw.ca

Maplewood Farm:
Address: 405 Seymour River Place
North Vancouver, B.C. Canada V7H 1S6
Phone: (604) 929-5610
Fax: (604) 929-9341
www.maplewoodfarm.bc.ca

MDM Ranch
Doug and Marj McGregor
Box 328, Barrier, V0E 1E0
Phone: 250-672-5590
Raise Katahdin hair sheep

Monashee Woollen Mill
54 Hollingsworth
Lumby BC, V0E 2G0
Phone: 250-547-6040.

Mountain View Alpaca Farm
Brett & Vera Patricny
3713 Emerald Road, Westbank BC V4T 1W2
Tel: 250-768-2593
Email: peruvianalpacas@telus.net
Website: Mountain View Alpaca Farm

Mount Leman Llamas
Brian and Jane Pinkerton
29343 Galahad Crescent
Mount Lehman
British Columbia
Canada V4X 2E4
Phone or Fax: 604-856-3196
Website: http://www.mountlehmanllamas.com/

Nosie Rosie's Katahdin Sheep
Anne S. Morrison
RR-1, S-4, C-53
Crescent Valley, BC V0G 1H0
Phone: 250-359-2216

Omineca Alpaca Ranch Inc.

Doug Montaldi and Sharol Briere
4889 Colleymount RD (Box 614) Burns Lake, BC V0J 1E0
Email: dmontald@telus.net
Website: www.alpacacanada.ca

Oyama Lake Alpaca Farm
Jim Covington and Darlene Homenchuk
5561 Oyama Lake Road, Oyama BC V4V 2C9
Tel: 250-548-4004
Email: info@alpacadelights.com
Website: www.alpacadelights.com

Pacific Sun Alpacas
Jennifer Apostoli
3791 Cavin RD, Duncan BC V9L 6T2
Tel: 250-748-5088
Email: japostoli@shaw.ca
Website: www.pacificsunalpacas.com

Quickheels Ranch & Kennels Reg'd
Dave and Megan Thacker
Box 307
Savona, BC V0K 2J0
Phone: 250-373-3289
Email: quickhls@mail.ocis.net
Raise Dorper hair sheep

Rainbow Forest Acres
Barb & Daniel Eslake
7756 Owl Ridge Rd, Mt Currie BC V0N 2K0
PO Box 1203
Tel: 604-894-3383
Email: info@rainbowforestacres.com
Website: www.rainbowforestacres.com

St. Mary Lake Alpacas
Alan & Joy Burrows
1120 North End Road, Salt Spring Island BC, V8K 1M1
Tel: 250-537-8411
Email: stmarylake@telus.net
Website: www.stmarylakealpacas.com

Seaview Alpacas
8126 Shasta Road, Box 256,
Crofton, BC. VOR 1RO

They have an business called Crofton Custom Carding. Operated by Marie Caron and Charlie Nixon they offer services for the small individual and the larger breeders, and everyone in between.
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Website: www.alpacasbc.com

Wakefield Alpacas
Terry & Diane Lee
4265 Sunrise Rd, Duncan, BC V9L 6G6
Tel: 250-748-1769
Email: info@wakefieldalpacas.com
Website: www.wakefieldalpacas.com

WestWool Alpacas
Michael Anthony

1898 Swayne RD, Box 304 Errington BC V0R 1V0
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Email: westwool@accoyo.com
Website: www.accoyo.com