



As usual the file folder holding information for this newsletter was filled to overflowing. There are a lot of things happening in the Industry. The research is fascinating – a potential tie-in between outbreaks of Orf and thistles in Welsh pastures. A project in Ohio looking at comparisons of lamb growth between traditional self-feeders and a clean up style, or slick bunk, feeding management. Neither study complete – so watch for in upcoming issues.

Lamb markets and prices are always forefront in the minds of producers at this time of the year. Talking to lamb buyers, feeders and marketers you have to be encouraged. The demand for good quality local lamb is growing. Prices are decent – maybe not high enough for producers recovering from drought and perhaps too high for buyers and processors – but every sector has to make money for the Industry to thrive. Prairie lamb prices are tied to Canadian prices, to North American market prices and increasingly to offshore lamb carcass prices. Market Links will look at that perspective in future editions.

Producers who have been keeping tabs on their cost of production and cash flow have been generally pleased with the alternative forages they were forced to use in last winter's rations. Several have commented they likely won't go back to feeding the feeds they used to, and that feed testing and ration balancing paid off. Lamb crops have been excellent in Central Alberta with high lambing percentages and good, strong lambs. The stringent cull of last summer is showing.

It does seem to have remembered how to rain – our fingers are crossed. Of course if there isn't a drought in one area of the Prairies there'll be a flood, hail or frost in another. Coping with weather is part of farming – managing the risk is the trick.

With that quick summary of Prairie Sheep Update – we wish you all a great spring.

Susan Hosford, AAFRD, Alberta

Wray Whitmore, MAF, Manitoba

IN THE CORRAL ...

Tetany in Sheep – Prevention is Best

Grass tetany and winter tetany (or hypomagnesaemia) are metabolic diseases caused by lower than average blood magnesium (Mg) levels. It can affect all sheep, but is usually seen in late pregnancy, or in ewes in the first six weeks after lambing with multiple lambs. The highest incidence of the disease happens one to four weeks after lambing when the milk production of the ewe is at its maximum.



Photo: Velocci, Sheep Canada Magazine

Grass tetany is most commonly seen in ewes on lush spring grass. While lush spring grass hasn't been a problem the last couple of springs in Alberta, but Manitoba grows grass very well. Producers lambing on spring grass do need to be aware of the potential for problems. Flocks in the UK are routinely supplemented to avoid grass tetany.

Winter tetany, on the other hand, has been seen in prairie cattle and sheep in the past two feeding seasons. It seems to be associated with some of the forages being used to winter ewes.

Often the first sign of winter or grass tetany is often a dead ewe, or one in that convulsive pedaling motion of dying sheep. Affected ewes are often nervous or 'flighty', appear uncoordinated, trembling or staggering. Occasionally, affected ewes look like those with milk fever. They are down, very quiet or dopey and unable to get up. These ewes are often treated with calcium, but don't show the normal

rapid recovery of the 'milk fever', calcium deficient ewe. Contact your veterinarian if

these symptoms show up in your ewe flock. Treatment usually consists of injections of a combination of calcium and magnesium sulphate.

What is hypomagnesaemia? Unlike calcium, there is very little magnesium stored in the bones. Absorption of magnesium is dependent on the magnesium status of the animal, which is based on dietary intake. Ewes depend on a frequent supply of magnesium from the digestive tract to maintain normal blood magnesium concentrations. As ewes get older, magnesium becomes less available and body supplies are rapidly depleted. Magnesium

needs to be assimilated by the ewe on a daily basis. This often contributes to individual animal coming down with the problem. Not all magnesium in the diet is available to the ewe, and different ewes have different abilities to absorb dietary magnesium. Absorption of magnesium is also influenced by the amount of calcium, phosphorus and potassium (K) in the diet. High dietary potassium, or sodium sulphate, or phosphorous, reduces absorption of magnesium. This is where the problem becomes a flock problem rather than that of an individual older ewe.

Normally, levels of potassium range from 1.5% to 1.9% (100% dry basis). **Drought, or dry growing conditions, and regions where acidic soils exist (low pH) contribute to the accumulation of potassium in plants, especially cereal crops.** High levels of potassium in the feeds can reduce the amount of magnesium that is absorbed from the ration. High levels of potassium in feeds can be caused by fertilizing crops with high levels of nitrogen and potassium, or by repeated high levels of manure application to soils.

Winter tetany occurs when ewes, or cows, are fed poor quality hay, greenfeed or straw, with low levels of magnesium, or high potassium levels. Cereal feeds are low or borderline in magnesium compared to the ewe's requirements. If the potassium levels are high this compounds the difficulty. Alfalfa can

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accumulate high levels of potassium in addition to its normally high level of calcium. **Ewes on rations of high quality third cut or alfalfa pellets, with very high calcium levels, have also come down with the condition.** Keeping minerals balanced is tricky, yet essential.

Prevention of this disease is possible through supplementation of the ration with magnesium oxide and limestone. Limestone is a source of calcium, which is often deficient in cereal-based rations as well. It is important to ensure that the ewes are receiving adequate, and balanced, levels of calcium and magnesium. A feed analysis will indicate the levels of available nutrients and minerals in the straw, greenfeed or silage. Based on the results of the feed tests, proper mineral / vitamin supplements can be added to the ration.

The suggested minimum magnesium requirements are 0.15 and 0.18 % for ewes in late pregnancy and ewes in early pregnancy. These minimum levels can be increased to 0.20 % when ewes are grazing forage high in potassium. Based on absorption and retention data, magnesium in the forms of magnesium carbonate, magnesium oxide and magnesium sulfate is well used by sheep.

Producers should sample all feeds and work with a nutritionist from a feed company to design a ration that fits with their management system.

Information sources:
Susan Hosford & Tennis Marx, AAFRD
Wray Whitmore, MAF
More information: 'The Veterinary Book for Sheep Farmers' by D. Henderson

Over 4,200 sheep and lambs were certified organic in 27 states in the USA in 2001, nearly a 500% increase from 1997. Top States with sheep and lambs were Montana, Oregon, New Mexico, Idaho and Maine.

USDA: Economic Research Review, Organic Farming 2001

Feeding Your Winter Born Lambs

Another lamb feeding season is here. Those who winter lamb (January/February) want to wean the lambs at 6 – 8 weeks of age and then push the lambs on concentrate (grain) rations. It is important to get winter born lambs to market before the prices start to fall, usually in June. These early-weaned lambs have the potential for a high growth rate (3/4 – 1.0 LB/day) once they weigh 60 LB.



- Once a lamb has reached 60 LB, energy level of the ration is very important. To maximize growth it is best to limit forage intake to 0.5 LB or less/day. Forage (second cut alfalfa) can be a good source of protein, but the energy content is lower than grain. Work with a nutritionist to make sure the ration is properly balanced for both energy and protein.
- Grain fed to lambs over 60 LB should be fed whole. Feeding whole grain reduces the chance of grain overload or acidosis. Grain that is highly processed (barley chop) can produce too much acid in the rumen and this can be fatal to lambs. Lambs are efficient at chewing and most of the whole grain fed to them is chewed and digested, with little passing through the animal whole undigested.
- A protein supplement that is going to be mixed with whole grain should be in a crumble form. A crumble is a pellet that has been broken into several pieces, which will

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- mix well with whole grain without separating. Some producer who have used pea screening as a protein supplement have found out that lambs are very good at sorting feed the hard way.
- It is important to feed a coccidiostat to prevent coccidiosis in the lamb crop. If you are using a protein supplement, you can have a coccidiostat added to it with a veterinary prescription. Coccidiosis damage to an animal's intestine can be permanent, so it is a problem that is best avoided rather than treated.
- Grain is a very poor source of calcium. Grain contains phosphorus but no calcium. The low levels of calcium can lead to problems especially in wether lambs. If the phosphorus content of the lamb's urine is too high, it can precipitate out as urinary calculi (stone) that can block the urethra. The lamb cannot urinate and if left untreated, will die. This is another condition that is a lot easier to prevent, than treat. The two ways of prevention are to ensure a proper level of calcium is available. The easiest way to do this is using limestone (which is 38% calcium) in the ration. The limestone can be mixed with salt or it can be used to fortify a supplement, which can be mixed with grain. Another way of prevention is using ammonium chloride. This method is usually only used in test station situations.

Remember to consult with a specialist or nutritionist if you are not sure about what to feed your lambs.

Source; Wray Whitmore
Sheep and Goat Specialist, Manitoba



Liver Flukes

Liver flukes can be a significant problem to sheep producers. The problem with flukes is that the symptoms are dead animals. If the lamb crop is infected, they will have to be medicated or the losses can be very high. Below is an article on the giant or large American fluke (*Fascioloides magna*).

General Description: Thick, flesh-coloured oval flukes with a rounded posterior end. They are 23 to 100mm long, 11 to 26mm wide and 2 to 4.5mm thick.

Location: Liver.

Geographical Distribution: North America, particularly the northern United States and Canada.

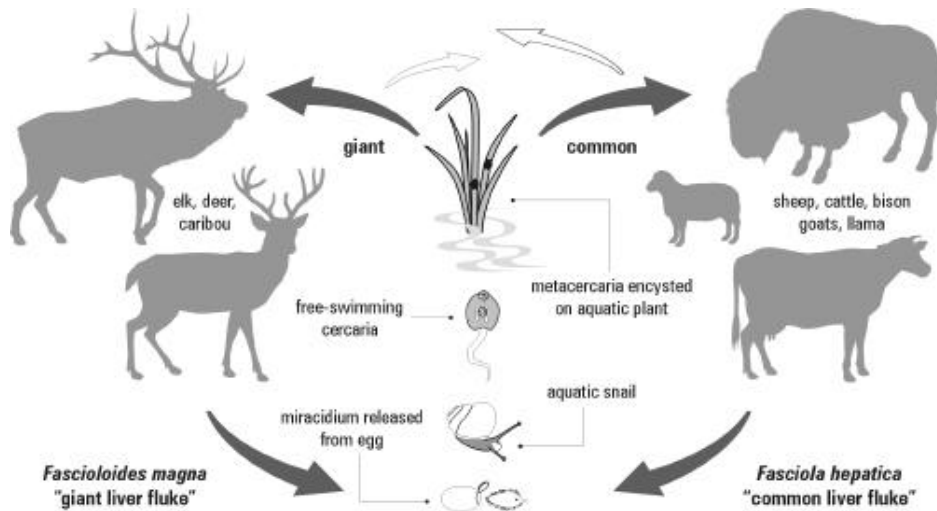
Significance: The large American fluke is a serious problem in the sheep since relatively few parasites may kill an animal. The threat is greater where deer and sheep share pasture. Infected sheep are not a source of infection from other sheep. The infection comes from white tail deer.

Effect on Host: *Fascioloides* flukes are large and migrate extensively through the liver and other organs, causing tracts of tissue damage. Bleeding occurs and scar tissue forms. Liver function is often disrupted significantly and frequently results in death. Weakness and death may be the only apparent sign.

Diagnostic Information: Post mortem diagnosis is most common. Eggs do not usually appear in feces of sheep. Tracts of hemorrhage are seen in the liver at slaughter. Finding parasites at necropsy is necessary for definite diagnosis.

Control: Avoid grazing of sheep in areas where deer feed, since these wild ruminants are a reservoir of *Fascioloides magna*. Use of fencing to exclude deer may be necessary to prevent infection. Snails should be controlled by chemical treatment of pastures where they exist.

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Background:

In contrast, the giant liver fluke, *Fascioides magna*, has a narrow host range. Wapiti (elk), white-tailed deer and caribou are the main hosts of this latter parasite in North America.

Fascioides magna, commonly a parasite of cervids, occur sporadically in cattle and sheep in Canada. Although common in cattle worldwide, the prevalence and distribution of these flukes in Canada is not completely known.

See diagram above.

F. magna is found throughout North America primarily in the deer population which is its natural host. The natural host for *F. magna* is the white-tailed deer. *F. magna* can infect cattle, sheep and goats while grazing areas shared with deer. Since snails are needed as intermediate hosts during their development, liver flukes are most commonly found in areas with abundant moisture such as swampy or poorly drained pastures. The life cycle of liver flukes begins when eggs are shed in feces of the natural host (white-tailed deer in the case of *F. magna*). When deposited into warm, moist environments, the eggs develop into free-swimming organisms called miracidium. These are able to penetrate snails, which serve as intermediate hosts and are necessary for further development of the fluke. Snails shed a tadpole like form of the liver fluke called a cercaria, which migrates onto the leaves of

green plants where they form a cyst and are eventually ingested by grazing animals. In the small intestines, young liver flukes penetrate the gut wall and migrate to the liver. Once in the liver, young flukes migrate throughout the liver tissue. Eventually they become encysted within the liver. In the natural host (deer), they mature and produce eggs.

Since cattle are an abnormal host, they react more intensely to the parasite, forming an impermeable cyst around the flukes, which effectively prevents the release of eggs. Thus, cattle are a dead end host for *F. magna*. This creates a problem in detecting individuals with *F. magna* as most parasitic diseases are diagnosed by identifying eggs in the feces of infected animals.

In sheep, *F. magna* does not become encysted. This allows flukes to migrate through the liver unabated causing severe damage and eventual death of the infected sheep.

Besides liver condemnation, *F. magna* it appears to cause few, if any, signs of disease in cattle. However, little is known about the effects that this parasite may have on production efficiency. In contrast, *F. magna* infection is highly fatal in sheep and limits sheep-raising in areas heavily infested with this parasite. Cattle infected with *F. hepatica* typically show signs of chronic parasitism including weight loss, anemia and edema due to low serum protein. Production losses from reduced feed efficiency

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and daily weight gain have been reported in cattle chronically infected with *F. hepatica*. Bacillary hemoglobinuria and Black disease, two highly fatal diseases cause by clostridial bacterium, may be a secondary complication of liver flukes migrating through the liver.

Specific recommendations on the control of *F. magna* infections are difficult to make because of the lack of effective drugs and the potential for constant exposure to the parasite during the grazing season. Because of a lack of knowledge on the production and health effects that *F. magna* have on cattle, the costs/benefits of fluke control is unknown.

Two drugs are available in the United States for the treatment of liver flukes: Clorsulon (Curatrem[®] and Ivomec Plus[®]) and Albendazole (Valbazen[®]). These drugs are approved only for the treatment of *F. hepatica*. Albendazole is effective only against adult liver flukes.

Clorsulon is very effective against adult flukes and somewhat effective against later stages of immature migrating flukes. In limited studies, both albendazole and clorsulon appear to be less effective at eliminating *F. magna* infections. Although there is no specific supporting evidence, treatment of pastured calves or yearlings when entering the feedlot may be of benefit in reducing liver condemnation and improving performance. The benefit of treating adult animals is unknown.

As with most internal parasites, it is likely that adults develop some degree of age related resistance to infection with *F. magna*, thus decreasing the benefit of treatment. Unlike control programs for other parasites, strategic treatment of cattle/sheep aimed at reducing pasture contamination is of no value for *F. magna* since deer are the major source of contamination. Another approach to controlling infection with *F. magna* is to prevent exposure to snails. This can be done in several ways including fencing off areas which might be natural habitats of snails, draining swamps or wet pastures, or treating snail habitats with molluscicides. Unfortunately, these measures are often impractical and uneconomical. Control of white-tailed deer grazing livestock pastures could also serve to reduce exposure to *F.*

magna. Given the distribution of free ranging deer in Manitoba, this also seems impractical. With the current understanding of liver fluke infections, control strategies should be evaluated carefully. Consult with your veterinarian or government specialist to decide what is appropriate for your operation.

How can I control liver flukes on my farm?

Attempts to control liver flukes include snail eradication, eliminating infected animals and treating infected animals with a flukicide. Limiting the movement of infected animals to areas where suitable aquatic snails are not present will help control this parasite. Infections can be prevented by not allowing livestock access to contaminated pastures or water bodies where snails and plants abound. Controlled burning of grasses and rushes in the spring may reduce the number of larvae available to infect livestock.

FASINEX (Trichlobendazole) is the product of choice in Canada to control giant liver flukes in Elk and Deer. This product is not registered in Canada and is brought in for use under special permit. Albendazole products, which are registered for fluke control, are not very effective on this particular fluke species.

Source: Dr. Terry Whiting, Veterinary Services, MAF
Wray Whitmore, Animal Industry, MAF



Stressed Sheep Stressed Lambs?

Ewes stressed in early pregnancy bear lambs with stunted kidneys that predispose them to assorted adult health conditions. Australian research suggests that scarcity of feed or high levels of stress pressure the fetus to adapt, making tissues changes that persist into adulthood. There is growing evidence in human studies that early fetal influences affect adult health. How fetal tissues are altered and what impact it has on adult mammals is under study.

Source: Pearson, Nature news Service, Ap'02

MARKET LINKS ...

SHEEP AND LAMB:

Markets:

In Manitoba, the "Easter" market runs from February to early April and typically attracts the highest prices for lighter weight lambs. However this year, prices were higher in December 2002 than they were in March 2003. The graphs found at the end of this section, illustrate the seasonal nature of lamb prices for various weight categories. In Manitoba, the average price of lambs under 80 lb was 10 percent lower in March 2003, (\$115.50/cwt) compared to March 2002, (\$128.50/cwt). In Toronto, lambs under 80 lb sold 3.7 percent lower in March 2003, (\$167.40/cwt) compared to March 2002, (\$173.89/cwt). The Manitoba average price for lambs 95-109 lb was up 5.8 percent at \$115.50/cwt compared to last year and in Toronto the prices were 7.7 percent higher at \$136.98/cwt compared to last year. The South St. Paul price for lambs 110+ lb was 41.7 percent higher in March 2003 at C\$142.73/cwt compared to last year. Caution is advised when studying sheep and lamb prices due to the small numbers of animals on offer, the wide range in quality and different weight ranges reported at the various markets. With small amounts of data it is often difficult to know if the quoted price reflects true market value or a special situation.

US Sheep and Lamb Outlook

Source: Economic Research Service, USDA Livestock, Dairy, & Poultry Outlook/LDP-M-104/February 18, 2003

The inventory of all sheep and lambs fell in 2002, continuing the long downturn. On January 1, 2003, inventory totaled 6.35 million head, down 5 percent from 2002 and 9 percent from 2001. Among the top 10 States, the biggest percentage drops were in Oregon (18 percent), Utah (12 percent), and Montana (10 percent). Texas, the largest sheep producing State, experienced a 7 percent drop. California, the second largest sheep producing State, saw a 1 percent drop. The breeding sheep inventory declined by 5 percent from a year ago, compared with a 1 percent decline last year. Texas saw a 40,000-head reduction in

breeding sheep and lambs, while Montana, Wyoming, and Utah each saw 30,000- head

breeding sheep and lambs, while Montana, Wyoming and Utah each saw 30,000 head reductions. The replacement lamb inventory was 4 percent below a year earlier, but 4 percent higher than 2 years ago, prior to the ewe retention program instituted as part of the Lamb Industry Improvement Initiative. Persistent drought conditions in the Western States resulted in a higher than normal sell off of breeding ewes, especially in the summer and early fall of 2002. Continued drought conditions in 2003 may result in further reductions in the breeding stock and continue to dampen the impact of the ewe retention program.

Tight Supplies Expected and Lamb Prices Near Record Levels

In 2003, commercial production of lamb and mutton is projected to total 208 million pounds, down 5 percent from a year ago. The inventory decline and the ongoing drought conditions would continue to reduce numbers of market lambs and tighten domestic supplies. Tight supplies are expected to continue in the first quarter of 2003 as high prices encourage producers to hold lambs to heavier weights and to market them for the Easter and Passover holidays. Lamb demand usually peaks at the religious holidays, which are in mid-April this year. With the existing tight lamb supplies, prices are expected to increase to near record levels. Prices of slaughter lambs at San Angelo are expected to average \$97 per cwt in the first quarter, 2003, more than \$30 per cwt above the same period last year. Lower production estimates also suggest higher U.S. farm prices for lamb in 2003.

Live Sheep Trade Gap Narrows

The USA remained a net exporter of live sheep in 2002, though the gap is narrowing. Net exports decreased 11% in the fifth straight year of declines. Imports of live animals increased about 64%. Imports to the US come primarily from Canada and are mainly slaughter lambs while exports go mainly to Mexico and are cull ewes. Most of the Canadian slaughter lambs go to US processors to utilize excess capacity.

MARKET LINKS ...

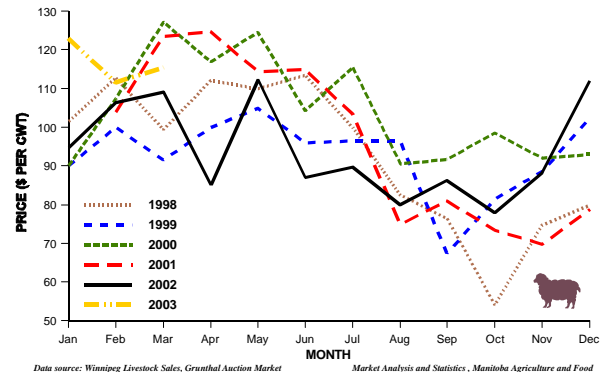
Lamb and Mutton Imports To Increase Despite Growing Problems Raising Sheep in Australia

In 2003, lamb and mutton imports are expected to total about 172 million pounds, up 6 percent. In 2002 imports rose about 12 percent. Attractive U.S. prices favor increased imports from Australia and New Zealand. Drought conditions in Australia, the supplier of nearly 60 percent of U.S. imported lamb, persist. Australian producers have had to reduce their stock due to unfavorable weather conditions. The optimal stocking rate is heavily influenced by pasture conditions. Even with improved weather conditions in 2003 it will be difficult for Australia to rebuild its stock in time to significantly increase its depressed supply.

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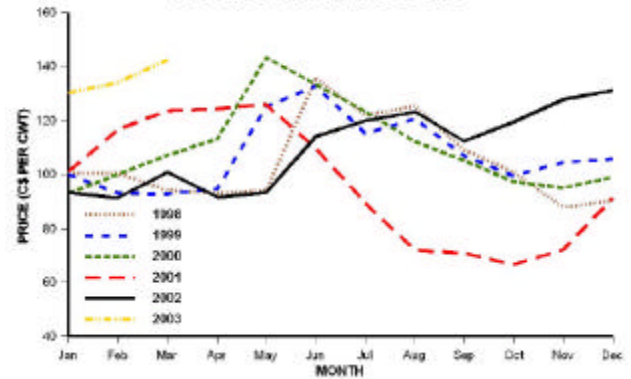
Livestock, Dairy & Poultry Outlook, Economic
Research Service, USDA, April 2003

SEASONAL LAMB (95-109 LB) PRICES
Manitoba, 1998-2003



Data source: Winnipeg Livestock Sales, Grantham Auction Market, Market Analysis and Statistics, Manitoba Agriculture and Food

SEASONAL LAMB (110+ LB.) PRICES
South St. Paul, 1998-2003



Gazing Into the Crystal Ball

If there's anything riskier than forecasting the weather – it's trying to predict the lamb market. We don't ... we gather ideas and information ... talk to your buyers, often.

Long-time Alberta lamb feeder Jean Bolay is moving his operations from north-central Alberta to Manitoba. We wish Jean and his family well.

Some thoughts from Dave Twitchell, an Alberta lamb feeder who fed out nearly 12,000 head of sheep and lambs in 2002:

“ Generally there is a world shortage of lamb, so while there will be ups & downs, the market should hold for much of 2003.”

“With the Canadian dollar strengthening, every week I ship to the States the price drops. Feed costs are high in the States so they seem to be doing less feeding of big lambs, this has pushed the weights up somewhat on lambs they buy from Western Canada.”

“Lambs seem to be coming on earlier this year. With the drought last year producers did better ration balancing. The lamb crops were good, the poor ewes were shipped last year and the lambs are growing well. It's also been cool and lambs eat better. The later lambs always slow down as warm weather hits. The lambs that come off grass take longer to get started onto feed, can be even slower.”

MARKET LINKS ...

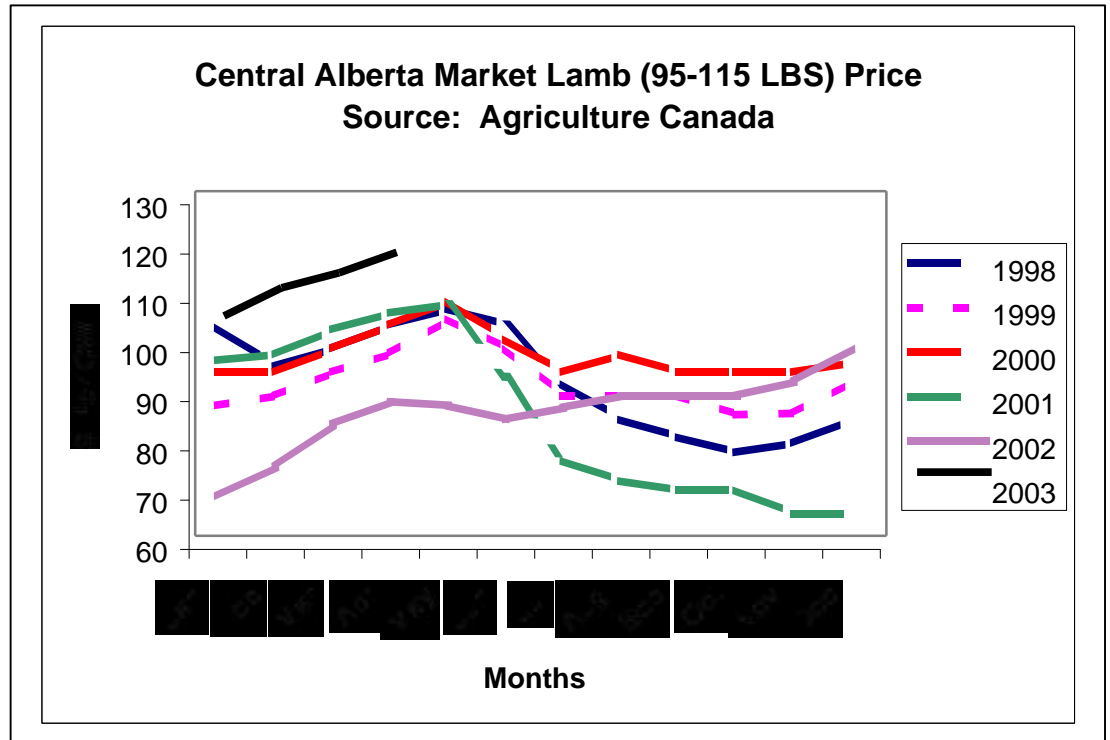
Central Alberta Market Lamb Monthly Price

Source: Agriculture Canada

Date	1998	1999	2000	2001	2002	2003
Jan	105.12	89.28	96	98.4	70.8	104.64
Feb	97.2	91.2	96	99.6	76.8	110.4
Mar	100.8	96	100.8	104.64	85.44	113.4
Apr	105.6	99.84	105.6	108	90	117.6
May	108.864	106.8	110.4	109.8	89.28	
Jun	105.6	100.8	102.72	95.04	86.4	
Jul	93.6	91.2	96	78	88.8	
Aug	86.4	91.2	99.6	73.92	91.2	
Sep	82.8	91.2	96	72	91.2	
Oct	79.68	87.36	96	72	91.2	
Nov	81.6	87.6	96	67.2	94.08	
Dec	86.4	94.08	97.92	67.2	100.8	

By weeks (2003)

3-Jan	100.8
10-Jan	105.6
17-Jan	105.6
24-Jan	105.6
31-Jan	105.6
7-Feb	110.4
14-Feb	110.4
21-Feb	110.4
28-Feb	110.4
7-Mar	112.8
14-Mar	112.8
21-Mar	112.8
28-Mar	115.2
4-Apr	117.6
11-Apr	117.6
18-Apr	117.6



Prepared by: Statistics and Data Development Unit, Economics and Competitiveness Division, AAFRD

OUTSIDE THE CORRAL ...

Wood makes shearing less of a drag

The best floor to drag a sheep over is made from wooden battens with a 1 in 10 incline.

So say scientists in Australia. They got eight enthusiastic shearers to heave five less enthusiastic sheep over wood, steel and plastic flooring with two different slopes - all in the pursuit of cheap, low-tech ways to reduce farm-worker injuries.



A ridged, sloped shed floor could cut the drag force by up to 15%, conclude John Culvenor of the University of Ballarat, Victoria, and colleagues. "Some of the hardest shearing work is about getting the sheep from the pen to the workstation, and then releasing the

sheep once the shearing is complete," says Culvenor.

Source: Ed Gerstner, Dec'02

Future Watch

The world has experienced amazing and revolutionary technological developments over the past few generations. But one additional fact must be kept in mind: the business, technological and scientific worlds over the coming decades are going to be getting more complicated, not less.

Very big changes are on the way, which will trigger not only enormous opportunities for businesses and consumers, but which will also tax to the limits our abilities as people to cope with their social, ethical, and cultural implications.

Information technology is now on the verge of being shaped in utterly new ways by such sciences as physics, chemistry, and biology. Our children's children will look back on our educations as that quaint time before

"Introduction to Quantum Physics" became a prerequisite for every business student.

Source: Future Watch, Accenture Technology Labs, Ap '03

Canadian sheep not alone Australia's 115 million sheep to get special tags

Australia's 115 million sheep are, according to this story, set to get special identification tags in a bid to protect the nation's disease-free status.

The story says that the ear tags, part of the National Flock Identification Scheme, will not only number every individual sheep but also its home property. It follows growing demands from overseas markets for suppliers such as Australia to have trace-back systems in place for its products.

Fear of a disease outbreak, such as last year's foot and mouth disease outbreak in the United Kingdom, has forced the sheepmeat and the beef industries to consider national identification systems. Sheepmeat Council of Australia president Bill Whitehead said a foot and mouth disease outbreak here would cost the sheepmeat industry up to \$1.6 billion over a 12-month period. An identification system would enable the industry to trace-back the cause of a disease outbreak.

Farmers wanting more information, or details on where to get their tags, should visit the Meat and Livestock Australia website at www.mla.com.au.

Source: Sydney Morning Herald, Jul'02

Need an aerial photograph of your farm - to plan your pastures, waterways, dugout sites?
pixxures.ca/canada/index
Just have your legal land location.

OUTSIDE THE CORRAL ...

Virus cleans up food poisoning bug

A virus that kills the food-poisoning bacterium *E. coli* O157:H7 has been discovered in sheep. The virus could help eliminate the bacterium in farm animals, greatly reducing the chance of human infections. O157:H7, a toxic strain of the normally harmless gut bug *E. coli*, is a major cause of food poisoning. Three-quarters of cases can be traced directly to livestock, which harbour the bug without becoming ill. Meat can be contaminated when the animals are slaughtered, and manure can also be a source of infections. So Andrew Brabban at Evergreen State College in Washington state and his team wanted to test different antibiotics to find those which would eliminate the bugs from farm animals. First, they had to infect sheep with *E. coli*. But they hit an unexpected problem: the bacteria just kept disappearing from the animals. The team re-infected the sheep three times, and every time the bacteria mysteriously vanished.

It turned out that the sheep harbour a bacteria-killing virus, or bacteriophage, that infects certain *E. coli* strains. When the team tested the phage against the food-poisoning bug in the lab, they found it kills 16 out of 18 toxic strains. "That includes all the big ones you've ever heard about," says Brabban, such as the strain responsible for an outbreak at Jack in the Box fast-food outlets in the US in 1993, which left four people dead. But the phage, christened CEV1, only kills eight out of 73 harmless *E. coli* strains.

Brabban now hopes to use the phage to wipe out O157:H7 in herds and flocks. In a small trial in sheep, the phage reduced numbers of the toxic bacterium by 99 per cent in just two days, he told a meeting of the Society for General Microbiology in Edinburgh earlier in April. And using bacteriophages has all sorts of advantages. Phages are far more discriminating than antibiotics, so the natural microbial flora of animals' guts should not be affected. Also, while antibiotics are expensive and must be given to every animal, infecting just one animal with the

CEV1 phage is likely to be enough to pass the phage to a whole herd or flock - and the numbers of the phage will rise exponentially as

long as there are host bacteria left to infect. What is more, the phage seems to persist in animals, suggesting it continues to replicate in a harmless *E. coli* strain after all the O157:H7 bacteria have been destroyed. Finally, while bacteria can develop resistance as they do to antibiotics, the phage can out-evolve them.

Source: Randerson, New Scientist, Edinburgh, Ap'03



Key Components to Success

Take a hard look at your operation and decide:

1. What you can be 'best in the world' at doing? Everyone would like to be the best, but most of us lack the discipline to figure out, without ego interference, what we can be best at. Part of this is to assess what we're not 'best' at.
2. What drives your economic engine? You need to break your operation into segments and search for one thing that has the biggest impact on your bottom line. If you can pick one or two items and focus on improvements – the profit picture can change dramatically.

Source: 'Good to Great', Collins, OFFMA, Bulletin Jan'03

OUTSIDE THE CORRAL ...

Managing Risk – Drought or Monsoon?

The past couple of years have left producers across the Prairies more aware of drought than since the 'dirty '30's'. Will it rain in 2003? When it rains, will it know when to quit? The toss of the weather coin can just as easily mean flooding in other areas.

Weather contingency plans need a positive approach, a clear understanding of your farm objectives and management, and a careful evaluation of alternative possible strategies. A realistic assessment of the situation is essential. Underestimating the resources required (time, money, feed, management etc.) to complete a particular strategy is costly in terms of added business, personal and family stress.

Where to start?

- Watch the signs - It's raining today, but what do soil moisture levels look like in your area?
- Act early. Talk to neighbours, develop local plans. Talk to financial advisors and lending institutions about options.
- Plan and review. What worked in the past? Where were the problems?
- Plan again.

1. Check the most limiting farm resources:

- The mental and physical energy to do the work, maintain family, an off-farm job etc.?
- The capital available to implement strategies and to have available for 'back-up' plans?
- Inventory i.e. alternate water sources? (i.e. Alberta Farm Water Program – pumping, emergency hauling etc. – 310-0000 dial 780-422-5000)
- What feed will be available – growing and stored? Are there grazing possibilities available in your local area that temporary electric fence netting

could make useable? Are stored feed supplies protected from wet weather?

- What are the surface/subsoil moisture reserves – for annual crops, pastures, perennial grass and hay? Annual seeded pastures (i.e. oats, barley, triticale) produce a lot of forage and give perennial pastures a chance to rest and recover.
- What body condition is your flock in? Maintaining good body condition is cheaper than trying to put weight back on thin animals.

2. Set action strategies, considering:

- What is the breakeven position of each different strategy?
- Is there an opportunity to adopt management practices that will be profitable? In 2002 numerous producers successfully utilized different forages in sheep rations – many plan to continue to use to lower feed costs.
- What are the available resources and what are the implications on animal welfare, ground cover, chemical residues etc. of carrying out each strategy?
- When situations are constantly changing, are there alternative and timely fall-back options?

3. Monitor and review performance, position and outlook:

- Use established information networks to stay informed about key factors that affect your strategies.
- Be proactive about the decisions made.
- Be prepared for change.
- Remember that the impact falls heavily the decision makers and on the whole farm family.

Source: adapted from Drought Management, Meaker, New South Wales, AU, 09/'02

OUTSIDE THE CORRAL ...

Producing lamb for consumers – more than meets the eye

Did you know that 50-60 years ago lambs typically required 8-10 pounds of feed for one pound of gain and that they would gain between 1/4 to 1/3 of a pound a day? Pressured by costs, aided by research and producer selection, today's lambs grow faster and eat less.

It's still hard work raising sheep. The narrow profit margin has forced producers to look seriously at production, markets and the product. Having to meet a consumer driven market is very different than the traditional production driven market. Lamb numbers aren't enough – lamb quality and production efficiency is critical.

This is part of an article by Jennifer Fleming on lamb growth and body composition. It is a summary of one most interesting research articles she found, entitled "A sheep production model for maximum nutritional efficiency", by Dr. D.E. Hogue, Cornell University.

Dr. Hogue developed this model based on data collected in the 1960's using Dorsets, Suffolks, Corriedales and Southdowns. The objective of the research was to determine a nutritionally efficient way of producing 'ideal' retail cuts with standard weight and chemical composition.

Using previously conducted research, it was determined that legs would weigh 14.7 lbs, loins 4.4, racks 5.3, and shoulders 13.9 with each cut being comprised of 53.4 per cent water, 26.5 per cent fat, 16.4 per cent protein and 3.7 per cent ash. With that end in mind, the research focused on nutritional, reproduction and genetic parameters to produce these ideal retail cuts.

The model uses the working assumptions: that growing lambs gain weight faster if they are fed a grain based diet as opposed to a low quality hay diet, regardless of breed or housing. With that assumption out of the way, the model then states that body weight is the main

determinate of body composition. To use fat as an example, 1 per cent of a 70 lb lamb (live weight) will be lost as fat trim, compared to 7 per cent of a 130 lb lamb. Apparently, these differences are offset by differences in dressing percentages.

In short, Hogue concluded that heavier lambs had higher dressing percentages and were fatter than lighter lambs. However, body weight had no effect on the weight of retail cuts at slaughter (Table 1).

Table 1. Effect of body weight on marketing losses and yields of lambs

	% of live weight*			
	70 lbs	90 lbs	110 lbs	130 lbs
Pre-slaughter shrink	7.3	8.3	8.4	6.8
Dressing loss	46.2	42.1	38.9	39.1
Cooler shrink	2.4	1.7	1.4	1.3
Misc. trim	1.5	1.5	1.4	1.3
Breast/flank/shank	8.5	9.4	9.9	10.3
Fat trim	1.1	2.8	5.1	7.3
Retail Shoulder	12.1	12.1	12.7	12.6
Retail Rack	4.2	4.5	4.6	4.5
Retail Loin	3.4	3.7	3.9	3.6
Retail Leg	13.0	13.5	13.4	12.8

*assume 24 hour fast

Despite the fact that live weight affects body composition, age apparently, does not. It is important to note that the lambs were all slaughtered at the same body weight, but varied in age due to differences in feed levels.

The model showed that:

- increased growth rates do not mean leaner carcasses; nor do slower growth rates
- ram lambs tend to be leaner than wethers who tend to be leaner than ewes, at the same weight
- if you want leaner lambs start with bigger parents. Bigger sheep eat more but tend to have lambs that are leaner at a given weight than lambs from smaller parents.

Just a few more pieces of the puzzle to ponder.

Source: Jennifer Fleming, Ontario Sheep Marketing Agency, SheepNews, Mar/Ap'03