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Forage Management	Surya N. Acharya	
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Kootenav Corn Projects	Alfalfa	PICHAPDSO
Relay Cropping	Alfalfa (M. sativa L.) is the most widely used forage legume in western Canada. This crop occupies approximately 2.6M ha in this region due to its wide adaptation. It establishes	SEED
Telkwa Forane Trials	quickly and easily, produces high forage yield and if harvested at an appropriate stage the forage is of high quality. For these reasons alfalfa is often reformed to as the Queon' of	SOLL
2009	forages. However, this crop has some weaknesses. This crop can cause bloat in	
2009	tolerance for acid soils. Most cultivars are prone to verticillium wilt caused by Verticillium	www.tlbort.co
2008	albo-atrum. This is a serious disease of alfalfa in Alberta and BC in areas with high moisture. In interior BC, alfalfa faces two major challenges for optimal growth. They are	www.unort.co
2007	plant diseases and acid soils.	
2006	Two cultivars AC Blue J and AC Longview with high levels of resistance to verticillium and bacterial wilt and high yield were released in the past six years to counteract the disease	
2005	problem. Seeds for these cultivar are readily available in the market. These cultivars will not only produce higher yield each year, but also, they will live longer and produce weed	Advertis
2004	free high quality hay. However, these cultivars are not suitable for low pH soils.	Here
2003	Vast tracts of land in the Prince George area are quite low in pH, and most alfalfa varieties in Canada are not suitable for these acidic soil conditions. We now have a new alfalfa cultivar under testing in the region that looks very promising. The new cultivar is the result of a careful breeding strategy. We collected stem cuttings from surviving plants from some old pastures and hay stands in the area - with the idea that they have some acid-tolerance - and intercrossed these selections. We were able to come up with a new alfalfa synthetic that shows good tolerance and produces high forces wild. If all goes well this synthetic	
New Forage Cultivars Tailored for BC Production		Successfully Reach Agriculture Indust
When Bugs Come to Dinner		
2001	could be released to a seed company in the fall of 2004 for multiplication. Seed for commercial production of the acid tolerant cultivar with adaptation for interior BC will probably be available in 2006.	
	Cicer milkvetch	
	Cicer milkvetch is a long lived, rhizomatous high quality forage legume. It is well adapted to western Canada, is productive and long lived and unlike alfalfa, does not cause bloat when grazed by ruminants. However, cicer milkvetch is not used to its potential in western Canada pastures. Cicer milkvetch seeds have a high level of slow germinating hard seeds and the seedlings grow much slower than most other forage crops. This crop requires special care at establishment to obtain a vigorous forage stand.	
	The impermeable hard seed coat does not allow the seed to take in water under favorable germination conditions. Hard seededness is a type of dormancy that ensures species survival by maintaining long-term viability and distributing seed germination over a long period. Hard seeds, however, pose a major agricultural problem where quick and uniform stand establishment is the goal. Quick and uniform establishment also requires rapid growth at seedling stage. Unfortunately, seedlings of cicer milkvetch grow slow compared to most forage crops.	
	Research at Lethbridge Research Centre has focussed on improving this important forage crop. Through repeated cycles of selection for improved seedling vigour genetically superior lines have been produced that emerge faster, grow rapidly at the seedling stage and produce greater amounts of forage. Using these selections we have developed AC Oxley II that can produce almost 200 % of Oxley biomass in the establishment year. Although AC Oxley II seedlings have the ability to grow rapidly after germination a high proportion of the seeds have a hard coat. Therefore, for proper establishment the seeds need to be scarified property prior to seeding.	

For assured establishment and high level of forage production, scarified cicer seeds need to be seeded into a firm and weed free seed bed at shallow depth. Use of proper inoculant and fertilizer has shown positive effects on cicer milkvetch establishment and subsequent performance. While establishing a mixed stand, cicer milkvetch has benefited from a

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mowing when fast growing companion crops may shade the crawling seedlings and adversely affect their growth. Unlike alfalfa, cicer component in a mixture increases over the years, especially in stands that are grazed.

Now producers have a more productive cicer cultivar AC Oxley II. Seed for this cultivar is now available for commercial production. This new cultivar, released in 2001, has performed well in trials conducted in interior BC. Another new synthetic LRC94-1 is out performing all other entries in BC trials. This new synthetic may be ready for release in 2005.

Orchardgrass

Orchardgrass (Dactylis glomerata) is known for producing high quality forage and under BC conditions can produce high forage yield. It responds well to irrigation and has shown tolerance to heavy manure applications. Orchardgrass is the main feed for dairy cows in much of central BC. However, it is prone to winter injury when grown in the Canadian prairies or interior BC.

New lines of orchardgrass - represent further potential for forage producers. We have developed several lines of this forage with improved winterhardiness and resistance to the cocksfoot mottle virus. Winterhardiness is important for farmers in the BC interior, while lines with resistance to cocksfoot mottle virus are needed in the coastal areas where this disease is more prevalent. Using an indoor screening method, we have developed several winterhardy synthetic populations that have produced higher forage yield than the check cultivars in BC interior. The highest yielding synthetic will be released for multiplication and distribution in 2004. Producers are advised to look for "Adanac" orchardgrass in near future.

In collaboration with Dr. Shabtai Bittmen of Agassize, BC, we have developed nine orchardgrass populations with resistance to the cocksfoot mottle virus. These populations are now being tested in coastal BC. If all goes well, the best performing synthetics will be released for commercial production in 2005.

Non-Traditional forages

Perennial Cereal Rye (PC rye)

Lower feed costs, good persistence, beats barley as silage, and solid performance against weeds are sure to attract producers to Canada's first perennial cereal (PC) rye cultivar ACE-1. A population developed in Germany by crossing Secale cereale (rye) and Secale montananum (grass) was used as source material. The original population did not have the winter hardiness required for the prairies so we made selections within the population to produce a suitable cultivar that would survive western Canada winters. ACE-1 is the resulting cultivar and has survived for four years in southern Alberta.

This perennial will only be seeded once every three to four years, unlike barley or wheat, which would mean a substantial savings for producers. This also means that throughout winter, the live roots will prevent soils from wind and water erosion. This cultivar grows early in spring and so will utilize spring moisture better than annual crops. It has produced two cuts per year under normal growing conditions.

ACE-1 produces best if seeded in the fall. It is as early as crested wheatgrass. It can be seeded in the spring, but the crop will stay vegetative and will not produce seed head during the summer of establishment year. ACE-1 should be seeded using seven inch row spacing on moist or irrigated areas and 14 inches on dryland. Use 100 pounds of seed per acre and 75 pounds of nitrogen per acre for optimum performance. The yield potential from the first cut is about the same as you would expect from barley silage. In most cases it can produce a second crop of another 40-50 % of the first cut biomass. The quality of silage is comparable to that of barley.

The cultivar is very competitive, doesn't require much herbicide and grows very rapidly at establishment. Tests indicate that ACE-1 fits well in common herbicide systems. In a three-year study, weeds made up 20-36 per cent of total ACE-1 dry matter, when herbicide was not applied during the crop's vegetative state. These results are particularly good considering the weed content of seedling alfalfa under the same test hit 80 per cent. In the year after establishment, ACE-1 was essentially weed-free without having to use herbicides. The variety was not harmed by herbicides used to control wild oat, green foxtail and broadleaf weeds.

So far we have noticed only one problem with ergot and that's why it is not being grown for human consumption, but rather for silage and grazing at early stages of plant growth.

As a dry land crop, ACE-1 produces extremely well and that amount doubles if the land is irrigated.

In BC, ACE-1 was only tested in Creston where it has done well for two years now. We will collect germplasm from the Creston stand after three years to develop a new cultivar with adaptation to interior BC conditions. More research on this crop is needed to determine how widely it will be adapted and how it will be utilized by different types of animal systems.

Fenugreek

Fenugreek is an annual legume presently grown as a dryland crop for it=s seed. Fenugreek seed is used as a condiment, flavouring agent and for pharmaceutical Ask A Question | Buy & Sell | Events | Forum | Indus Directory | Interviews | Islands | Kootenay News | Library | Links | Climate | Environment | Dairy | Forage | Fruit | Variety Testing | Photos | Contact Us Advertise | Buy & Sell Hay | Real Estate | Local Food Garden | Horse

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purposes. In the year it's seeded, fenugreek produces almost as much forage as a mature stand of alfalfa. The crop yields 3 to 4 tons of dry matter per acre on dryland and twice that under irrigation. In collaboration with animal nutritionists we have found that fenugreek forage is very similar in quality to alfalfa, with crude protein levels around 18 to 20 percent. In preliminary grazing trials fenugreek did not cause bloat in ruminants.

Fenugreek has an advantage over alfalfa: it maintains its quality all through the summer. Instead of taking multiple cuts to ensure good yield and high quality forage, you can cut fenugreek once, late in the year and get a full high quality forage harvest. Fenugreek is probably better suited to silage making than haying, because harvesting a full forage crop in a single cut results in a heavy swath that takes a long time to dry, especially late in the summer.

Dr. Zahir Mir found that silage made from mature fenugreek was eaten about 15% less than alfalfa. However, animal gains were similar to those on prime cut alfalfa. The plant contains growth promoting substances and these natural substances may increase muscle growth in animals fed fenugreek. It is extremely palatable for rabbits and so for small plot trials rabbits can become a pest. However, fenugreek has no known insect pests or diseases excepting showing susceptibility to powdery mildew in late fall.

Fenugreek is expected to make excellent hay cubes without addition of a binding agent. It contains a gummy substance which can be used as a binding agent for making alfalfa or other cubes. The intense aroma of fenugreek survives passage through the animal and may taint milk. However, this nature may be useful in reducing manure odors, especially from cattle, poultry and hog operations.

Growing fenugreek is similar to growing other legumes. As it is an annual crop, the seed should be inoculated, seeded as early in spring as possible with a little nitrogen and fairly high phosphorus. The crop is drought tolerant, but it produces better under irrigation. The following crop in the rotation gains from the nitrogen fixed by the fenugreek. These considerations may make fenugreek particularly attractive to farmers growing annual crops who wish to include a high value forage in a short rotation.

A forage type fenugreek cultivar adapted to western Canada is expected to be released for multiplication and distribution in 2003 fall. Producers are advised to look for 'Tristar' fenugreek in near future. This cultivar needs to be tested in interior BC before it can be recommended for commercial production in the region.