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SAINFOIN

A NON-BLOATING LEGUME FOR YOUR PASTURE

Sainfoin (*Onobrychis viciifolia* Scop.) is an introduced perennial forage legume from Europe and Asia that, unlike other forage legumes (e.g. alfalfa), does not cause bloat. It has high protein content, is highly palatable and livestock often prefer it over alfalfa. This cool-season legume, alone or in mixtures with grass, can be hayed, silaged or grazed.

Other desirable characteristics include early maturity and high productivity – yields can be up to 90% of alfalfa (under one-cut/graze system). In addition, sainfoin has good leaf retention and high frost tolerance. In autumn, sainfoin forms a low rosette that remains green under snow cover for most of the winter, making it ideal for late season grazing

Sainfoin – deep-rooted with showy pink, white or purple flowers – typically grows taller than alfalfa reaching 20 to 90 cm tall.

Cultivar development

Sainfoin research conducted by Agriculture and Agri-Food Canada (AAFC) in the 70s and 80s produced a few cultivars (e.g. 'AC Melrose' and 'AC Nova') that were adapted to prairie conditions.

Recent sainfoin research and development has produced a new variety, 'AC Mountainview'. This cultivar, developed by AAFC researcher Dr. Surya Acharya, has excellent productivity with good stand longevity, competing well in mixed stands – a significant improvement over older cultivars.

'AC Mountainview' is proving itself as a valuable forage legume: it has all the digestibility benefits of sainfoin combined with forage quality similar to alfalfa. Yield is also similar or slightly lower compared to alfalfa depending on where it is grown.

Like all sainfoin, 'AC Mountainview' begins to grow in the spring before other perennial forage legumes and flowers about two weeks before alfalfa. The blooming and ripening period of sainfoin is also shorter than alfalfa.

Sainfoin can be found in western rangeland sites with greater than 300 mm of precipitation.

"This new sainfoin cultivar is truly one of a kind and represents an exciting new opportunity for cattle producers," says Dr. Acharya. "It is the first sainfoin cultivar that will survive in alfalfa pasture and grow back at the same rate after cutting or grazing. It prevents bloat in mixed stands to provide producers with their first real, economically viable option to allow for highly productive, bloat-free alfalfa pasture grazing."

The seeding unit is a single-seeded pod with 40,000 un-husked 'seeds' per kg.

Government of Saskatchewan

Horn Cattle Purchases Fund Committee

South West Forage Association

Canada

Nutritional Qualities

Forage quality and animal performance on sainfoin is very similar to alfalfa. However, unlike alfalfa, sainfoin retains its lower leaves and the stems remain succulent and hollow as the plant matures. As a result, sainfoin forage quality does not decline as rapidly as alfalfa after it starts blooming and even at the seedpod stage, sainfoin can meet the nutritional maintenance requirements of beef cows **(Fig. 1)**.

In addition, sainfoin contains a moderate concentration of condensed tannins (CT) thereby reducing the potential for bloat in grazing cattle. These CTs are also able to react with forage proteins after the plant has been chewed: they bind with the protein in the rumen to form CT-protein complexes, making the protein more available to the animal.

Other studies have shown that forages containing CTs can act against parasitic nematodes by breaking their cycle and thereby reducing the contamination of infective larvae in pastures.

Ongoing research

AAFC researchers continue to develop and test additional new sainfoin cultivars that are better suited to the brown soil zone, to give pasture managers high yielding, bloat-free legume options with greater stand longevity than previous cultivars.

Three new sainfoin lines have been developed by Dr. Surya Acharya and are being tested in mixtures with 'AC Grazeland' alfalfa, seeded in alternate rows. The work is being conducted at AAFC research facilities in Swift Current, SK and Lethbridge, AB and in conjunction with the Western Beef Development Centre in Lanigan, SK. Beyond determining the suitability of these cultivars in the brown soil zone, cultivars are being evaluated on yield and winter survival over multiple years. Results of these trials should be available by 2017.

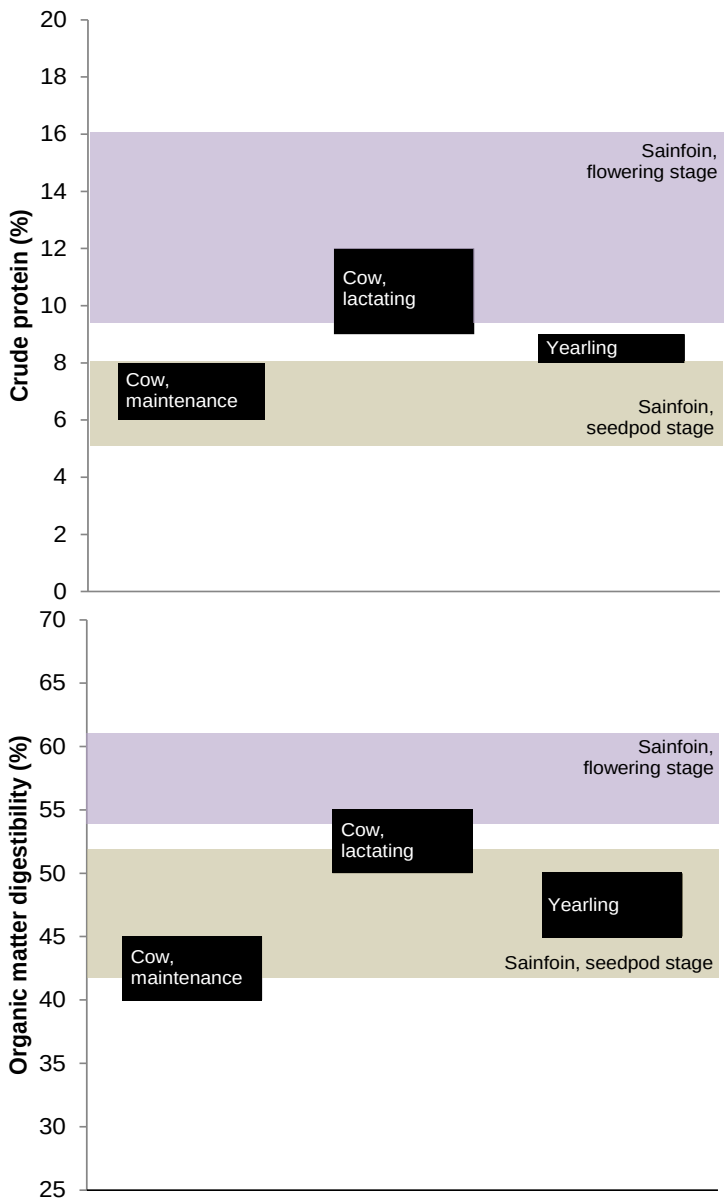

Figure 1. Top. Crude protein percent (CP%) levels in forage needed to meet specific cattle production requirements (black boxes) (adapted from Holechek et al. 2004) against CP% levels produced by sainfoin (coloured bars). Bottom. Organic matter digestibility percent (OMD%) levels in forage needed to meet specific cattle production requirements (black boxes) (adapted from Holechek et al. 2004) against OMD% levels produced by sainfoin (coloured bars).

"What is important is that sainfoin is being tested in a variety of mixtures under real life grazing conditions. This will tell us which varieties will stand the test of time and be good investments for pasture managers" –Dr. Alan Iwaasa, Research Scientist, AAFC

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