

Galega could be a good alternative to alfalfa!

Dr. Tarlok Singh Sahota CCA

Galega (*Galega orientalis*), also called oriental goat's rue, is a perennial forage legume from the Scandinavian countries though the plant is reported to be a native of the Caucasus region (located at the border of Europe and Asia, on the peripheries of Turkey, Iran and Russia between the Black and the Caspian seas). It grew wild in the meadows and more open forests of the Caucasus and it was introduced to the Baltic countries, Scandinavia and north-west Russia. The plant has been reported to persist for 10-30 years! Its beautiful violet blue flowers have good quality nectar that attracts honeybees. Galega, like Sainfoin, is a good honey plant! Being a legume it can fix its own nitrogen from the atmosphere. Galega could also produce good amounts of biogas especially if mixed with grasses and manure. It could be used for bioremediation of oil polluted soils; some of the bacteria hosted by Galega could degrade pollutants such as toluenes. Galega (flowers) could be a delight to the gardeners.

Galega has been reported to perform best on deep, loamy and well drained friable soils though it could be grown on a wide variety of soils. We had Galega flourishing well in our slightly acidic to neutral tile drained soils at the Thunder Bay Agricultural Research Station (TBARS), Thunder Bay. We have found that Galega was more winter hardy and persistent than alfalfa and much faster to grow in early spring than alfalfa. Faster growth rate of Galega in early spring helps it to smother dandelions even in older stands. Whereas, alfalfa cannot compete with dandelions as it grows older. However, Galega's ability to compete with weeds could be low at early establishment, which improves with the canopy development. Another beauty with Galega, as compared to alfalfa is, that it has a dense well/long retained canopy and its stem isn't as hard as that of alfalfa; as a result its quality doesn't come down as speedily as alfalfa after the first bloom. Galega's value as a high protein fodder was realized more than a century ago. It is also rich in carotenes, minerals and vitamins, especially vitamin C. It is low in toxic alkaloids. Thus overall, it makes a good quality feed for livestock, especially for dairy cows. It may be grown as hay or silage and cut twice in the northwestern Ontario and probably 3-4 times in eastern/southern Ontario and Quebec (same number of cuts as alfalfa). It has better retention of leaves after harvesting and drying for hay than alfalfa. Ideally, the crop should be direct seeded with good seed to soil contact and grown alone; though it can be grown with less competitive companion crops such as timothy and fescue. However, we have not tested combined cultivation of Galega with timothy or fescue or any other crop for that matter. Can Galega and alfalfa be grown together in a mixed cropping system in the same field? No! We tried seeding the two together and were surprised to see not even a single plant of Galega emerging in/and growing along with alfalfa. It seems that alfalfa had a very strong allelopathic effect on Galega.

Gale, released jointly by Estonian and Russian plant breeders, is the only variety of Galega in cultivation since 1837. Gale seed is not available in Canada and has to be imported (my seed source has been Timo Mäkinen General Manager Naturcom Ltd, Koskenkankaantie 325, FIN-92400 Ruukki, Tel. +358 8 270 7200, Mob. +358 400 555 400; Email:

timo.makinen@naturcom.fi). Galega flowers could turn to pods full of seeds at Thunder Bay. This gives us hope that we can produce our own seed. Seed pods are ~ 4 cm long and contain 5 to 8 kidney-shaped yellowish green seeds (2.5-4.0 mm long, 1.7 – 2.0 mm wide) that may later turn to light brown. Galega could be seeded in spring as early as possible. We tried seeding it @ 25, 35 and 45 kg seed rates/ha and found that 25 kg seed rate/ha was optimum for forage production (For seed production, a lesser seed rate of 4-10 kg/ha is recommended). Seeds should be inoculated with a symbiotic bacteria (*Rhizobium galegae*); though we didn't do that. We applied 44 kg N, 20 kg P₂O₅, 70 kg K₂O and 24 kg S/ha every year (to both alfalfa and Galega). Dry matter yield gain by Galega over three harvest years (2012-'14; total 6 cuts) as compared to alfalfa seeded @ 13 kg/ha was 2,630 kg/ha, which amounts to ~880 kg/ha/year (higher yield than alfalfa). Protein content in first cut Galega was 26.1 % (up to 4.1 % point higher than that in alfalfa). In the second cut, there was no difference in the protein content in the two crops (little over 20 %). Dry matter yield spread was 55 % in the first cut and 45 % in the second cut; more or less the same as in alfalfa. The crop is harvested when a few flowers are seen blooming (usually in the second week of June at Thunder Bay). Due to its early start in the spring, Galega is ready for harvesting a week before alfalfa. The crop is reported to be spreading from rhizomes. However, we didn't observe that at Thunder Bay. If that was the case, our inter plot spaces would be filled with Galega.

We didn't grow Galega for seed production. Highest seed yields of up to ~700 kg/ha have been reported during the second harvest year in Estonian trials. Five-year average seed yields ranged from 254 to 357 kg/ha depending on row spacing and seeding rate; low seed rates (4-8 kg/ha) and wide row spacings (37.5-62.5 cm) proved to be the best.

Published in Northwest Link, February 2016, Pages 8-9 & Country Guide March 2016!