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Sainfoin – Worth Another Look?

Jason Koivisto and Gerry Lane have been growing Sainfoin at the Royal Agricultural College, Cirencester. Their results are quite encouraging and will be of interest to those farming on light, free-draining soils.

Sainfoin was largely grown in England during the 17th -19th centuries and, to a lesser extent, in the early 20th century. It was used as a source of very high quality hay, much of which was fed to the heavy working horses of the time. The aftermath grazing was very highly favoured for fattening lambs.

There are two main types of sainfoin, the common type and the giant type. The common type lasts longest, whereas giant sainfoin is productive over a much shorter time span and is more popular with the equine industry in the eastern counties. Sainfoin prefers to grow on calcareous soils with a pH of over 6. Several reports suggest that it is more drought tolerant than lucerne, and therefore better suited to the shallow brashy soils of the Cotswolds.

Sainfoin has many positive characteristics as a forage. In ruminants, these are the result of its content of high levels of chemicals called condensed tannins. These bond to the protein in the rumen and allow it to pass into the abomasums where it is digested. Daily liveweight gains for cattle and lambs are high on grazed sainfoin.

Agronomically its positive characteristics include a deep taproot that allows the plant to be very resistant to drought and of course, being a legume, there is a high level of residual fertility after a sainfoin ley has been ploughed.

However, sainfoin does not persist well. This, plus poor re-growth in some varieties, could be the result of poor carbohydrate storage in the tap roots. This fact coupled with rather low dry matter yields, the decline in the use of horses for farm work and the availability of cheap nitrogenous fertilisers brought about the inevitable decline in the growth of this crop in the twentieth century. At the GRI conference in 1982 Dr. J E Sheehy commented:

“Sainfoin is something of an agricultural paradox; from the point of viewof animal nutrition it seems to be the most desirable of all forage legume plants; from an agronomic point of viewit is an undesirable plant because it doesn't growvery well.”

Sainfoin Varieties

Most of the common type varieties and landraces grow very slowly and produce a relatively low yield in the establishment year. Common types of sainfoin, if well managed, will out-persist the giant types by several years. Some of the different landraces of the common type are Cotswold Common, Hampshire Common and Sombourne.The giant type is far more vigorous in the first year, and will provide a measurable yield during this establishment season, but will only persist for a relatively short period of time. Hampshire Giant and English Giant are the best known of this type of sainfoin.

Some of the newer varieties to come from these two types and Russian landraces are Nova and Melrose developed on Canada, Eski, Remont and Remunex from the USA, Zeus and Vala from Italy, Perly from Switzerland, Fakir from France and Emyr developed in Hungary.

The RAC had a Sainfoin variety trial site in 2000, sponsored by Cotswold Seeds Ltd. The varieties compared were Cotswold Common, Hampshire Common, Nova, Perly, Emyr, Melrose and a Ukrainian landrance called Esparcette (German for Sainfoin). We are always looking for new material to include in this ongoing and evolving study.

Table 1. Average crude protein of four Sainfoin varieties (%)

Variety	First Cut	Second Cut	Third Cut
Emyr	15.6	13.4	14.8
Cotswold Common	16.7	15.1	N/A
Sombourne	17.9	16.0	13.7
Nova	16.0	14.9	N/A

Establishment

Sainfoin is usually sown at 25-35kg/acre. Sowing Sainfoin with non-competitive grass companions such as timothy and meadow fescue sometimes helps to improve yields and reduce weed ingression into the sward.

Several experiments have been performed to determine the suitability of sowing multiple legumes mixtures that include sainfoin. These include mixtures with white clover, birdsfoot trefoil, and even lucerne. The birdsfoot trefoil mixture worked well when used in a conserved forage system. Sainfoin and lucerne have been sown together in hopes that Sainfoin could reduce the risk of bloat from feeding cattle fresh lucerne. Experiments in Canada have shown that it is possible to reduce the risk of bloat by feeding the two crops in a mixture. Possible concerns with mixtures are that the sainfoin may not persist under the higher levels of competition from lucerne.

Early work suggested that Sainfoin was best established without a companion crop. Unfortunately this means that the field would

normally not provide a yield for the establishment year. Recent work done at the RAC suggests that it is possible to use a companion crop (spring cereals or peas) to establish sainfoin and obtain a forage crop in the establishment year.

Sainfoin is very susceptible to invasion from weeds, as a result of slow growth during the establishment year. A post-emergence application of 'Belmac +' (NO LONGER APPROVED ON LABEL) is approved but be sure to follow the product label to avoid injury to the sainfoin. If there is not a companion grass with the sainfoin a winter application of carbetamide will suppress grass weeds and give a useful control of chickweed. Please check with your agronomist for details.

Production and Management

The yields obtained at the Royal Agricultural College in 1998 are consistent with yields for Sainfoin reported by the Grassland Research Institute in 1982, and in western Canada in 1972. Interim results from a trial carried out in Hampshire in 2000 by NIAB have also confirmed the high yield potential of Emyr both sown alone and with companion grasses. Cotswold Common also performed well in that trial.

Yields vary according to the soil fertility, but few recent studies on fertiliser requirements have been performed. Sainfoin, like all forage legumes, requires an adequate supply of potassium to sustain forage yields. Some research suggests that it will grow well in areas that have low soil phosphorus indices.

Sainfoin suffers from root and crown rots which will reduce the longevity of the stand. The worst of these root rots is caused by clover rots (Sclerotina trifoliorum). So try to use varieties that are resistant to this disease. Some loss of plant may also be caused by damage to root nodules by the larvae of sitona weevils.

Cattle and sheep have shown a preference for Sainfoin over other legumes in grazing trials. Furthermore, animals grazing on sainfoin are much less prone to bloat than when grazing other legumes and it is believed also to have anti-worming properties. However, close continuous grazing of Sainfoin will result in stand losses (especially in the autumn of the establishment year), so it is recommended that grazing take place when the plant is at either bud or even flower stage, with light or medium intensity.

Sainfoin has similar crude protein and digestibility to lucerne. Animal performance on sainfoin compares favourably to animals fed lucerne. Sainfoin can also be harvested at 50 per cent flower without a large loss in quality. Sainfoin and alfalfa hay are similar in feed efficiency and digestibility for beef cattle.

Sainfoin is a good quality feed for racehorses. If you are growing for the market then special care must be taken to produce superior quality dust-free hay. The best stage of growth for horse hay is mid to late flower. Care must be taken to avoid leaf shatter in field handling and dust in the hay, so it must be worthwhile to

use a barn drying system to reduce field losses and prevent dust. An alternative is to wilt the sainfoin to between 50-65 per cent DM and then wrap with six layers of polythene for “haylage”.

The need for further research

Future studies should concern establishment, nodulation, stand persistence, cutting management and animal nutrition. It is to be hoped that sufficient funding can be attracted for these important investigations to be carried out. From a commercial point of view there would appear to be substantial incentives for both the agricultural and equine industries to take another look at Sainfoin as a way of enhancing performance and cutting costs.

by Ian Wilkinson of Cotswold Seeds

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