

Box 1: Liver function and photosensitisation

In all plant-eating animals, a by-product of chlorophyll, phylloerythrin, which is photo-dynamic (reacts with light) is absorbed into the blood stream from the digestive system. A healthy liver filters out the phylloerythrin and excretes it safely with faecal material, but if the liver is damaged, phylloerythrin can build up in the blood and react with sunlight in exposed skin, causing significant damage to the skin cells.

Box 2: Bog asphodel

Bog asphodel (*Narthecium ossifragum*) is very common on wet, acid, unimproved ground in the North and West of Scotland. It is also common in NW England, Wales, Ireland, Norway, The Faroes and other parts of north-west Europe.

Its grass-like leaves are deciduous and the distinctive yellow flower (see picture) blooms in July and August. It is also known to contain a toxin that causes kidney disease in cattle.



Bog Asphodel: the pretty bog flower has a role to play in the occurrence of yellowses/plochteach

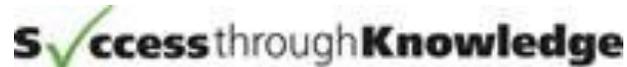
If you would like more information, or if you'd like to provide information about the level of disease incidence on your farm, please contact us at:

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Yellowses/Plochteach/Saut in hill lambs

Do you graze ewes and lambs on boggy hill ground? If so, it is possible you may have seen lambs with signs of photosensitisation in early summer.

Photosensitised lambs have a swollen head and the skin on the ears, face and along the spine, where the fleece parts, becomes red and ulcerates (see pictures).



The disease can cause whole ears to slough off and in severe cases jaundice may also be present. Untreated lambs may die from secondary infections or from starvation if they become blind and thus unable to suckle or graze.

The disease is common in Scotland, where it is known as yellows, yellowses, plochteach, plochach or tòchd. A similar disease has been reported elsewhere in western Europe, in particular England, Norway, Ireland and the Faroes.

Norwegian research suggests that the disease is caused by lambs ingesting a toxin (or possibly toxins) that causes liver damage. The damaged liver is unable to remove normal toxins (see Box 1), which then build up in the blood and damage exposed skin by reacting with sunlight. The disease has only been observed in lambs grazing pastures containing bog asphodel (Box 2) and this plant may be the source of the toxin causing the liver damage.

Affected lambs (adult sheep appear to be unaffected) need to be removed from boggy pasture with their mothers, kept in heavy shade and fed hay until they recover.

At SRUC Kirkton and Auchtertyre Farms, 2014 (a sunny summer) was particularly bad, with 20 per cent (51 of 250 lambs tagged) of Scottish blackface lambs in the Auchtertyre flock showing clinical signs. In the less sunny summer of 2013, 11 per cent (21 of 194 lambs tagged) of the Auchtertyre lambs had clinical signs.

The extensive nature of Scottish hill sheep systems means that photosensitised lambs may not always be found in time and even if they are found sheds or shady woodlands may not be available to keep them from sunlight. It is likely that this disease is a significant cause of

“black-loss” (unexplained lamb losses) in the North and West of Scotland. The incidence of the disease seems to vary from year to year and from location to location, but as yet very little data on the disease has been collected in Scotland. However, the majority of farmers polled at an open day at SRUC Kirkton and Auchtertyre Farms in 2012 said that the disease was an ongoing problem on their farms, and that typically about ten per cent of lambs were affected.

Avoiding the disease

Some farmers in Cumbria have reported success by avoiding grazing lambs on boggy ground during late spring and early summer, but this may not be an option on many Scottish farms. The plant is common on boggy ground, and as boggy ground is usually patchily distributed across a farm, fencing it off is unlikely to be practical.



Wool loss due to yellowsores on the back of the animal

Where next?

Despite the commonness of the disease in Scotland, there has been little research. The efforts made by Norwegian researchers were significant but effectively stopped a decade ago, before new scientific techniques became available. This disease is a significant animal welfare and production problem. An important first step will be to collect evidence of this by getting farmers to report the numbers of affected lambs they see. The disease needs to be properly characterised in terms of the clinical signs and liver pathology, and treatment options need to be tested.

It is probable that some lambs are genetically resistant to the disease. In New Zealand, resistance to a similar disease called facial eczema (caused by a fungal toxin found in pasture), has been shown to be highly heritable and each year 1000 ram lambs are tested for their level of resistance. If evidence of genetic variation in resistance to plochteach/yellowsores could be found, it would be possible to run a breeding programme to select for resistant animals. If the toxin(s) that cause this disease can be identified, this would make any breeding programme more efficient.