



Animal &
Plant Health
Agency

Information Note

Hot weather and potential risks to health and welfare

August 2022

Livestock & wildlife health and welfare and production problems may arise during periods of hot weather. Examples are listed below to raise awareness.

Water Shortages and Intoxications

Animals require an adequate supply of fresh water. The use of alternative water supplies in dry weather can lead to accidental intoxications. For example, when transporting water in bowsers, ensure they have been adequately cleaned beforehand, especially if they have previously contained fertilisers. AHDB advice can be found at the link below:

[water supply problems on farm | AHDB](#)

Heat stress can affect fertility and cause production losses in all animals, particularly in high producing dairy cattle and pigs, and can lead to welfare problems. Provide shade, minimise the time animals are held in strong sunlight, and ensure good ventilation for those which are housed. Wallows should also be provided for outdoor pigs. AHDB advice:

[Drought - reducing heat stress | AHDB](#)

Flies and Strike

Flies may exacerbate the spread of infections, for example 'New Forest Eye' and summer mastitis. However, a key risk to the health and welfare of sheep is blowfly strike. SCOPS have produced a product guide that provides treatment and control options for this condition:

[Blowfly | SCOPS](#)

Plant poisonings

Many weeds survive remarkably well in dry weather, probably due to their deep-seated roots. Ragwort may be eaten if dried out on the pasture when it becomes more palatable to stock. Hedgerow plants such as the nightshades or bryonies may be browsed as animals are seeking shade cast by hedges. Animals may also break out of fields in their search for feed and gain access to gardens and potentially become poisoned by ornamental plants most commonly *Pieris* spp, rhododendron, and yew. As grazing becomes scarce, animals may also eat more bracken. Soil erosion or cracking can also expose the roots of toxic plants such as Hemlock Water Dropwort.

Algal bloom

Blue green algal blooms

Certain summer weather conditions are favourable for algal growth, and there is an associated increased disease risk from cyanobacteria in inland water bodies. Cyanobacteria, of which there are several species, are organisms with some characteristics of bacteria and algae. They are similar in size to algae, contain blue-green or green pigments, and are capable of photosynthesis. However, in contrast to most algae, they readily accumulate as surface scums (blooms). Certain species of both algae and cyanobacteria can produce toxic metabolites, causing animal poisoning at high concentrations. It is the dense surface scum of the cyanobacteria that allows the toxin to accumulate in concentrations likely to be hazardous to human or animal health. The main risk factor for toxin production and release is the period when the bloom dies back. This can be why, as temperatures fall and night frosts kill off the blooms, the autumn is considered a particularly high-risk period. The image below (Figure 1) is an example of algal bloom on an inland water body.

Algal toxins can be both neurotoxic and hepatotoxic. In livestock, poisoning might present as sudden deaths with more than one animal involved. Hepatotoxicosis is slower in onset (from 8 hours if acute) and associated with lethargy, ruminal atony and mild bloat, anorexia, pallor, internal haemorrhage, hypovolaemic shock and occasionally haemorrhagic diarrhoea. Suspected poisoning is difficult to confirm, and most commonly relies on identification of the presence of an algal bloom, fish and bird deaths in the vicinity, and the demonstration of algae in or around the mouths of stock to prove exposure. APHA do not offer algal identification or toxin testing but are happy to be contacted for further advice on testing. Depending on the water body affected, the Environment Agency or UK Health Security Agency, together with Water Companies, may also need to be informed.



Figure 1: Algal bloom on an inland water body (Environment Agency, GOV-UK)

To prevent problems occurring, ensure that stock have access to a clean, fresh supply of water, avoiding groundwater, and that stagnant water is fenced off.

Photosensitisation and sunburn

Primary photosensitisation in grazing animals occurs due to the ingestion of lush green plants containing photodynamic agents, such as St John's Wort (*Hypericum perforatum*) or Bog Asphodel (*Nartheicum ossifragum*). Secondary photosensitisation is the most common type seen in animals and occurs due to liver or bile duct damage, most often because of ingestion of hepatotoxic plants such as Ragwort (*Senecio jacobea*). Umbellifera plants, such as parsley and parsnips. These can cause contact photosensitisation and skin lesions have been seen in pigs placed on aftermath of these crops, in one case involving the udders of sows leading to reluctance to let the piglets feed.

Direct exposure to UV radiation can damage the skin in cattle, sheep, pigs, and horses with light colouration. Sunburn is more common in early summer when pigs with outdoor access are exposed to the first strong sunlight since winter; although a layer of mud from wallows will reduce sunburn, shade is essential so the pigs can move out of direct sunlight. AHDB advice:

<https://ahdb.org.uk/knowledge-library/avoiding-heat-stress-in-pigs-outdoor-herds>

Soil-borne pathogens

Drought affects livestock directly as the grass is shorter and consequently animals may eat more soil while grazing. In addition, soil erosion, cracks, and fine soil particles can expose animals to increased numbers of soil pathogens and spores. Examples of this would be *Clostridium chauvoei* (the causative agent of blackleg) and anthrax (as discussed below).

Potential sequelae of hot and/or dry weather

Once a period of dry weather ends there is the potential for localised flooding due to water run-off from dry land. In addition, several conditions may occur:

Haemonchosis

The possibility of haemonchosis in grazing sheep, goats and calves could increase, particularly after heavy rains, as this parasite is able to survive in warmer temperatures. Clinical signs are anaemia, with no diarrhoea, and subcutaneous oedema (bottle jaw). There is little immunity to this parasite, so disease can be seen in lambs and adult sheep. All classes of anthelmintics have activity against *Haemonchus contortus*, but anthelmintic resistance in this parasite is a recognised problem.

Ryegrass staggers

Ryegrass staggers is a neurotoxicosis of animals grazing perennial ryegrass (*Lolium perenne*) infected with a seed-borne endophytic fungus *Acremonium lolii*. It may be encountered in cattle, ewes, and fattening lambs in late summer, usually after periods of prolonged dry weather when the grass is under drought stress. The condition may also occur following periods of rain that allow production of the endophytes on the ryegrass.

Diagnosis of ryegrass staggers is based mainly on a clinical history of ataxia, tremors, and collapse, although brain histopathology at postmortem examination may be helpful in differential diagnosis. If suspected and animals are moved to another pasture, they may improve but the neurotoxin can persist in hay and silage.

Cerebrocortical necrosis (CCN)

CCN is most prevalent in the summer months in animals at pasture, particularly cattle (figure 2). The APHA's disease data from 2002 - 2022 show a peak in the number of diagnoses of CCN in cattle at this time of the year. The disease is most frequently seen in weaned animals, occasionally in adults, and rarely in unweaned calves.

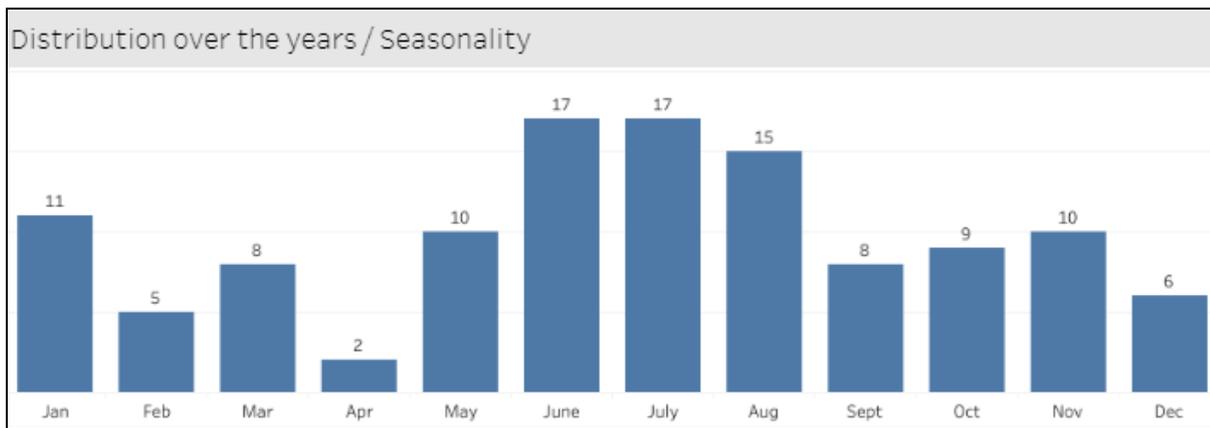


Figure 2: Diagnoses of cerebrocortical necrosis in cattle in England and Wales 2002-2022

A lack of vitamin B1 is considered the principal cause, although the exact reason animals develop disease is uncertain. Studies have identified that the proliferation of thiaminase-producing bacteria in the rumen can deplete the available vitamin B1 which passes into the intestine for absorption. Certain grazing conditions, which are more common in the summer, appear to precipitate outbreaks, although these are quite unpredictable, and advice on prevention can be problematic. Restricted water availability can also increase the risk of developing CCN, and any enteric inflammation, such as that caused by parasitic gastroenteritis, which reduces small intestinal absorption of the vitamin, can also potentially precipitate this disease.

The most common clinical sign is blindness. There is no test available for live animals, confirmation of the diagnosis requires postmortem examination. The gyri of the cerebral hemispheres are usually swollen and can show yellowing, and the affected areas of the brain often autofluoresce under ultraviolet light. Diagnostic confirmation of cerebrocortical necrosis requires histopathology. It is also useful to examine large intestinal content for worm eggs to determine whether a significant endoparasitic burden could be affecting intestinal absorption of vitamin B. Treatment with vitamin B soon after onset of blindness can be effective.

Risks to Wildlife

Higher temperatures increase arthropod activity and arbovirus transmission. Drought reduces the water area and volume of natural lakes, thus concentrating waterbirds into smaller areas. This concentrates any pathogens being shed and can lead to outbreaks. Botulism cases may also increase in waterbirds as sediments become more exposed.

Risk of notifiable disease

West Nile Virus

Drought can lead to water storage in open vessels which can serve as mosquito breeding sites. Outside swimming pools may become stagnant if there is not enough water to top

them up. West Nile virus was detected in a captive owl at a zoo in northern Germany in early July 2022. There have been five avian cases in southern Europe (Italy) in 2022 (by August 2022), although no equid cases had been reported in Europe during that period.

Bluetongue Virus

Hot weather can increase vector movement and survival and therefore increases the risks of vector-borne diseases such as bluetongue virus. In August 2022, the risk of airborne introduction of bluetongue virus to the UK through midges from the near-Continent has recently been increased to medium risk.

Anthrax

As described above, the risk of soil and spore borne diseases may increase in hot weather. Anthrax livestock cases may increase in parts of Europe and anthrax in livestock has been reported in 2022 in Italy, France, Spain, and Croatia during July and August.

African Swine Fever

There may be increased wild boar to wild boar, or wild boar to domestic pig contact as water sources become fewer. This could impact on African swine fever transmission in wild boar in Germany, Italy and elsewhere in Europe.

High pathogenicity avian influenza virus (HPAIV)

Whilst drought and high temperatures may reduce the environmental load of high pathogenicity avian influenza virus (HPAIV), they can promote transmission of other pathogens as described above. However, drought can promote HPAIV transmission, particularly in wading birds, which migrate in August and September into the UK and feed in coastal lagoons and marshes.

Useful links and further information

- Potential impacts on ruminant health and welfare during hot weather – article: <https://veterinaryrecord.bmj.com/content/183/5/154.full?ijkey=okcC151jKHBM&keytype=ref&siteid=bmjournals>
- Avian botulism – a recurring paralytic disease of wild UK waterbirds <https://doi.org/10.1136/vr.l5417>
- SCOPS: <http://www.scops.org.uk/>
- COWS: <http://www.cattleparasites.org.uk/>
- NADIS parasite forecasts: <http://www.nadis.org.uk/>

- NFU Fodder Bank:
<https://www.nfuonline.com/sectors/crops/crops-news/the-nfu-fodder-bank-is-now-open/>
- DEFRA information note:
[Keeping farm animals and horses in extreme weather - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/keeping-farm-animals-and-horses-in-extreme-weather)

Information about the APHA, SRUC-VS and AFBI postmortem provider network in the UK:

- APHA in England & Wales:
<http://apha.defra.gov.uk/vet-gateway/surveillance/diagnostic/index.htm>
- SRUC Veterinary Services in Scotland:
<https://www.sruc.ac.uk/business-services/veterinary-laboratory-services/veterinary-diagnostics/>
- AFBI in Northern Ireland:
<https://www.afbini.gov.uk/articles/animal-disease-diagnostic-services>



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