

info

Pendulous or Drop Crop (PC)

The Crop - What is it? How does it function?

The crop of domestic poultry is a thin walled out pouching of the esophageal wall. When the muscular part of the stomach is full, food is stored in the crop where it undergoes softening and swelling. No digestion takes place here. The crop is composed of 3 layers of muscles. These layers are held together by connective tissue plus 2 band-like cross-striated muscles which insert into the skin and assist in the emptying of the crop. Contraction of the crop is controlled by the vagus nerve.

When empty, the crop contracts at 1 to 1½ minute intervals. The emptying contractions of the crop are dependent on the filling state of the stomach and also on the type and consistency of the crop contents. Soft food goes more quickly through the crop than do kernels of grain. Wheat and rye pass through more quickly than oats.

What is a pendulous crop? Why does it happen?

A pendulous crop is grossly distended (hence the term “drop crop”) and visible hanging over the breast area. It is filled with feed, particles of bedding and fluid that is often foul smelling. It feels like a half full bag of water. This should not be confused with a crop distended with feed after a bird has just eaten, especially birds on feed restriction or young poults. These normal crops feel doughy.

The underlying theory of why crops become pendulous is thought to be the result of overdistention, causing rupture of some of the elastin fibers holding the muscle layers together. This can be compared to overstretching an elastic waistband. This causes breakage of some of the elastic fibers and eventually it doesn't return to its original shape. When the muscle integrity is impaired the crop does not contract properly.

Water and feed aren't completely emptied from the crop which provides an ideal environment for secondaries such as bacteria, yeasts or mold to grow. The lining of a PC may become ulcerated with white plaques from the secondary invaders. Fungal hyphae may penetrate through the lining of the crop into the muscle layers below which further disrupts the integrity of the crop. Birds continue to eat but digestion is impaired and emaciation results.

Factors Contributing to Pendulous Crop

The following factors have been shown to cause an increased incidence of PC.

- Over consumption of water by turkeys during hot weather. When the water temperature got hot, birds backed away from it, then overconsumed when it cooled at night.
- Poults that are dehydrated or overheated will overconsume water. Overheating could possibly weaken the elastin fibers of the crop.

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- ↘ Presence of something in the water which causes birds not to consume it. For example, birds that receive fluctuating levels of chlorine in the water will back off water when chlorine levels are high. When the chlorine dissipates they will then overconsume.
- ↘ Absence of food or water leading to overconsumption. Note that breeder flocks on feed management programs do not have an increased incidence of PC.
- ↘ Addition of high levels of yeast supplements to the feed.
- ↘ Certain feed ingredients such as cerolose, a starch substitute, cause gas production in the crop due to *Saccharomyces tellustris*.
- ↘ Genetic predisposition to PC. It may be that certain lines of birds are susceptible to developing PC if their crops are distended.
- ↘ Chemical irritation of the crop. Higher incidence of PC has been reported in flocks where drinkers were disinfected with a higher than normal level of quaternary ammonia disinfectant or in cases where feed was top dressed with the wrong type of dicalcium phosphate resulting in chemical burns to the mucosa. Mucosal damage leads to secondary infections and subsequent damage to the underlying muscle and elastin fibres.
- ↘ Damage to the nerve supplying the crop. This has been reported in parrots due to a specific virus but not in domestic poultry.
- ↘ Crop infections due to mold or parasites such as trichomoniasis. This is often due to poor water sanitation.

Recommendations to Minimize Pendulous Crop

- ↘ Water provided to turkeys at all times should be cool, clean and free of contaminants. Monitor chlorine levels regularly to ensure that bacteria are controlled but ensure that fluctuations are not occurring. If you can smell chlorine, it may be too high. If you test the level and it reads zero, try diluting the water sample as the chlorine may be so high it is bleaching out the color reaction.
- ↘ Monitor water consumption to determine if turkeys are drinking more than normal or if the pattern of water consumption changes.
- ↘ Ensure that feed is palatable: appropriate size and consistency with minimal fines.
- ↘ Sanitize drinkers regularly with an approved disinfectant. Use the correct dilution and rinse drinkers afterwards.
- ↘ Do not overheat poults. During brooding room temperatures should be 75°-80°F (24°-27°C) with 95°-100°F (35°-38°C) under the stove. Empty drinkers often to provide cool water.

Flocks with higher than normal incidence should be investigated to determine underlying causes. There is no economically viable treatment for pendulous crop. Prevention is key.

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