



HONEYCHOP

All About Chaff

Dr Teresa Hollands R.Nutr., FHEA BSc (Hons), MSc (Animal Nutrition) PhD

Dr Teresa Hollands, R.Nutr, from the School of Veterinary Medicine at the University of Surrey, talks to Honeychop about their exclusively oat straw-based chaffs.

What is chaff?

Chaff, or chopped forage (straw, grass or alfalfa), is commonly fed to horses and ponies to bulk out concentrate feeds and slow eating. It is dried and cut into small pieces, unlike the long stems found in hay or haylage. Traditionally, molasses was added for palatability, but many modern options now exist, including chaffs with oil, herbs, or no added ingredients.

Should I feed a chaff?

Some see chaff as a cheap filler, but it is a valuable dietary addition. It provides forage, which should form the basis of a horse's diet, and encourages chewing. Chewing is essential because horses only produce saliva while eating, and saliva helps protect the upper stomach from acid, supporting gastric health. For these reasons, feeding a chaff can be very beneficial.



Chaff is dried and chopped forage (grass, straw or alfalfa).

DID YOU KNOW?

Chaffs encourage chewing, which produces saliva that will protect the upper stomach from acid and aid gastric health.

Can we clarify the difference between fibre and forage?

Fibre is often thought of as grass, hay or straw, so the terms fibre and forage are commonly used interchangeably. However, they are not the same. In human nutrition, fibre includes components such as those found in whole grains, which people can digest, even though we cannot digest forage. This is why whole grains make up a large proportion of human fibre intake and are linked to positive health outcomes. Forages contain fibre, but not all fibre comes from forage.



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What is fibre?

Fibre is defined as lignin and plant polysaccharides that are not digested by mammalian enzymes and form the plant cell wall. Horses rely on microorganisms to ferment fibre into substances they can absorb. Fibre includes carbohydrates such as cellulose and hemicellulose, as well as lignin, which binds tightly to these carbohydrates. High lignin levels make fibre harder to digest, even for horses, as it limits bacterial access during fermentation. Although forage is often classified as fibre, the two are not the same.

DID YOU KNOW?
Horses have evolved to graze for up to 18 hours a day and should eat about 2% of their body weight in forage daily.

What is forage?

Forage refers to the edible parts of plants, excluding separated cereals, that are eaten by grazing animals or harvested for feeding. Its nutritional value varies depending on fibre type and content, which can range from 30–80%. Non-fibre components are easily digested in the small intestine. Forage includes grass, hay, haylage, and chaffs, and should make up the majority of a horse's diet. Horses have evolved to graze for up to 18 hours a day, and it is recommended they consume around 2% of their body weight in forage daily.

Which feeds contain fibre?

All plant-based feeds contain fibre, but in different amounts and forms. For example, cereals contain 12–18% total dietary fibre and are a major fibre source in human diets. In horses, feeds such as hay, straw, grass, cereals, haylage, and sugar beet all provide fibre, but their differing fibre types affect how they are fermented by gut bacteria. As a result, fibre sources vary in calorie and nutrient contribution.

What is filler fibre?

Straw is a good example of a forage that provides filler fibre. It can be compared to celery in the human diet: it fills the stomach but provides few calories. This is because straw contains lignin, a type of fibre that hindgut bacteria struggle to digest. The higher the lignin content, the lower the energy value. Wheat straw is particularly indigestible due to its high lignin and silica content. Horses in light work or good doers can benefit from filler fibre, while horses in hard work generally require more digestible fibre sources.



Straw is a good example of forage that provides filler fibre as it provides very few calories..

Why is wheat straw commonly used despite being hard to digest?

Many chaffs use wheat or unspecified cereal straw because wheat straw is the most abundant in the UK. According to the Agriculture and Horticulture Development Board, over half of the UK's straw production comes from wheat, making it readily available and cost-effective.

Do you know which straw is in your fibre feed?

Traditionally, chaffs were made from oat straw, but rising costs have led some manufacturers to switch to cheaper wheat or barley straw. Not all products specify the straw type, often listing only "cereal straw." Checking the label is the best way to know what you are feeding.



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How can you provide bulk while reducing calories?

Low-calorie forages such as oat straw can replace higher-energy forages like hay or grass to provide bulk without excess calories. Oat straw must be balanced with added protein, vitamins, and minerals, ideally by feeding a high-quality balancer alongside an oat straw chaff.



Good quality clean straw should make up the majority of a donkey's diet.

How much oat straw can I feed?

Horses should receive at least 1.5%, and ideally around 2% of their bodyweight as forage to provide adequate bulk. It's important to note that different forages fed at the same weight provide different calorie levels, as shown in the table below.

Does feeding straw cause colic?

An overview of the causes of colic indicates that there is a decreased risk of colic in horses fed varied diet with a high proportion of forage, but no risk was associated with the feeding of straw.

A similar study with donkeys, which are traditionally fed more straw compared to horses also showed no increased risk associated with the feeding of straw, but did with poor dental health. Interestingly, a more recent study has highlighted that horses fed haylage are at greater risk of colic compared to horses fed other forages.

Forage (7.5kg dry matter)	Fresh weight (kg)	Calories/day MJ/DE
Straw (oat or barley)	8.9	37.5
Winter pasture -17hrs grazing	30	47
Late cut meadow hay	8.9	52.5
High fibre haylage	12.5	75
Good quality meadow hay	8.9	75
Summer grazing 8hrs plenty grass	38	76
Spring grazing- average grass/all night	50	90

Different forages fed at the same weight provide different calorie levels.

Can straw be fed to horses at risk of gastric ulcers?

Generally the most successful approach to dietary management of EGUS, is to ensure that we minimise acidification of the stomach by meal management so it mimics the natural digestive physiology and function of the equine stomach. Saliva is the main buffering agent in the stomach and is only produced when your horse chews, with 1ml of saliva produced per chew. Oat straw chaff helps all of the above; however some people think that not all fibre provides the same protection.

A study in Denmark showed that eating straw was associated with a slightly increased risk of EGUS *but* these horses didn't have access to any other fibre, only their straw bed, which is rather misleading. It is very likely that horses with only access to a straw bed would have lower fibre intake compared to horses with other sources of forage.

It is true that a lack of fibre has been associated with EGUS and therefore the overall lack of forage is likely to have predisposed these horses to EGUS (it is a good thing they were not on shavings, or the problem could have been a lot worse). They thought that straw doesn't buffer the stomach acid because straw is low in calcium and protein, but whilst straw is lower in protein, it has a similar calcium content to some timothy hays (straw 0.1-0.3%; timothy hay 0.3-0.5%).

Product	Chews per kg of feed
Forage such as hay	4500
Concentrate feed	1200
Short chop forage such as chaff	5200

1 kg of fibre produces up to 4 times more saliva and therefore buffering compared to the same weight of compound feed.

A table showing a comparison in chews per kg of different feed types.

Why is fibre so important in minimising the risk of gastric ulcers?

Firstly it is due to the saliva production. Secondly, there is evidence that a fibrous mat, which aids buffering, sits at the bottom of the upper part of the stomach. Some people consider the fibre acts as a physical barrier preventing the acid from the lower stomach splashing up into the upper stomach. Others consider that it is the minerals in the fibre that act as a buffer when they dissociate from the fibre. Do remember that some degree of stomach acid is needed to free ingested calcium from the fibre mat or food matrix before it can be absorbed in the small intestine. The free calcium in the stomach then acts as a buffer before the food moves into the small intestine.

So it is true that fibre low in calcium (e.g. straw and perhaps most hays) might not have the buffering capacity of forage that contains more calcium. A simple solution if straw is being fed as a low calorie forage for good doers, is to add a balancer, that is formulated to provide the necessary protein and vitamins and minerals including calcium, to your horse's diet.

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Dr Teresa Hollands R.Nutr., FHEA BSc (Hons), MSc (Animal Nutrition) PhD

Teresa is an internationally renowned Clinical Equine Nutritionist, with over 30 years in practice. Originally a Multi-Species Animal Nutritionist, working for a farming coop, coordinating with large dairy farms and numerous feed manufacturers who utilised the alfalfa in their rations across all herbivores. Working in the feed industry, Teresa was a member of the Agricultural Industries Confederation Legal and Scientific Advisory Committee, was a founding member of the British Equine Trade Association Feed Committee, developed the original Feed Law Code of Practice, sat on the Pet Food Manufacturers Association Veterinary and Nutrition Advisory Committee, was an external industry advisor for numerous equine college undergraduate courses, and wrote a BTEC in nutrition for retailers.

Teresa Hollands currently works at the School of Veterinary Medicine, University of Surrey where she is Senior Teaching Fellow in Veterinary Nutrition. She is also Joint Programme Director for Vet Bioscience and module lead for Animal Nutrition.

