



Cultivation of high protein soybean seeds varieties for cattle nutrition

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INTRODUCTION

Due to its high protein and fat content, soybean seeds are a valuable protein and energy rich animal feed for cattle. Measured by a microbial protein synthesized from available nitrogen and energy in the rumen. The efficiency of microbial protein synthesis in the rumen depends on the correct and appropriate selection of feed components that ensure synchronization of nitrogen rates and energy release in the rumen fermentation process. The microbial protein digestion coefficient in the rumen of raw soybean seeds reached a high value of 0.72, indicating a high nitrogen release rate. Intensive digestion of forage proteins in the rumen can cause nitrogen loss in the form of urea in urine and ammonia in gas. Estimation of diet energy values included fat content. In the rumen environment, he undergoes two main processes during the metabolism of dietary fats.

DESCRIPTION

Hydrolysis of ester bonds of free fatty acids released from lipids and bio hydrogenation of unsaturated fatty acids. Unsaturated fats make up about 88% of soybean oil. Fat increases the energy density of the diet to meet the demands of highly productive dairy cows, but when the diet contains large amounts of soybean fat, the toxic nature of unsaturated fatty acids for many rumen bacteria inhibits rumen fermentation is impaired. The fat content in the diet for adult cattle should not exceed 7% of dry matter, usually he 6% or less is sufficient. The use of soybean seeds in feed compositions is limited by

ingredients that modify digestion in the animal's gastrointestinal tract. Soybean plants contain trypsin and chymotrypsin inhibitors, lectins, antigenic proteins, estrogens, saponins, phytic acid, and non-starch polysaccharides called anti-nutritional factors, which adversely affect monogastric and immature ruminants. Affects in adult ruminants, most harmful anti-nutrients are effectively inactivated by bacteria, fungi, and protozoa living in the mature rumen, whereas saponins are not detoxified. Saponins are a diverse group of glycosides, and their content in the seed hypocotyls of soybean seeds ranges from 0.6 to 6.2%. The main effect of saponins is to eliminate protozoa from the ruminal microbial ecosystem, followed by a significant increase in rumen cellulolytic and total bacterial counts. This causes an intensive breakdown of the protein feed on the one hand, but also increases feed efficiency. Microbial protein synthesis and duodenal protein supply. A decrease in methane emissions was observed as an effect of reducing the activity and number of methanogens in response to saponins dose. In calves less than 3 months of age, soy protein appears to be immunoreactivity and evades digestion. 70% of storage is classified as β -conglycinin and glycinin proteins. Functional rumen immunoreactivity proteins are inactivated. Other factors limiting the use of soybean seeds as part of livestock feed are endogenous seed enzymes, lipase, lipoxxygenase, and urease. Lipases catalyze the hydrolysis of the ester carboxyl bonds of oil triacylglycerols, liberating fatty acids, whereas lipoxxygenases catalyze the oxidation of unsaturated bonds to form the corresponding fatty acid hydro peroxides. In the presence of urea in the feed, the urease enzyme achieves high hydrolytic activity leading to rapid

production of ammonia. The high rate of nitrogen release in the rumen, the modifying effects of fats and saponins on rumen fermentation, and the activity of endogenous seed enzymes are factors that must be considered in the proper use of soybean in cattle nutrition. Full fat raw soybean seed is used as part of the daily ration for heifers and beef cattle. Studies show that the amount of full fat raw soy in the diet of high yielding dairy cows depends on the stage of lactation. Feed rations at a level of 12% given to cows from 90 days before calving to 81 days of lactation had no effect on energy corrected milk yield and composition and improved cow immunity compared to externally fed cows had a positive effect on raw soybeans. Full fat green bean content reaches 16% of the diet ration when fed to cows on lactation days 188-201 without adversely affecting milk dry matter intake, yield and composition. The percentage of this feed in the adult cattle diet is limited by the amount of fat in the diet. Recent research suggests that feeding whole soybeans to cows protects unsaturated fatty acids from ruminal bio hydration. This protection is more effective than administering fatty acids in the form of calcium salts. The above results show that the inclusion of 12% full fat raw soybean seed in the daily diet early in lactation and 16% in late lactation did not adversely affect the production performance of dairy cows, whereas more High concentrations indicate that production was not adversely affected. Dairy cow performance impaired milk production during mid lactation.

Mechanical processing products

Mechanical treatment increases the intensity of total protein microbial degradation in the rumen environment and the rate of fat release and bio

hydration. Prepared diets have a shorter shelf life because fat during storage is exposed to fat denaturation processes due to the activity of endogenous enzymes, storage time and temperature that affect the fatty acid content and composition of raw soybeans.

Cracked full fat raw seeds: Crushed whole fat soybeans are used in cattle nutrition. When soybeans are broken into smaller particles, the smaller particles have a higher surface area and therefore break down faster than the proteins in larger particles because of their protein content. Feeding seeds ground to a particle size of 2 or 4 mm per kg of feed (dry matter) shows milk yield and milk composition were not supported by the diet.

Cold press cake: A mechanical process that is a grinder is a commonly used method in the production of oils and cakes. This method is mainly used in the animal feed industry. Mechanical oil presses are often combined with extrusion to increase productivity. The process itself is the physical pressure that soybeans undergo to extract the oil. When the temperature does not exceed 49°C, it is called cold pressing and the oil has a high nutritional value in human nutrition.

CONCLUSION

The successful implementation of locally cultivated varieties of soybean, whole plants, their raw seeds, and their processing products in feeding cattle depends on the precise and adequate selection of feed ration components, ensuring synchronization of the rate of nitrogen and energy release in the rumen fermentation processes.