

Animal Genetic Diversity Facilitates Adaptability to Environmental Changes

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Description

Hemp derived from the plant *Cannabis sativa*, has garnered attention not only for its use in human food and supplements but also for its potential application in livestock diets. However, despite its nutritional and functional potential, the inclusion of hemp in animal feed remains a subject of regulatory scrutiny and ongoing research.

The key points about the nutritional value of hemp, its safety for various species, regulatory challenges and the future outlook for hemp-based feed products in the animal agriculture industry. Given the growing demand for sustainable and alternative feed ingredients, hemp's potential to contribute to animal health, productivity and welfare warrants careful consideration.

Nutritional profile of hemp

The impressive nutritional profile of hemp, which makes it an attractive candidate for animal feed. Hemp seeds, in particular, are rich in protein, need fatty acids and fiber, all of which are important components of a balanced diet for livestock. The protein content of hemp seeds ranges from 25% to 35%, making it comparable to other high-protein feed ingredients like soy. Furthermore, hemp protein is rich in need amino acids, including arginine, which plays a role in immune function and growth.

In addition to its protein content, hemp is a good source of omega-3 and omega-6 fatty acids, which are beneficial for animal health, particularly in reducing inflammation and supporting cardiovascular function. These fatty acids are especially important for monogastric animals, such as pigs and poultry, which cannot synthesize omega-3s on their own and must obtain them from their diet.

Hemp also contains significant levels of dietary fiber, which can improve digestive health in livestock. Ruminants, such as cattle and sheep, benefit from fiber-rich diets, as fiber supports healthy fermentation in the rumen. For monogastric animals, moderate fiber intake can promote gut health and help in digestion. The fiber in hemp may also help regulate nutrient absorption, improving feed efficiency in livestock.

Another notable aspect of hemp's nutritional profile is its content of vitamins and minerals. Hemp seeds are rich in vitamin E, a potent antioxidant that supports immune function and protects against oxidative stress. They also contain need

minerals like phosphorus, magnesium and potassium, which contribute to overall animal health and growth.

Cannabinoids in hemp

One of the most significant safety concerns surrounding hemp-based animal feed products is the presence of cannabinoids, particularly Tetra-Hydro-Cannabinol (THC) and Canna-Bi-Diol (CBD). THC is the psychoactive compound in cannabis that produces a "high" in humans, while CBD is non-psychoactive and has been studied for its potential therapeutic effects. The article highlights that while industrial hemp contains only trace amounts of THC (typically <0.3%), concerns remain about the potential accumulation of cannabinoids in animal tissues and their impact on both animal health and food safety.

THC exposure in livestock could potentially lead to behavioural changes, altered motor function, or other physiological effects. Although hemp contains very low levels of THC, there is still a lack of comprehensive studies on its effects when fed to livestock over long periods. For animals that are part of the food chain, such as dairy cows, pigs and chickens, there is also concern about the possible transfer of cannabinoids into animal products like milk, meat and eggs, which could pose risks to human consumers.

The use of hemp in animal feed is subject to stringent regulations, particularly in countries like the United States, where the Food and Drug Administration (FDA) has yet to approve hemp or hemp-derived ingredients for use in livestock diets. The article discusses the intricate regulatory landscape surrounding hemp-based animal feed products, highlighting that, despite the legalization of industrial hemp cultivation in many regions, regulatory authorities remain cautious about approving its use in feed due to the lack of comprehensive safety data. In many regions, regulatory authorities are hesitant to approve its use in feed without robust safety data.

One of the main challenges in the regulatory process is the lack of standardized guidelines for the testing and certification of hemp-based feed products. In many cases, producers of hemp-derived ingredients must provide extensive safety data, including information on cannabinoid content, potential contaminants (such as heavy metals and pesticides) and the effects of long-term consumption by animals. The article emphasizes that regulatory bodies are particularly concerned about the potential health risks to humans who consume animal products from livestock fed hemp.

In some regions, hemp-based animal feed products are allowed on a limited basis, typically under specific conditions, such as restrictions on cannabinoid content or limitations on the types of animals that can be fed hemp. For instance, hemp might be permitted for non-food-producing animals, such as horses, but not for animals that are part of the human food supply. This regulatory uncertainty has created challenges for feed manufacturers and livestock producers who are interested in analysing hemp as a feed ingredient but are unsure about its legal status.