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Reform and practice of ideological and political teaching in the course of processing and storage of forage crops

Hongmei SHANG[1], Yu TIAN[1], Bo XU[1], Haizhu ZHOU[2], Nanyi ZHANG[1,*]

1. College of Forestry and Grassland of Jilin Agriculture University, Changchun 130118, China
2. College of Animal Science and Technology, Jilin Agricultural University, Changchun 130118, China
*Corresponding author.
E-mail address: shangmei2000@163.com

Abstract: The 6th document of the Ministry of Education in 2019 pointed out that ideological and political education should run through the whole process of talent training, insisting that the effect of "cultivating people by virtue" should be regarded as the fundamental standard to test all the work of colleges and universities. Forage processing and storage is based on the basic theory of maintaining and improving the nutritional value of forage feed and reducing the nutritional loss in the process of processing and storage. It focuses on the science of processing technology of forage. It is a professional course of grassland science major in higher agricultural schools. The teaching content involves botany, seed science, soil science, culture science, animal nutrition, ecology and other aspects, which contains rich ideological and political elements. With the purpose of "cultivating people by virtue", the paper explored the ideological and political elements, and integrated them with professional knowledge organically. Through the analysis of typical teaching cases, the reform and practice of ideological and political teaching of "Forage Processing and Storage" are promoted, and the correct values and scientific outlook are set up by the students in a subtle way.

Key words: "Forage Processing and Storage"; ideological and political course; teaching reform

1 Introduction

In the National Conference on Ideological and Political Work in Higher Education held in 2016, it was emphasized: "We must adhere to making moral education and cultivating talent the central focus, integrate ideological and political work throughout the entire process of education and teaching, achieve full-process and all-round talent cultivation, and strive to create a new situation in the development of higher education in China" [1]. In April 2021, in a congratulatory message on the 100th anniversary of Xiamen University's founding, national leaders mentioned, "we hope that Xiamen University will comprehensively implement the country's education policies, effectively fulfill the fundamental task of moral education and contribute to nurturing talent for the nation" [2]. This illustrates that ideological and political work will play an increasingly important role in the education of universities. Ideological and political education is not only the responsibility of ideological and political teachers but also a shared mission for all educational professionals, including subject teachers. Specifically, "curriculum ideological and political education" mainly refers to the integration of various

teaching elements with ideological and political theory courses. It involves fully exploring the moral education components inherent in professional knowledge, infusing ethics throughout the entire teaching process, and nurturing students into talents needed by the nation [3].

Forage crops, including grass and feed crops, can be collectively referred to as "forage". Processing and storage of forage crops are specialized courses in agricultural colleges and are fundamental theories aimed at preserving and enhancing the nutritional value of forage crops while reducing nutrient losses during processing and storage. These courses focus on the scientific study of forage crop processing technology. Processing and storage of forage crops directly serve the animal husbandry industry and are indispensable in livestock production [4]. This field constitutes a comprehensive discipline that involves theoretical and technical aspects of botany, seed science, soil science, cultivation science, animal nutrition, ecology, and more, encompassing rich ideological and political elements [5]. This article integrates ideological and political education with specialized knowledge in the processing and storage of forage crops, exploring ideological elements from multiple angles. Subject teachers convey the importance of the discipline and its alignment with industry demands, enabling students to personally experience the significance of their chosen profession and coursework. This approach continuously enhances students' professional identity and the sense of mission in their course of study. Simultaneously, by deeply exploring ideological and political education elements inherent in national needs, subject development, and the characteristics of the profession, such as "patriotism, ecological civilization, and sustainable development", we comprehensively elevate the level of ideological and political education in curriculum design, aiming to achieve the educational goal of moral character cultivation.

2 Exploration of ideological and political education elements in the curriculum with typical cases

2.1 Introduction of grass and livestock industry, telling master stories, cultivating students' professional dedication

In 2015, the term "grass and livestock industry" appeared in China's Central Document No. 1, which emphasized the importance of accelerating the development of the grass and livestock industry, supporting the cultivation of forage crops like silage maize and alfalfa, and promoting the coordinated development of grain crops, cash crops, and forage crops through combined planting models [6]. This underscores the crucial role of processing forage crops in the development of animal husbandry. Academician Ren Jizhou is a scientist who has been engaged in grassland research and grass industry education for nearly 70 years. Academician Ren Jizhou pointed out that "grass and livestock industry" is a compound word that combines "grass" and "livestock" industries. He once used a phrase from the *Book of Rites* to describe himself as a "man of grass," signifying two aspects: first, he humbly positioned himself as an ordinary grassland worker, and second, he saw developing the grass industry as his responsibility from the perspective of national nutrition. Therefore, in the teaching process of introducing "grass and livestock industry," students are introduced to a large number of dedicated grassland science and technology workers who have dedicated their lives to rigorous scientific research and have made unremitting efforts to promote the development of the grass industry. It actively encourages students to aspire to the excellent teachers in the school and take Academician Ren Jizhou as a role model, inspiring them to set ambitious goals and become morally and intellectually well-rounded professionals in the field of grassland science, thereby enhancing the "warmth" of ideological and political education in the curriculum and cultivating students' professional dedication.

2.2 Introduction of the concept "lucid waters and lush mountains are invaluable assets", cultivating students' sense of responsibility

By explaining that "forage production contributes to improving the ecological environment", the concept of "lucid waters and lush mountains are invaluable assets" is introduced to cultivate students' sense of responsibility. "Lucid waters

and lush mountains are invaluable assets" is a well-known scientific principle. In March 2015, during a meeting of the Central Political Bureau of the Communist Party of China, the phrase was officially included in a central document titled *Opinions of the Central Committee of the Communist Party of China and the State Council on Accelerating the Construction of Ecological Civilization*. During the 19th National Congress of the Communist Party of China held in October 2017, this concept was further established as a philosophy that must be "established and practiced" [7]. A healthy ecological environment is a necessary prerequisite and material foundation for human survival and development. Vegetation cover can reduce soil erosion caused by wind and water, and it plays a crucial role in shaping a favorable ecological environment. For instance, after three years of planting, the roots of alfalfa can penetrate 2 meters into the soil, and crop rotation with fast-growing forages like winter barley can improve soil permeability, aiding efficient water utilization. Planting perennial forages in areas with severe soil erosion can both provide high-quality forage for herbivores and help maintain soil stability. Through these explanations, students are encouraged to realize the importance and necessity of fully utilizing land resources for forage production, emphasizing the preciousness of land resources.

2.3 Recognizing the importance of efficient land resource utilization in forage production by incorporating characteristics

Land is an irreplaceable resource, and most food and forage crops originate from soil cultivation. Currently, China's population is steadily increasing, leading to a growing demand for food. However, arable land in China has been decreasing year by year, and the country increasingly relies on imported food, posing a significant challenge to food security. Food security is a critical component of national security and is the cornerstone of economic development, social harmony, and political stability in China [8]. How to produce more food and forage efficiently using limited land is an important issue. Artificially cultivated forage crops primarily focus on nutrient yield and are not strictly limited by factors like growing seasons, light intensity, or daylight hours, allowing for the cultivation of suitable forage crops. Through methods such as understory grass planting and filling idle land, land resources can be fully utilized. For instance, planting shade-tolerant forages like white clover and duckweed in orchards and early-growing forages like winter barley in fallow fields during winter can maximize land resource utilization while meeting part of the demand for high-quality forage production. Therefore, while discussing the "efficient utilization of water, heat, and land resources in forage production," students are made fully aware of the preciousness of land resources and the necessity and importance of utilizing land resources for forage production.

2.4 Enhancing students' legal awareness through negative examples

Seeds are unique productive materials with life and are vital for achieving high-yield and high-quality forage crops. They are the key factor determining forage crop yield and quality, and their contribution to forage crop production is significant. In the context of emphasizing the requirements for forage crop seeds, cases of "inaccurate seeds or low germination rates potentially causing significant economic losses to consumers if not detected in a timely manner" are introduced. The importance of seed authenticity and germination rates in the circulation of forage crop seeds is emphasized. Students are educated about their social responsibility as high-quality forage producers and, more importantly, about the importance of professional ethics and adherence to laws and regulations when engaged in relevant work. When discussing the importance of providing high-quality forages for milk production, the 2008 "melamine" incident in China's dairy industry is introduced. The fundamental cause of the "melamine" incident was the lack of forage support in the "straw + grain" feeding model [9]. Adequate supply of high-quality, high-protein forages is crucial for producing quality milk and can contribute to food safety. Through these cases, students come to understand the social responsibility and have a sense

of accomplishment associated with being producers of high-quality forages, emphasizing the importance of professional ethics and compliance with laws and regulations in their future careers.

2.5 Cultivating students' craftsmanship spirit by addressing the current situation of forage crop production in China

China has a long history of forage crop production, with an expanding cultivated area and increasingly diverse types of grasslands. However, the majority of forage products in China are primary products like bales, pellets, blocks, and powders, with relatively low quality, small production scale, and limited international competitiveness. In contrast, countries like the United States, the United Kingdom, and Australia place great importance on deep processing of forage products, extracting bioactive substances such as dietary fiber, protein, and chlorophyll from forage crops for use in the food, feed, and pharmaceutical industries, achieving significant economic benefits. To address the issues facing forage crop production in China, there is a need to conduct basic research, develop various forage products, create independently patented forage product processing equipment, improve product quality and processing efficiency, and enhance the international competitiveness of Chinese forage products. These solutions require dedication and hard work from forage crop practitioners, year after year. Therefore, by addressing the current situation and demands of forage crop production in China, students are made aware of the need to enhance their dedication, lean towards excellence, focus on their work, and embrace innovation --in essence, to possess a spirit of craftsmanship [10].

2.6 Enhancing students' scientific literacy through participation in teacher research projects

Scientific literacy is a crucial component of civic literacy and represents the most representative manifestation of the comprehensive qualities of citizens in modern civilized society. The state of scientific literacy among college students directly affects China's scientific and technological innovation and modernization [11]. Developing forage crop production, including processing forage crops, is necessary for the development of modern, intensive, and efficient animal husbandry, grassland animal husbandry, reforestation, and ecological construction. The process of improving China's forage crop production involves various scientific issues that need to be explored. Encouraging students to participate in teacher-related research projects, actively engage in activities such as the "National Undergraduate Innovation Program", the "Challenge Cup" National College Students' Extracurricular Academic and Technological Works Competition, and entrepreneurship competitions, helps nurture their research and innovation thinking and their problem-solving abilities, ultimately enhancing their scientific literacy.

3 Enhancing the ideological and political qualities of course instructors to promote curriculum ideological and political construction

Instructors with a strong ideological and political foundation are essential for the implementation of ideological and political education within the curriculum. Ideological and political courses are disciplines that facilitate holistic personal development, possessing qualities of inspiration, guidance, and influence. They serve as important means to stimulate students' thinking and enhance their moral character. Ideological and political education plays an irreplaceable role in fostering students' psychological well-being, improving their humanistic literacy, and strengthening their social ethics and legal awareness. Only when course instructors possess excellent ideological and political qualities can they effectively integrate ideological and political elements into their teaching, ensuring that these elements nurture students' hearts and minds [12]. As the saying goes, "excellence in learning, excellence in teaching". By continuously enriching their knowledge base, engaging in ongoing learning, and critical thinking, instructors can enhance their ideological and political competence, thus fulfilling their educational mission. To achieve this, course instructors can utilize platforms such as "e-Branch" and "Study Strong Nation" to strengthen their learning and continually elevate their ideological and political proficiency. Groups of instructors can establish curriculum ideological and political study groups, continuously explore

and refine curriculum ideological and political elements, discuss the identified ideological and political elements, and collaboratively revise the teaching syllabus to incorporate these elements. Throughout the teaching process, instructors can assess the implementation effectiveness of curriculum ideological and political elements through offline interactions with students and online interactions via platforms like "Learning Gateway". Continuous refinement and improvement of the teaching syllabus can be carried out, fostering a diverse range of teaching methods that guide students towards the threshold of success and cultivate more social talents.

4 Initial achievements in curriculum reform

In the past two years, the team of course instructors has continuously unearthed ideological and political elements in the curriculum of forage crop processing and storage and gradually introduced them into the classroom. Through offline discussions and questionnaire surveys, it has been observed that the sense of responsibility among students majoring in forage science has strengthened. Their learning objectives have become clearer, and their interest in learning has intensified. Students' scientific literacy has improved, with a 70% participation rate in activities such as the "National Undergraduate Innovation Program", the "Challenge Cup" National College Students' Extracurricular Academic and Technological Works Competition, and entrepreneurship competitions. Students' practical skills have also been enhanced. The key to implementing ideological and political education in the curriculum lies in the selection of materials and the incorporation of these elements, providing valuable insights for the future development of ideological and political education.

5 Conclusion

The fundamental goal of curriculum ideological and political education is to cultivate moral character and educate individuals. In classroom teaching, "cultivating moral character and educating individuals" should be the main theme, incorporating ideological and moral education, cultural knowledge education, and social practice education at all levels. Curriculum ideological and political construction leverages classroom teaching as its primary channel. Course instructors must cleverly integrate ideological and political elements with the characteristics of the curriculum, achieving a natural integration rather than a forced or rigid introduction. While imparting professional knowledge, instructors should help students perceive ideological and political elements subtly, aiming for a silent but impactful influence. Forage crop processing and storage is a comprehensive discipline that encompasses rich ideological and political elements. Therefore, course instructors should continuously enhance their ideological and political competence, explore relevant ideological and political elements, make typical ideological and political cases more rational and scientific, and skillfully integrate them into classroom teaching. This approach helps achieve the educational goal of cultivating moral character and educating individuals. Starting from the perspective of cultivating high-quality talents for the new era, we have explored various aspects, including the construction of integrated teaching teams, in-depth exploration of curriculum ideological and political content, innovative teaching methods, and expansion of practical sessions within the curriculum. We aim to infuse ideological and political education into all aspects of teaching, nurturing high-quality talents with both virtue and talent.

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Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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