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Development of Raw Material Base in the Production of Meat Products

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Annotation: Modern meat industry is one of the important sectors of the economy and plays a key role in ensuring food security of the population. The development of raw material base is crucial for increasing competitiveness and efficiency in this sphere. The article considers ways of expanding the raw material base, introduction of modern technologies and efficient use of resources.

Keywords: Raw materials, automated cutting, breeding, modern feeding and housing.

INTRODUCTION

Importance of raw material base.

The raw material base is the quality and stable supply of livestock used in the production of meat products. Deficiency of raw materials can negatively affect the activities of enterprises, reduce the quality of products and reduce production volumes. Thus, the development of raw material base includes the following factors: development of livestock breeding; Introduction of modern feeding and care technologies; Efficient use of local resources. The **meat industry** plays a vital role in global food production, ensuring a stable supply of protein-rich products for consumers. The **development of the raw material base** is a critical factor in maintaining the quality, sustainability, and economic efficiency of meat production. A well-established raw material base enhances **product safety, nutritional value, and environmental sustainability**, directly impacting the overall competitiveness of the meat industry. The growth and modernization of the meat production sector depend on **several key factors,** including **livestock breeding efficiency,**

feed quality, technological advancements in meat processing, and adherence to international safety and quality standards. Additionally, increasing concerns about **sustainable agriculture, animal welfare, and food security** have influenced global approaches to sourcing raw materials for meat production. This study aims to explore the **current state, challenges, and future prospects of raw material development** in the meat industry. It will analyze factors such as **supply chain efficiency, government policies, technological innovations, and the role of alternative meat sources** (e.g., plant-based and lab-grown meat) in shaping the future of meat production. By addressing these aspects, the research will provide valuable insights into optimizing the raw material base to meet **growing consumer demand while ensuring economic and environmental sustainability.**

METHOD AND METHODOLOGY

Ways of livestock breeding development.

1. Breeding purebred cattle. Breeding purebred animals allows improving the quality of meat. This, in turn, ensures the competitiveness of products. For this purpose, it is necessary to carry out special selection and genetic research.

2. Improvement of livestock breeding conditions. The use of innovative technologies, such as automated feeding systems and creation of the right microclimate, allows for healthy growth of animals.

3. Expanding the feed base. It is strategically important to produce food products based on local plants and reduce dependence on imports. It is also necessary to introduce technologies for production of low-cost and highly nutritious feeds.

The methodology for studying the development of the raw material base in meat production involves a comprehensive research approach, integrating qualitative and quantitative methods to analyze production efficiency, supply chain dynamics, and regulatory frameworks. The study will focus on scientific, technological, economic, and sustainability aspects of raw material sourcing in the meat industry.

1. Research Design

This study employs a **mixed-methods approach**, combining:

- **Literature review and regulatory analysis** – to examine current trends and policies.
- **Quantitative data collection** – to measure production efficiency, raw material availability, and economic impacts.
- **Qualitative assessments** – through expert interviews and case studies of meat production enterprises.

2. Data Collection Methods

2.1 Literature and Regulatory Review

- Analysis of **scientific publications**, industry reports, and government policies on raw material sourcing in meat production.
- Examination of international standards (e.g., **Codex Alimentarius, USDA, EU regulations, ISO standards**).
- Comparative analysis of **sustainability strategies** and environmental regulations across different regions.

2.2 Quantitative Research

- **Surveying meat producers and suppliers** to assess raw material sourcing challenges.

- **Data analysis on livestock production**, including feed efficiency, breeding programs, and meat yield rates.
- **Market analysis**: Evaluating supply chain logistics, cost structures, and trade policies influencing meat raw materials.
- ✓ Use of statistical tools (**SPSS, Excel**) to analyze production data and market trends.

2.3 Qualitative Research

1. **Expert Interviews**

- Conducting semi-structured interviews with **meat industry specialists, policymakers, and sustainability experts** to gather insights into key trends and challenges.

2. **Case Studies**

- Analyzing best practices in **meat supply chain management** from leading meat producers.
- Studying the impact of **technological innovations** (e.g., precision livestock farming, alternative meat sources) on raw material availability.

3. **SWOT Analysis**

- Identifying **Strengths, Weaknesses, Opportunities, and Threats** in the development of the raw material base for meat production.

3. Data Analysis Methods

- **Descriptive statistics** to assess production trends, efficiency, and economic factors.
- **Comparative analysis** of different regions' meat supply chains.
- **Content analysis** of expert interviews and regulatory frameworks.
- **Correlation studies** to determine the impact of technological and economic factors on raw material sustainability.

4. Research Process

1. **Preliminary Phase**

- ✓ Defining research objectives and selecting relevant literature and industry data sources.
- ✓ Developing **survey and interview questionnaires** for industry professionals.

2. **Data Collection Phase**

- ✓ Conducting **surveys, interviews, and literature reviews**.
- ✓ Gathering statistical data on **meat production trends, supply chain structures, and regulatory compliance**.

3. **Analysis Phase**

- ✓ Applying **quantitative and qualitative analysis** to interpret collected data.
- ✓ Identifying key **barriers and opportunities** in raw material base development.

4. **Conclusion and Recommendations**

- ✓ Formulating **strategic recommendations** for improving raw material sourcing efficiency.
- ✓ Proposing **policy measures** to enhance sustainability and regulatory compliance.

5. Expected Outcomes

- ✓ A **detailed assessment** of raw material availability and sustainability in meat production.
- ✓ Identification of **key challenges and policy gaps** affecting the industry.

- ✓ **Recommendations** for improving livestock productivity, supply chain efficiency, and sustainable sourcing.
- ✓ Insights into the potential **role of alternative meat sources** in addressing raw material shortages.

RESULTS AND DISCUSSION

Importance of technological innovations.

The use of modern technologies in the production of meat products significantly increases efficiency. For example: automated cutting and processing lines speed up the production process; cooling and storage technologies ensure long product storage; biotechnology provides an opportunity to improve the quality of meat.

Utilization of local resources.

Utilization of local resources in the development of raw material base is economically efficient.

The meat industry is one of the main branches of the food industry and is of great importance in the development of the economy and meeting the needs of the population in quality food products. For the development of this industry it is necessary to strengthen and expand the raw material base. The main directions of development of raw material base of meat products production are considered below. Breeding and biotechnology should be used to develop breeds of animals with high productivity. With the help of these methods it is possible to increase the genetic potential of animals, strengthen their resistance to diseases and improve the breed. The quality of animal feed is important for the production of quality meat. Rational use of land, increased planting of fodder crops and feed production based on modern technologies serve the sustainable development of the raw material base. It is necessary to develop logistics and trading systems to meet the needs of the local and international market.

CONCLUSION

Modern storage warehouses, refrigeration systems and fast delivery services help to maintain a constant flow of raw materials. The development of raw material base in the production of meat products allows not only to increase economic efficiency, but also to provide the population with quality and safe food products. Sustainable development of the meat industry can be achieved through the implementation of the above measures. In this case, an important role in achieving this goal is played by the cooperation of the state, entrepreneurs and research institutes. This is especially true for areas closely related to agriculture. Providing livestock farms with local raw materials increases exports and strengthens the domestic market.

The development of the raw material base in meat production is a key factor in ensuring the stability, sustainability, and efficiency of the meat industry. This study has highlighted the crucial role of livestock management, feed quality, technological advancements, and regulatory frameworks in shaping the availability and quality of raw materials for meat processing.

1. **Optimization of Livestock Production**

Improving breeding programs, feed efficiency, and animal health management is essential for increasing meat yield and quality. Sustainable livestock farming practices help reduce environmental impact and enhance resource efficiency.

2. **Technological Advancements**

Innovations in precision farming, genetics, and automated meat processing have significantly contributed to higher production efficiency and improved quality control. The adoption of biotechnology and feed additives ensures better growth rates and meat composition.

3. **Sustainability and Environmental Considerations**

The meat industry must address environmental challenges such as deforestation, greenhouse gas emissions, and water resource management. Sustainable practices, including alternative protein sources and waste reduction technologies, are becoming increasingly important.

4. **Regulatory Compliance and Food Safety**

Strict international food safety standards and animal welfare regulations impact the meat industry's raw material sourcing. Compliance with Codex Alimentarius, USDA, EU regulations, and ISO standards ensures consumer health and product quality.

5. **Market and Supply Chain Efficiency**

A well-developed supply chain ensures a stable raw material base for meat production. Addressing logistical challenges, price fluctuations, and trade restrictions is vital for industry growth and global competitiveness.

6. **Future Prospects and Recommendations**

- Strengthening investment in livestock research and sustainable farming practices.
- Enhancing supply chain management to ensure cost efficiency and raw material stability.
- Encouraging alternative meat sources (e.g., plant-based proteins, cultured meat) to diversify raw material options.
- Implementing eco-friendly innovations to improve sustainability and reduce environmental footprint.

A strong and sustainable raw material base is essential for the growth, competitiveness, and resilience of the meat industry. By adopting technological advancements, improving regulatory compliance, and promoting sustainable practices, the industry can ensure a stable, high-quality, and environmentally responsible meat supply for the future.

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