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MODERN DIRECTIONS OF EDUCATIONAL WORK WITH CONSUMERS ON THE PART OF PORK PRODUCERS BASED ON THE 'TRANSPARENT PIG FARM' CONCEPT

I. Yu. Svinarev

Over the past 10–15 years, there has been a significant change in people's access to information. The need for food manufacturers to understand consumers and their motivation in choosing a product has increased. This research aims to analyze the relevance and applicability of the transparent production concept in the conditions of the Russian Federation and identify the most significant problems for educational work. The research tasks are as follows: (1) comparing preferences of consumers buying meat in Russia and the USA; (2) studying the differences in the perception of visual information and attitudes towards industrial production depending on the level of competence; (3) analyzing key aspects of pork production that are of the greatest interest to consumers; and (4) analyzing existing tools for communicating with consumers. The following research methods were used to solve the tasks set: (1) theoretical (analysis, synthesis, generalization, and comparison of information on the research problem); (2) empirical (questioning, conversation, and content analysis); and (3) statistical (graphical and tabular interpretations of research data). The paper compares new data on the differences in preferences of consumers buying meat. Within the transparent production concept, the nine most relevant areas for educational work aimed at increasing mutual understanding between consumers and producers of meat products are identified. The analysis has shown that depending on the experience and knowledge of the biological characteristics of pigs, there is a fundamental difference in the assessment of animal welfare in specific production conditions. The following areas are identified as the most relevant for educational work: (1) environmental protection measures; (2) measures to reduce odors; (3) outdoor and indoor production; (4) fixed or free housing of gestating sows; (5) castration, cutting tails, and grinding fangs; (6) practice of using antibiotics; (7) practice of using growth stimulants; (8) nature of rapid growth and reaching slaughter condition; and (9) animal welfare. As the main tools for information communication with consumers, it is proposed to more actively using

social networks, company websites on the Internet, television and radio, press publications, and agritourism, as well as agroclasses and agrohours at schools.

Keywords: *pig farming issues; production technology; pork properties; consumer preferences; pig welfare; agritourism*

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СОВРЕМЕННЫЕ НАПРАВЛЕНИЯ ПРОСВЕТИТЕЛЬСКОЙ РАБОТЫ С ПОТРЕБИТЕЛЯМИ СО СТОРОНЫ ПРОИЗВОДИТЕЛЕЙ СВИНИНЫ НА ОСНОВЕ КОНЦЕПЦИИ “ПРОЗРАЧНАЯ СВИНОФЕРМА”

И.Ю. Свиначев

За последние 10–15 лет произошло значительное изменение в доступе людей к информации. Возросла потребность производителей продуктов питания в понимании потребителей и их мотивации при выборе продукта. Цель исследования – анализ актуальности и применимости концепции «прозрачного производства» в условиях Российской Федерации, выявление наиболее значимых проблем для просветительской работы. Задачи исследования: сравнение потребительских предпочтений при покупке мяса в России и США, изучение разницы в восприятии визуальной информации и отношении к промышленному производству в зависимости от уровня компетенции, анализ ключевых аспектов производства свинины вызывающих наибольший интерес потребителей, анализ существующих инструментов для общения с потребителем. Для решения поставленных задач использовались следующие методы исследования: теоретические: анализ, синтез, обобщение, сравнение информации по проблеме исследования; эмпирические: анкетирование, беседа, контент-анализ; статистические: графические и табличные интерпретации данных исследования. В работе приводится сравнение новых данных о разнице в потребительских предпочтениях при покупке мяса, в рамках концепции «прозрачного производства» определены 9 наиболее актуальных направлений, проведения просветительской работы, направленной на повышение взаимопонимания между потребителями и производителями мясной продукции.

Проведённый анализ показал, что в зависимости от опыта и знания биологических особенностей свиней наблюдается кардинальная разница в оценке благополучия животных в конкретных производственных условиях. Наиболее актуальными направлениями, проведения просветительской работы определены: природоохранные меры, меры по сокращению запахов, производство на открытом воздухе и в помещении, фиксированное либо свободное содержание супоросных свиноматок, кастрация, обрезание хвостов, стачивание клыков, практика использования антибиотиков, практика использования «стимуляторов роста», природа «быстрого» роста и достижения убойной кондиции, благополучие животных. В качестве основных инструментов для информационного общения с потребителем предлагается более активно использовать социальные сети, сайты компании в сети интернет, телевидение и радио, публикации в прессе, агротуризм, агроклассы и агрочасы в школах.

Ключевые слова: *проблемы свиноводства; технология производства; свойства свинины; потребительские предпочтения; благополучие свиней; агротуризм*

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Introduction

Over the past 10–15 years, there has been a significant change in people’s access to information. However, it is evident that the availability of information does not always contribute to an increase in the level and quality of knowledge, which can lead to incorrect or distorted ideas. The use of the Internet, smartphones, and social networks has revolutionized the processes and sources of gaining knowledge and forming an opinion.

The flow of information about various products has become much more intense, which has led to a significant impact on consumer behavior. In turn, there has been an increased need for food manufacturers to understand consumers and their motivations when it comes to product selection. Given improved access to information, many factors can influence consumers’ decisions on what to buy. People want to know what they eat and when it comes to pig products, many people are also interested in the quality of life of animals.

The increased consumer interest in understanding food sources is a relatively new phenomenon, roughly in tandem with the communications technology

revolution. Both increased interest in food and increased access to information have made communication with consumers an increasingly recognized priority in the food and agriculture industries today [12].

Consciously or subconsciously, consumers make compromises on attributes when deciding what to buy. In *Understanding Consumer Pork Attribute Preferences* published in 2016 [9, 11], researchers have surveyed 1,004 US consumers representative of age, gender, income, and region. The analysis has aimed to find out which properties of pork affect consumers in their purchasing decisions.

Seven different attributes of pork were studied, and in order of preference, they were as follows: (1) pork and food safety, (2) taste, (3) animal welfare, (4) price, (5) environmental impact, (6) locally raised or farmed pigs, and (7) locally processed pork. Fig. 1 [10] shows that food safety is the most important attribute with a wide margin (41%), followed by taste (21%) and animal welfare considerations shortly thereafter (15%). Food safety and palatability traits are not surprising, but animal welfare comes in third with a solid margin (10%) [9, 10].

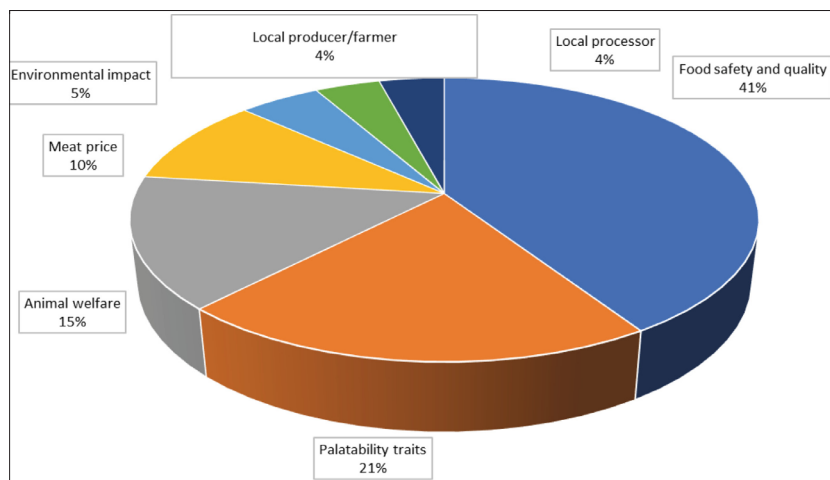


Fig. 1. Pork properties influencing consumers in their purchasing decisions, USA, 2017

There are also studies that analyze consumer concerns about the use of antimicrobials and antibiotics in pork farming [6, 8, 17].

In this light, animal welfare from consumers' point of view is an element that needs to be better understood. Some consumers view the production system in which the animal is raised and processed as an important attribute. The

same research has found that men are less affected by animal welfare issues than women. Those who bought pork in the past 12 months also have placed less importance on animal welfare.

People who owned a cat or dog placed more importance on animal welfare attributes. In addition, those who indicated that they had a source of animal welfare information placed more weight on animal welfare in their purchasing decisions. These findings related to pet ownership and access to animal welfare information support previous studies that have found similar relationships [15, 19].

Fig 2. shows consumer preferences in Russia, which significantly differ from those given above [4].

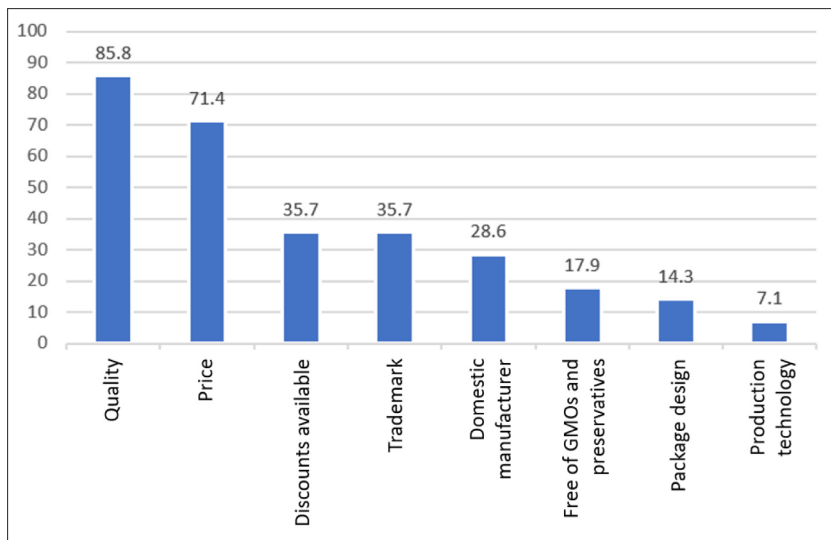


Fig. 2. Factors influencing the choice of a particular meat product in Russia, 2020, %

In a marketing study of the meat products market, A. V. Smirnova and O. N. Krasulya [4] analyze the factors influencing the choice of a particular meat product and note that for the domestic consumer, the key indicators are the quality level (85.8%) and the price factor (71.4%). The availability of discounts and promotional offers for products (35.7%) is also important, which, in turn, is partly associated with the price factor. The popularity of the brand and the fact that the product belongs to a domestic manufacturer are essential (35.7% and 28.6%, respectively). The presence of inscriptions *GMO-free* and

preservative-free were important for 17.9% of respondents. Another 14.3% pay attention to the design and information content of the packaging. The use of innovative (new) safe production technologies was appreciated by 7.1% of respondents. The presence of meat products on the counter was chosen by 7.1% of respondents.

At the same time, some studies show that as consumers become more affluent, they tend to require more animal protein sources. Since food availability is less of an issue, people can afford to shift their focus to how food is made and scrutinize the safety, quality, and ethical aspects of the products that matter to them [7, 13, 14, 16, 20].

Studying the difference in the perception of visual information and attitudes towards industrial production depending on the level of competence allows organizing two-way communication between consumers and meat producers. Consumers are wary of biotechnology applications in food and agriculture, with calls for natural or organic production across the industry [18]. This, in turn, will allow achieving a higher level of mutual understanding and ensure the sustainable development of the industry in the interests of society.

In order to organize effective work with consumers, it is important to focus on the key aspects of pork production that are of the greatest interest to consumers and analyze the existing tools used by meat producers to communicate with consumers. The relevant sections of the paper are devoted to these issues.

Materials and methods

The research aimed to analyze the relevance and applicability of the *transparent production* concept in the conditions of the Russian Federation and identify the most significant problems for educational work aimed at improving mutual understanding between meat producers and consumers of meat products.

The research tasks are as follows:

- Comparing preferences of consumers buying meat in Russia and the USA;
- Studying the difference in the perception of visual information and attitudes towards industrial production depending on the level of competence;
- Analyzing key aspects of pork production that are of the greatest interest to consumers;
- Analyzing existing tools for communicating with consumers.

The following research methods were used to solve the tasks set: (1) theoretical (analysis, synthesis, generalization, and comparison of information on the research problem); (2) empirical (questioning, conversation, and content analysis); and (3) statistical (graphical and tabular interpretations of research data).

Results

Studying the difference in the perception of visual information and attitudes towards industrial production depending on the level of competence.

Differences in the perception of visual information play a significant role in the assessment of animal welfare. In a production environment, the ability to observe and see is also very important for success. A good livestock specialist who knows and understands pigs with a high degree of certainty can quickly determine whether everything is normal, whether the animals have some kind of problem, what is causing the deviation, and what needs to be done. At the same time, a non-specialist can see the situation in a completely different light.

For a better understanding of the problem, it is necessary to consider the following two figures.



Fig. 3. A modern system for housing single sows in individual pens

An analysis of the difference in the perception of visual information by professional and non-professional persons is given in the Discussion section.

Key aspects of pork production that are of the greatest interest to consumers. environmental protection measures. Studying production processes in intensive pig farming has identified this industry as potentially contributing to the following environmental problems: (1) soil acidification, (2) eutrophication, (3) depletion of the ozone layer, (4) increased greenhouse effect, (5) drying of the soil due to the use of groundwater, (6) increased noise and unpleasant

odors, and (7) environmental pollution with heavy metals and pesticides (Information and Technical Reference Book on the Best Available Technologies (ITS NDT), 2017).



Fig. 4. Piglet sleeping on a sow in an individual farrowing pen with a metal retainer

As a rule, consumers learn about the existence of problems as a result of an inspection by the environmental department or as a result of an emergency. The task of producers is to inform about their environmental activities on an ongoing basis since in this case, the information field will not consist only of negative signals as it is today. It is also important to do this not formally but with an indication of specific activities and an assessment of their effectiveness.

A steady trend of enlargement of agricultural enterprises and an increase in livestock at individual sites leads to a reduction in production costs but simultaneously increases environmental risks. The priority environmental problem is the utilization of manure at large agricultural enterprises with a large volume of manure output [1].

Measures to reduce odors. An unpleasant smell is a first and most striking association that arises when pig enterprises are mentioned. The issue of preventing the formation of odors and reducing their spread is not simple and requires systematic work. It is wrong to dismiss this fact by referring to the bias of environmental activists.

There is a sufficient number of methods and equipment to prevent and reduce odor in the production process. Monitoring the effectiveness of odor reduction measures together with local residents can effectively solve this problem.

Outdoor and indoor production. The general perception of animal housing systems by consumers implies a positive assessment of technologies in which animals are partially or completely outdoors. Such technologies are shown against the background of spacious green fields and an abundance of sunlight where the pigs are happy and feel their best. This approach usually ignores the facts of the need to consider production in different seasons of the year (in cold or hot weather and snow or rain when ground walking turns into mud) and does not take into account the need to protect animals from parasites and diseases and various aspects of the deterioration of working conditions for livestock breeders.

At the same time, the industrial production system can also be presented in a positive light by showing groups of leveled, clean, and healthy pigs that are fed balanced diets and are in optimal conditions regardless of the weather.

Fixed or free housing of gestating sows. Fixed housing of gestating sows in individual pens is currently prohibited by law in some European countries, and plans are being actively pursued to further prohibit the fixed housing of sows in other technological periods. More than 30 American companies, including McDonald's and Burger King, have decided not to use pork obtained from enterprises that use this technology.

Formally, fixed housing of gestating sows is not prohibited in Russia, but it is not approved by the current recommendations for technological design. Nevertheless, the opinion that group housing of gestating sows has more minuses than pluses prevails among Russian specialists. This is due to the negative practice of introducing group housing systems, in which there are difficulties with feeding sows with their individual service and the inability to protect dominant individuals from aggression.

Castration, cutting tails, and grinding fangs. The current industrial technology of pig farming includes several standard procedures associated with pain. These are primarily castration, cutting of tails, grinding of fangs, installation of ear tags, and various injections.

The obligatory nature and necessity of some of these procedures are actively discussed even in the professional community, and there is no consensus at present. Therefore, it is important to explain to a non-professional consumer for what reason the manufacturer applies this or that practice, to what extent it is justified in specific production conditions, and what the consequences of refusing it are (in addition to financial ones).

Practice of using antibiotics. The problem of the emergence of antibiotic resistance is actively discussed all over the world and objectively poses a great danger. A significant part of consumers is sure that manufacturers producing

meat in industrial conditions abuse the use of antibiotics in order to preserve livestock in adverse technological conditions. Here, the openness of the manufacturer in the form of disclosure of information on the practice of using antibiotics and the provision of regular reports on the volume of drugs used will allow receiving some competitive advantages.

Practice of using growth stimulants and nature of rapid growth and reaching slaughter condition. When communicating with people unfamiliar with industrial pig farming, one can often hear statements that the rapid growth (in 5–6 months) of pigs is not normal and is obtained solely through the use of various growth stimulants and hormonal drugs. As a rule, these statements are based on rumors, information from social networks, or, at best, personal experience in raising pigs at home.

It is important to inform consumers that high growth energy is achieved due to the use of modern breeds of pigs and specialized balanced feeds. The *growth stimulants* used in production are conventional synthetic vitamins, which are also widely used to prevent vitamin deficiencies in humans.

Animal welfare. This criterion is gaining importance in Russia, and it must be taken into account, especially in the process of planning the construction of new pig production facilities and entering export markets.

With information about standard operating procedures for animal welfare, the consumer will know that animals are kept in good conditions and are not subjected to undue stressors [3].

Discussion. Comparing preferences of consumers buying meat in Russia and the USA. Analysis of the research results [4, 12] has shown significant differences in consumer preferences between the USA and Russia.

The attitude to the indicator of quality and safety of products is in the first place among consumers in both countries. A significant difference is observed in terms of assessing the importance of animal welfare. In the USA, consumers ranked this attribute in third place, while in Russia, welfare is completely absent from the list. It can be assumed that consumers can consider this problem in the *Production Technology* factor, which took the last place with a value of 7.1%. In the second place, US consumers ranked *Palatability Traits*, while in Russia, *Price* was in second place. Thus, it is likely that as the market becomes saturated and meat products in Russia become more available, an increase in consumer preferences for these attributes should be expected. The attitude towards *Local Producer* is important for consumers in both countries.

Given the methodological difference of the above studies, the revealed difference is considered only as general trends in the perception of attributes between countries.

Studying the difference in the perception of visual information and attitudes towards industrial production depending on the level of competence. In Fig. 3, the specialist sees a modern system of housing single sows in individual pens. The pens are equipped with hinged doors, and the doors have a reliable locking mechanism. The pen allows having free access to the sow for various activities (insemination, vaccination, and ultrasound). At the same time, there is no need to chase the sow or fix it additionally causing stress. If necessary, the doors of the pens can be lifted up, and the sows will be given the opportunity to be in a group pen, which is evidenced by the presence of a free zone in the lower right part of the photo.

In the front of the pen, one sees an automatic feeding system; the feed is loaded in the dispensers, that is, sows will be guaranteed to be fed and watered. Individual pens allow protecting animals from the aggression of other dominant individuals. The slatted floor keeps the pens clean.

Most sows are lying down, and the feces on the floor have a good consistency; therefore, animals are full and are doing well. The room is well lit, and the tails are cut not short, just so as not to attract too much attention of other individuals and not to provoke cannibalism.

A non-specialist can see in this photo a horrific picture of animal abuse. Pigs are kept in individual pens, in which they can only get up and lie down. They never go outside and see the sunlight. Pigs at the back of the pens may not be able to lie down because the pens are too short for them. Their tails are cut off at an early age, without anesthesia, because the animals show aggression in poor conditions and injure each other. On a wet and cold concrete floor, pigs feel bad and experience severe discomfort due to a draft from the slots in the slatted floor.

In Fig. 4, the consumer can see a *safe* picture in which the piglet sleeps happily on its mother.

However, the reality evident to the specialist is quite different. This piglet probably could not find a place under the lamp in the den, froze, and had to climb onto the sow. Frozen piglets crawl closer to the pig in search of warmth where there is a very high risk of being crushed.

It is also possible that the sow is not feeding the piglets well, and there is high competition in the nest for udder space. In any case, this figure needs attention from the livestock specialist as something is going wrong.

The given examples show how differently the same visual information is perceived depending on the experience and knowledge of the biological characteristics of pigs.

At the same time, it should be recognized that the look of a pig farmer forced to work in specific existing production conditions does not often see opportunities for positive changes especially if these changes require significant financial costs or these are changes in established technology. Therefore, a non-specialist's view can also be very useful.

Analyzing Key Aspects of Pork Production That Are of the Greatest Interest to Consumers. Analysis of the key issues that are of the greatest interest to consumers has allowed identifying nine areas in which educational work is needed (Fig. 4).

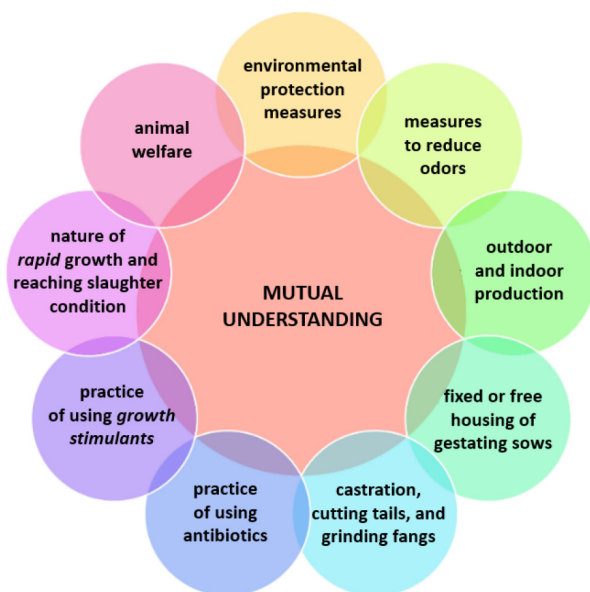


Fig. 4. Key areas for working with consumers to improve mutual understanding

The answers to most above questions are contained in the Information and Technical Reference Book on the Best Available Technologies *Intensive Breeding of Pigs*, which was approved in December 2017 [1, 2].

The introduction of the best available technologies is one of the indispensable conditions for the modern development of the state. In fact, this means the creation of a highly productive export-oriented sector, which develops taking into account affordable and environmentally sound technologies based on modern solutions [5].

Analyzing existing tools used by meat producers to communicate with consumers. For information exchange with the consumer, the following tools can be used:

- Social networks;
- Company website on the Internet;
- Television and radio;
- Press publications;
- Agritourism;
- Agroclasses and agrohours at schools.

As the research has shown, none of the listed tools is objectively used in Russia to the proper extent. Even large, well-known companies are limited on their websites and pages in social networks to advertising information, catchy headlines, and dry statements about compliance with global environmental standards, care for the environment, and compliance with biosecurity standards and ethical business principles.

Television programs and publications in the press are usually divided into two categories: (1) those concerning the opening of new production and (2) those related to the struggle of residents with the production that harmed their lives. There are very few programs in which the current production activities of enterprises are described in an accessible and methodical way.

The introduction of quarantine measures related to African swine fever has turned pig farms into impregnable, even secret facilities with activities almost not known.

At the same time, modern remote technologies allow organizing virtual online tours without significant costs and answering many questions of interest to consumers during them.

Studies on the experience of agritourism and the perception of pork production in the United States [10] indicate that people who have visited livestock facilities are more supportive of animal husbandry and agree that it is an important industry, which plays a big role. They were not opposed to the construction of new farms in their area.

Conclusion

Mutual understanding with the consumer becomes an important factor in business development now. The growth in the provision of food products allows paying attention to the technology of their production. Due to the difference in experience and knowledge, the perception of the same visual information can be diametrically different.

The need for information about the modes of production can be satisfied in various ways, and the media and social networks are the most important among them.

People who have sufficient and reliable information have a more favorable attitude towards industrial production and the plan for its further development.

At the same time, communications implemented within the transparent production concept are not a one-way road; they allow timely improving production, increasing confidence, and adequately responding to changing needs of the consumer.

The prospect of further development of the topic is to study the effectiveness of the proposed informing methods and improve them. A larger and more systematic study of preferences of consumers buying meat products in the Russian Federation is also needed.

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