

POSSIBILITIES OF IMPLEMENTING SOME NEW ALTERNATIVE INTENSIVE TECHNOLOGIES FOR INTENSIVE SWINE MEAT PRODUCTION

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Abstract: In order to cover the need for domestic swine meat and abandon the massive import of meat and swine meat products, in addition to modern super-intensive technologies, alternative meat production technologies can be used which, well managed: ensure the production of significant quantities of swine meat quality; it is done at lower costs; local fodder resources are effectively used, the meat obtained has special organoleptic qualities; the products meet the needs of the consumers of products obtained through exploitation outdoors;

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INTRODUCTION

For the newly built industrial units, modern shelters have been designed, with automatization and air conditioning systems, in which optimal comfort is ensured for the fat pigs and with rational management organization of the production processes, so as to eliminate the physical intervention of human. Along with the mechanization of the main technological processes, in parallel with the increase in investments and the reduction of human resources, it was necessary to increase the qualification and specialization degree of all those who contribute to the production. Today we can talk about a new production management, a new exploitation technology which represents a set of methods, procedures, operations or phases that take place in a logical sequence and chain of technological links - technological flow of meat production - using a varied range of mechanisms and high-end mechanical equipment [4,7,11,15].

Modern exploitation technologies implemented in industrial swine meat production farms aim to:

- efficient forecasting and planning of rhythmic meat production;
- exploiting the biological potential of commercial hybrids created through biotechnologies;
- a rational use of fodder, shelters, equipment, human resources, to achieve large individual productions, good feed conversion indices, quality meat, obtained in constant and profitable parties.

We note that intensive and super-intensive systems are distinguished by the following characteristics that ensure their durability and profitability:

1. raising and exploiting only commercial hybrids from breeds obtained from specialized lines for meat production according to consumer preferences on the meat market;
2. the use of shelters provided with machinery and interior equipment, with mechanization and automation of the main work processes;
3. ensuring optimal comfort for enhancing the genetic potential of animals.
4. specific endowments by age category and physiological state, with possibilities to ensure well-being by optimizing the microclimate, the feeding system, watering and waste disposal.
5. the food administered is balanced according to physiological and productive needs and is made based on manufacturing recipes;
6. rhythmicity and constancy in ensuring the meat market.

The technological flow is integrated throughout the meat supply chain and provides that all basic operations: insemination of sows, gestation, farrowing, weaning, transition

from one category to another, fattening, delivery to the slaughterhouse, processing, cutting and distribution, to be carried out rhythmically at intervals of 1-3-4 days, depending on the size of the farrowing compartment and the duration of the farrowing group, the size of the batch of fat pigs, the ability to obtain carcasses [8,10,13].

The activity of intensive and super-intensive industrial units for raising and exploiting swine and intensive meat production, takes place in the following technological links or sectors of activity: I – waiting, insemination and gestation; II – maternity; III – the nursery sector and youth growth; IV – fattening sector; V – meat processing and obtaining sector; VI – the sector of storage and distribution of meat and meat preparations; VII – the marketing sector. The production is integrated in a closed circuit and is organized in a continuous flow, repeating every day or every few days the set number of inseminations, parturitions, weanings, and deliveries for fattening and inflows to the slaughterhouse [1,2,9,14].

We can conclude that the basis of these industrial-type intensive and super-intensive production systems is the principle of continuous reproduction, which starts from the need to obtain piglets for fattening in correlation with their stationary period in each technological phase according to their biological value, production management and quality and cost-effectiveness of nutrition [3,5,12].

MATERIALS AND METHODS

The implementation of new alternative technologies for obtaining swine meat to cover the existing deficit on the meat market, requires the use of the most efficient economic methods of increasing production, finding effective solutions for outdoor exploitation, depending on the adaptability of swine to the new exploitation systems, the existence of food and human resources and the demands of consumers from the regional and local market for the type of production obtained. The implementation of such an alternative technology for obtaining pork meat requires economic, technical and social knowledge, because the choice of the location of the farm in a certain area must take into account the type of soil and the structure of the vegetation during a calendar year, regardless of the climatic conditions in area. For these reasons, in the exploitation of swine on pasture regardless of the physiological category and the degree of adaptability to exploitation, for the establishment of pastures, heavy soils that do not allow the infiltration of water from precipitation, which degrade quickly in winter and on which the disappearance of vegetation during the period of drought is common over large areas.

Obtaining swine meat in alternative exploitation systems requires conducting studies on the adaptability of meat breeds and hybrids to these systems and exploitation conditions, in order to be able to implement the most efficient technologies to ensure obtaining meat at low production prices. The purpose of the research carried out in small professional farms was to find solutions for the outdoor exploitation of swine of different categories, the objectives being:

- the use of the best biological material that lends itself to alternative outdoor exploitation;
- choosing the pasture according to the quality of the soil and its productive value;
- the vegetation structure during the exploitation period;
- the need for facilities, calving-growing areas, rest, watering and feeding;
- the possibilities of securing human resources;
- the ways of selling the production according to the consumption needs of the area.

RESEARCH RESULTS

In choosing the location for the implementation of the alternative industrial technology for a professional swine farm, which exploits them in the open air, the following elements will be taken into account:

- climatic conditions during the period of exploitation on the pasture
- swine category: sows, pregnant or lactating, young pigs, fattening pigs;
- soil type and runoff slope;
- the structure of the vegetation and its evolution over the period of a calendar year;
- the costs of establishing the meadow and ensuring the welfare conditions for the swine;
- the risks regarding the pollution of environmental factors;
- consumer demands from the market for this type of production;
- the possibilities of distribution of goods production.

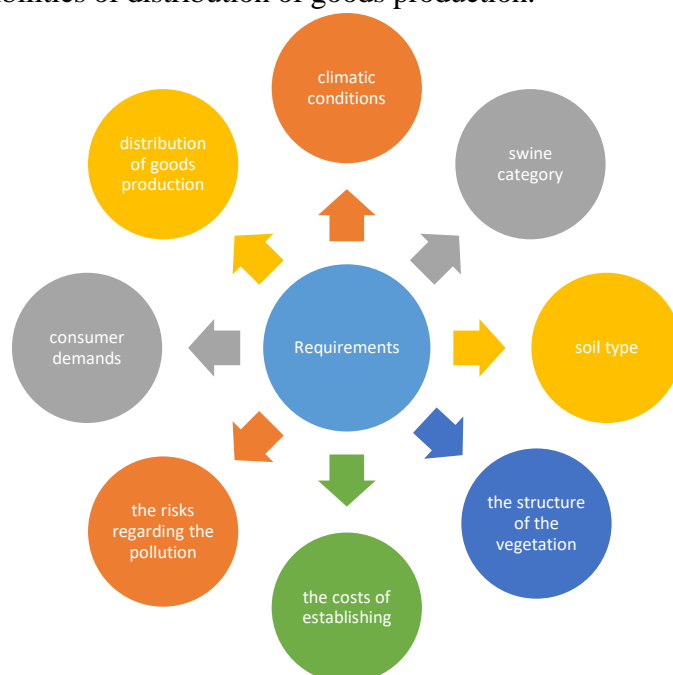


Figure 1. Requirements in the choice of location for the implementation of alternative technologies for meat production

We believe that in order to avoid the degradation of the pasture through waterlogging, when establishing the farm and implementing the alternative technology for obtaining pork meat, soils with a heavy texture that do not allow the infiltration of water from precipitation, which degrade quickly in winter due to stagnation of precipitation and on which the disappearance of vegetation in the dry period is frequent over large areas. For the establishment of artificial meadows, less dense soils with a high degree of drainage, favorable for the maintenance of vegetation, from the slope, in the upper part, organizing:

- splitting of the pasture;
- the farrowing and rearing area of infant piglets;
- feeding and watering area;
- umbrellas for rest in bad weather.

When implementing the alternative exploitation technology, it is necessary to provide for the professional swine farm, an additional area of meadow to allow:

- increasing vegetative mass for additional feeding;
- rotation of parcels;
- temporary restoration of damaged areas or with lower quality vegetation.

Choosing the best pasture for swine categories will take into account the implementation of the best alternative technology:

1. pregnant sows, the density on the pasture represents a productive factor of great importance, for these reasons, to avoid degradation regardless of the season, we recommend 750 m²/sow as a useful surface. At a useful surface of 550 or 650 m²/sow, we observed the degradation of the pasture through subsidence and in rainy periods, the lack of vegetation, puddles and altercations between animals;

2. lactating sows with 10-12 piglets, the recommended density is 850-950 m²/lactating sow, these areas allowing adequate vegetation, without soil and pasture degradation. At smaller usable areas per sow with piglets of 750-800 m²/sow during the drought or rains, there is degradation regarding the quality of the vegetative mass and soil drainage. We believe that these recommendations regarding the choice of the best soils must be adapted in case of implementation of this alternative technology for obtaining pork meat to the type of soil, the abundance of the vegetative mass, the rainfall regime and the increase of the areas regarding the roads to the improvised shelters, the places for feeding and watering, shading.

For the intensification of piglet production, we believe that it is necessary to have more plots, so that in crisis conditions the animals can be moved in order not to degrade the meadow and to achieve a higher density of animals, by maintaining for a shorter period of time. Although the large meat producing countries in alternative pasture systems recommend smaller usable areas per head of sow, we believe that for the type of soil from the analyzed area the best results were obtained in the case of the areas recommended by us, and the quality of the pasture was good, for these reasons we believe that in the implementation of the technology for obtaining meat in an alternative system on pasture, the following precautions are required (figure 2):

- avoiding the return of sows to the same plot in the same year;
- to avoid stocking with sows in early spring, when the soil is moist;
- to avoid maturing grasses that become fibrous and difficult to digest;
- avoiding grazing for a long period during the rainy season, in order not to degrade the soil and the vegetative mass;
- feeding with concentrates during the periods when the physiological condition requires it;
- management of plots by using the most efficient grazing system, rotation at short periods;



Figure 2. Precautions in the implementation of the most effective alternative technology for obtaining additional meat on pasture

The exploitation of sows on pasture must be managed based on the principle of gestation groups or lactation categories. The efficient organization of groups of sows and the limitation of movement on large pasture areas can be done by delimiting the plots by establishing the most optimal usable area with mobile electric fences. The electric fences used for sows can have a single wire in the case of pregnant sows or more many for sows with piglets, young pigs or first stage fattening pigs. The advantage of using a single wire, placed at a height of 0.40 meters, with stakes at a distance of 10.0 meters from each other, consists in the fact that:

- it can be passed with a tractor with a trailer for fodder, water supply;
- it can go directly from one pen to another or feeding and watering areas.

For an electric fence with 3-4 wires, their placement is generally done at 0.15, 0.30 and 0.40 meters from the ground, but to avoid the piglets escaping, the first wire will be placed as close to the ground as possible.

For well managed grazing, we recommend that for the useful surfaces indicated by us:

- the internal division for the pregnant sows of the plot to be made with 2 wires, which will stop the escape if they are placed at 0.20 and 0.40 meters and will be supported by fiberglass poles. We do not recommend that the wires to be stretched, because if the pregnant sows get used to the electric shock they can destroy both the wire and the pole;
- for sows with piglets, a thick electric net will be used close to the ground to avoid dispersal of the piglets in the hot season when they are looking for sources of cooling or bathing.

The improvised shelters need to be placed in the pens prepared for the farrowing of the sows, they are made of glass fiber insulated with straw, without a floor, with a round roof, and inside on the edges with protective bars to reduce the squealing of the piglets. These shelters are:

- individual for farrowing sows and those with piglets, with a pen in front for the first 5-7 days, to force the piglets to stay in the shelter until they can regulate their internal temperature;

- common on insemination groups for pregnant sows in the first 111 days of gestation;

Although the industry producing material for alternative technologies offers different types of shelters we recommend the shelters which provides enough shadow and protects the piglets well from the weather, and it is oriented to the south so that the animals can take advantage of the morning sun to warm up. It's ideal that on the opposite side of the shelter entrance should be a small opening to help ventilate the interior. The shelter must ensure, in order to avoid crushing the piglets, a useful surface of 2.50 m²/ per sow with piglets and a straw bedding of 20 cm, which will help to avoid temperature fluctuations. The bedding is introduced 4 days before calving to avoid shredding the straw and it is applied at least once a week or more often if it is wet. In order for the infant piglets to learn to recognize the nest, of a 30 cm wide wooden screen will be placed in front of it during the first week of life, for the formation of stereotypes.

CONCLUSIONS

The increase in swine meat production cannot be achieved only in super-intensive production systems, as it is necessary to implement alternative technologies for the exploitation of pregnant and lactating sows on pasture to cover the necessary meat-producing biological material, which will fatten according to the air freely using the resources of the pasture supplemented with concentrated fodder. To intensify the alternative production of piglets for fattening, it is necessary to arrange and parcel the pasture according to the optimal

herds and its floristic composition, to have several parcels, so that in crisis conditions the animals can be moved in order not to degrade the meadow and to achieve a higher density of animals, by maintaining it for a shorter period of time.

We do not recommend for small professional farms that use alternative technologies for obtaining pork meat on pasture, reduced usable areas per head of sow, for the type of compact soil, because the best results were obtained in the case of useful areas of 750-800 square meters per sow with piglets, if the best management of the use of forage resources is implemented on the farm and some precautions are observed regarding the start of grazing, rotation of plots, management of the use of grasses in rations and avoidance of soil degradation. In order to avoid the degradation of the environmental factors and the vegetative mass on the plots, studies are needed regarding the quality of the pasture, the degree of supportability, the optimal herds and the ways of locating the areas for feeding, watering and individual improvised shelters for lactating sows and common for pregnant sows. The exploitation of sows regardless of their physiological state on the pasture must be managed based on the principle of gestation groups or lactation categories.

The efficient organization of groups of sows and the limitation of movement on large pasture areas can be done by delimiting the plots by establishing the most optimal useful surface with mobile electric fences. Through well-managed grazing for pregnant sows, can be avoid the degradation of the plots, the vegetative mass and soil, if internal division is made with two-wire electric fence supported by fiberglass posts, and also for sows with piglets if electrical grid is used to stop the escape in the hot season for cooling, foraging and bathing, and reduces the period of standing on a plot in case of heavy rainfall or puddles.

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