The greatest number of which (about 72%) was registered in 2006, in comparison to the year of 2005, and the smallest number was about 15% in the year of 2008, also in comparison to the previous year. The data show that in the period of 2005-2009, the greatest number of the previously mentioned plants was in Masovian Voivodeship (about 17% of all the plants) and Lublin Voivodeship (about 14.1%), on the other hand the smallest number them was in Podlaskie Voivodeship and Pomeranian Voivodeship (about 3.3 %).

The data suggest that the area of ecological tillage in Poland during the studied period, systematically increased from 166299.7ha in 2005, up to 367061.6ha in 2009. The greatest increases of that area was in 2006, in comparison to the previous year, and it was over 37%, the smallest increase on the other hand was in 2008 - less 10%. Based on the data (table 2) there is a noticeable diversification of the area of tillage designed for the ecological production in the country. The greatest part of the mentioned area, in refer to ecological tillage, was in the West Pomeranian Voivodeship and Warmian-Masurian Voivodeship and it was about 18.45 and 10.5% of the whole tillage area in the country, respectively. The smallest part of the area was in Opole Voivodeship and Silesian Voivodeship, which contributed to the tillage as 0.4% and 1.1% respectively. It is worth to emphasize that the analysis of the dynamics of changes of the ecological tillage in 2009 in comparison to 2008 illustrates unfavourable changes concerning decrease of the ecological tillage. That tendency was observed in the Lesser Poland Voivodeship (27.2% drop), Subcarpathian (21.2% drop), Silesian and Lower Silesian (over 7% drop) and Swietokrzyskie Voivodeship (about 2% decrease). Simultaneously, the year of 2009 is characterised by the significant increase of the ecological tillage in Warmian-Masurian Voivodeship (over 72%) and Podlaskie Voivodeship (around 41%).

To sum up, one can say that in the period of 2005-2009 in Poland, a systematic development of the ecological agriculture was noticed. What it proves is that the number of ecological producers increases, as well as processing plants which use the ecological resources and the tillage which was destined as ecological. Simultaneously, a huge regional diversification was observed, in case of all of the analysed features. Along with the increasing need steaming from the aware consumers which have some idea about the ecological products, we can anticipate the increase of interest about the system of production in Poland in the future years.

Literature

1. Jończyk K, Stalenga J. 2010. Możliwości rozwoju różnych systemów produkcji rolniczej w Polsce. [w:] Możliwości rozwoju gospodarstw o różnych kierunkach produkcji rolniczej w Polsce. Studia i Raporty IUNG-PIB, Puławy, s.87

2. Kuś J., Stalenga J. (red) 2005. Kompleksowa ocena gospodarstw ekologicznych oraz wybrane aspekty funkcjonowania rynku żywności ekologicznej. Cz. I Wyd. IUNG Puławy, s.5

3. Sołtysiak U. 1993. Eko-rolnictwo. Szansa na polską specjalność. [w:] Sołtysiak U. (red) Rolnictwo ekologiczne. Od teorii do praktyki. Wyd. Stowarzyszenie EKOLAND LEBEN&UMWELT Warszawa, s. 114

ПРОГНОЗИРОВАНИЕ РАЗВИТИЯ СВИНОВОДСТВА В ПРИКАРПАТСКОМ ВОЕВОДСТВЕ

PROGNOSIS OF THE CHANGES IN SLAUGHTER ANIMAL POPULATION IN SUBCARPATHIAN VOIVODESHIP

Kilar J., Ruda M., Kilar M., Kusz D.
State College in Krosno

В статье проведен анализ статистических данных о поголовье свиней в Прикарпатском воеводстве за 1999-2007 гг., на основании чего определены прогнозные показатели развития свиноводства как в данном воеводстве, так и в целом по стране. Результаты исследований свидетельствуют о том, что поголовье свиней постоянно сокращается. Учитывая эту тенденцию, при ежегодном потреблении свинины 40 кг в год на одного жителя, к 2020 году даже по самым оптимистичным прогнозам дефицит поголовья свиней составит 55–65 %. Авторы также не исключают увеличение региональной диверсификации свиноводства и ужесточение санитарных требований к содержанию домашнего скота.

Introduction

A prognosis is predicting something, taking into consideration such factor as time. All in all, a prognosis means determining the most probable course of events which may occur in the investigated environment in the future, based on the possessed knowledge about the environment. By saying prognosis we mean a judgement about a particular event coming true at a particular point or a specified period of time in the future [Cieslak 2004].

The basic prerequisite of using prognosis in business, is the constant need of decision making, which refers to the uncertain future. There is usually a gap between those decisions which concern the future and the actual state of the things to come. The reason for that are numerous factors, particularly the constant changes occurring in the agricultural environment, which cannot be controlled. The basic function of prognosis is providing additional information in order to fill the previously mentioned gap, which leads to lowering the risk connected with decision making processes, namely those decisions which refer to scale and kind of production. Prediction of the future events based on the known empirical facts, as well as the rules and achievements of modern science connected with the studied phenomenon and its exogenous sphere (external surroundings) is a kind of prediction which is both scientific and rational [Zelias et al. 2008].

The aim of the work

The aim of the work was to determine the prognosis of changes in pig population in general, as well as the changes in slaughter pig population in subcarpathian voivodeship in the period of 2007-2020. The basis for determining the prognosis, were statistical data from the Main Statistical Office concerning pig population in Subcarpathian voivodeship during the period of 1999-2007. The prognosis of the changes in pig population was determined based on:

- a linear function of the trend
- a logarithmic function of the trend
- exponential smoothing model (Holt-Winter's method)

Results

Charts 1 and 2 shows the visualisation of the prognosis of changes in pig population in general in Subcarpathian Voivodeship in the period of 2007-2020. According to the prognostic models used, the number of pigs in the voivodeship will systematically decrease. The biggest decrease, down to the level of 242 thousand of pigs in the voivodeship in 2020 is suggested by the prognosis which was based on the linear function of the trend. According to the estimation for the period of 2007-2020, the average annual drop of the population will be about 2600 pigs. The lowest drop, down to 368 thousand in 2020, is suggested by the prognosis based on the logarithmic function of the trend. According to the prognosis based on the Holt-Winter's method, the number of the pig population in 2020 will be about 294 thousand.

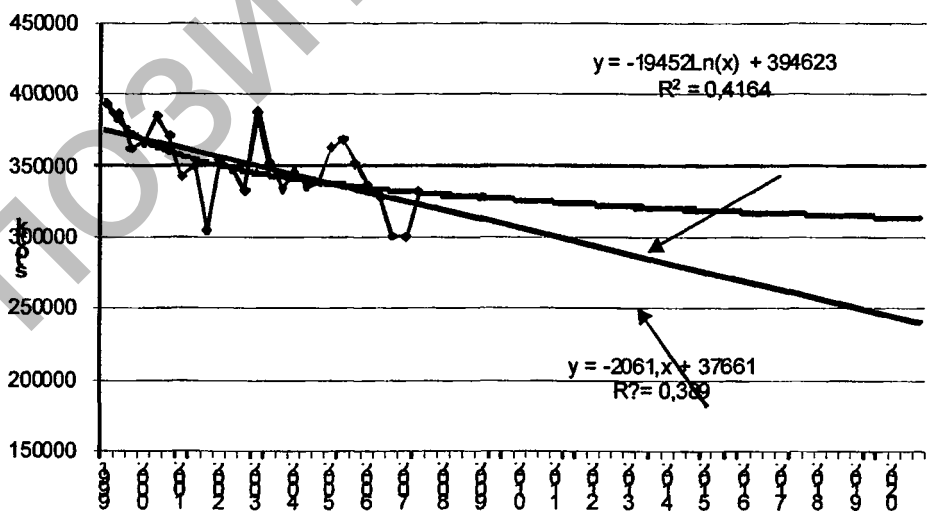

Chart 1. The prognosis of the pig population in general in the voivodeship, determined based on the trend up to 2020. Source: Own case study, based on the Main Statistical Office data.

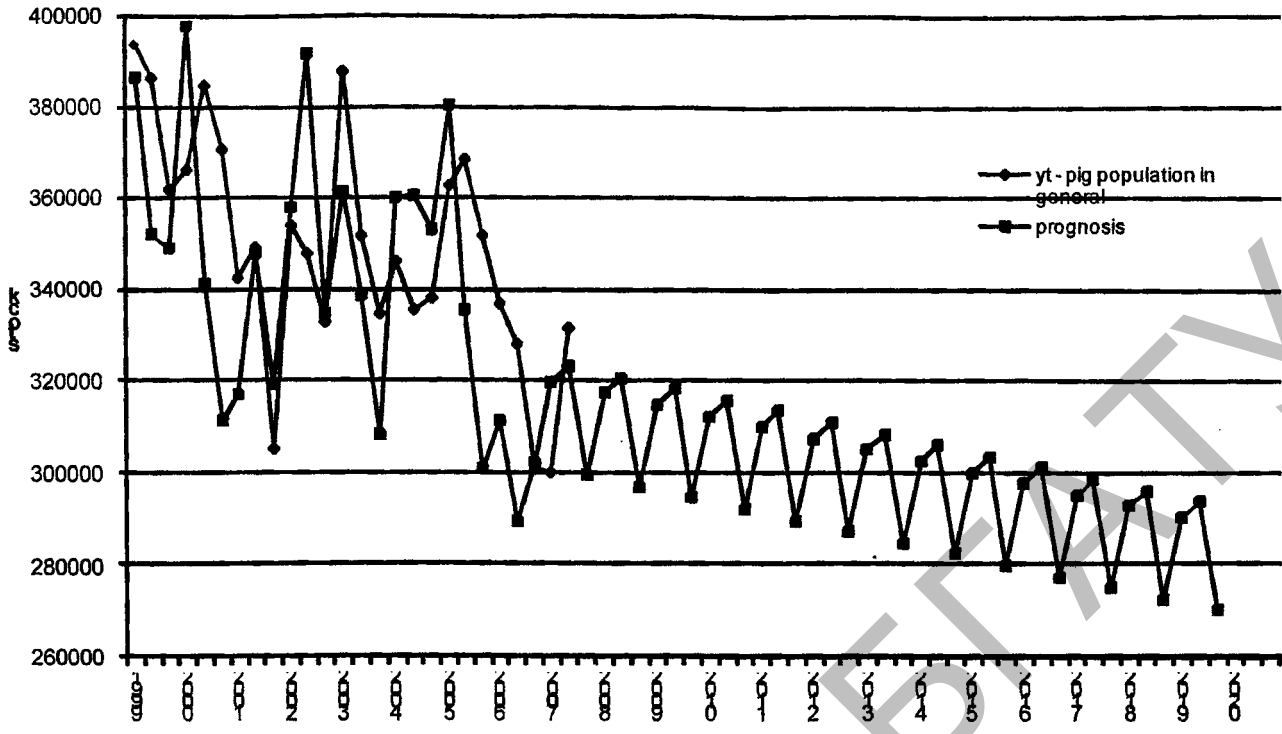

Chart 2. The prognosis of the pig population in general in the mentioned voivodeship, determined based on the Holt-Winter's method, up to the year of 2020. Source: Own case study, based on the Main Statistical Office data.

By the analysis of the average error of the prognosis, measured in percentage, concerning the number of the pig population, we can state that the most appropriate prognosis, matched with the real data, is the prognosis based on the logarithmic function of the trend. The average relative error is about 4.56%, which means that the values of the prognosis are different from the values observed in the period of 1999-2006, by 4.56%. The weakest match of the prognosis is in case of applying the Holt-Winter's method, where the average relative error in percentage is 5.80%.

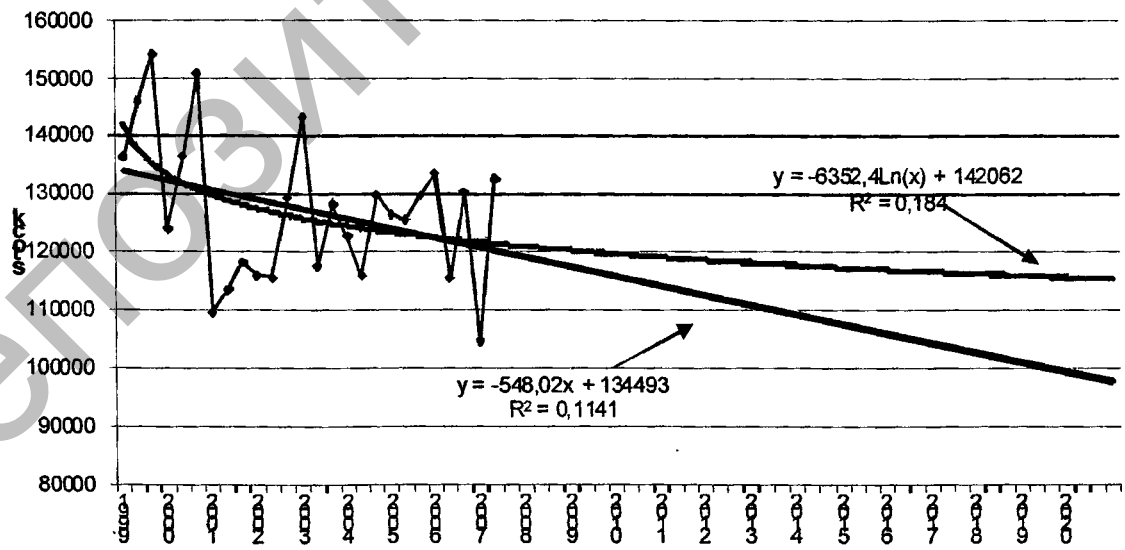

Chart 3. The prognosis of the slaughter pig population in Subcarpathian Voivodeship determined based on the trend up to 2020. Source: Own case study, based on the Main Statistical Office data.

The prognosis of the slaughter pig population up to the year of 2020 in Subcarpathian Voivodeship is presented on charts 3 and 4. Based on those, we may expect the continuous drop of the population. Depending on the applied method of prognosis, the slaughter pig population in

2020 may widely vary from around 100 thousand (linear function) up to around 113 thousand (logarithmic function). According to the prognosis which was constructed based on the Holt-Winter's method, the drop in pig population will be from 129 thousand in 2007 down to 116 thousand in 2020. By rating the quality of matching the prognosis to the real values from the period of 1999-2006 - by comparing the relative error - it has to be said that the most pessimistic prognosis based on the linear function of the trend is loaded with the smallest value of the error. It is 5.03%, what means that the prognosed values are different from the real values of the period of 1999-2006 by 5.03%. The weakest match of the prognostic model to the real values is manifested by the prognosis based on the linear function of the trend, for which the relative error was 8.64%.

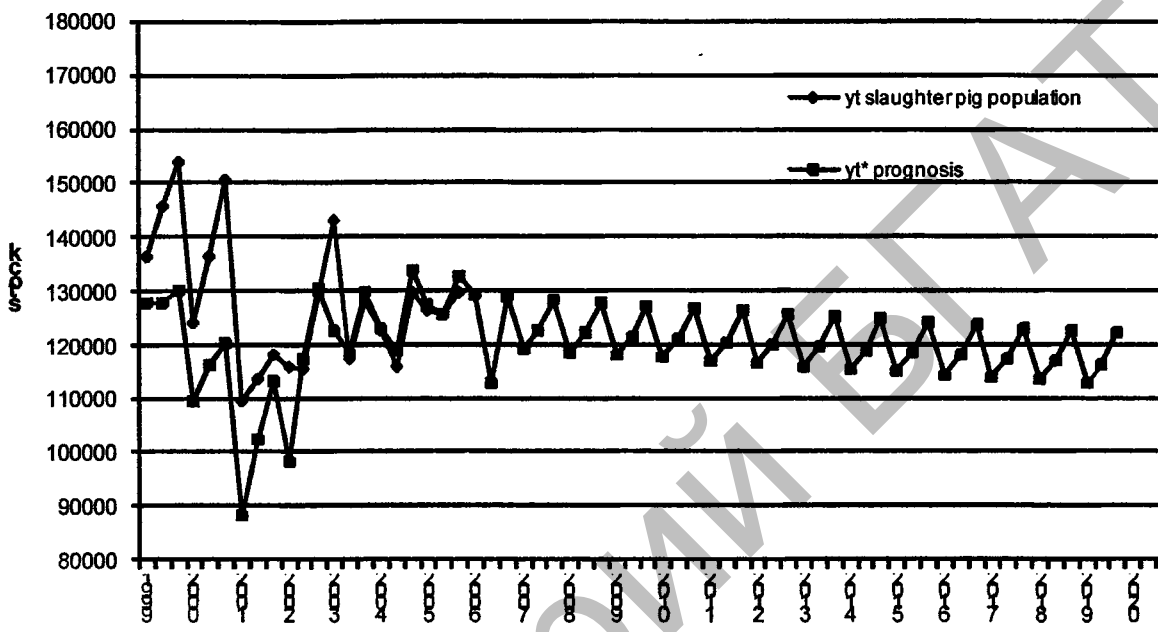

Chart 4. The prognosis of the slaughter pig population in the mentioned voivodeship, determined based on the Holt-Winter's method, up to the year of 2020. Source: Own case study, based on the Main Statistical Office data.

Summary

Just as in case of any other kind of production, slaughter pig production cannot be conducted with the exclusion of the needs of the country and the region. Considering that the annual consumption of pork meat per one citizen of Poland would hold at around 40kg, and the index of rotation in pig population in Subcarpathia would be around 1.5, then according to the present prognosis, even the most optimistic one, the deficit of the stock will be around 55 - 65%. While some of the butcher companies which met EU sanitary requirements possess the export right, the citizens of other voivodeships also willingly buys their products, what may result in the increase in the demand for the described stock [Kilar 2009].

In the light of this prognosis, the regional diversification concerning the pig population, which is observed nowadays, may even increase. The Subcarpathian producers of the livestock, even those who already are well trained, will face a hard competition while meeting the qualitative-quantitative requirements concerning the stock.

Literature

1. Cieślak M. (red). 2004. Prognozowanie gospodarcze. Metody i zastosowania. Wyd. Wydawnictwo Naukowe PWN, Warszawa.

2. Kilar J. 2009. Analiza zmian i prognozy rozwoju chowu i hodowli świń w województwie podkarpackim. Praca doktorska, UP Lublin.

3. Zeliaś A., Pawełek B., Wanat S. 2008. Prognozowanie ekonomiczne. Teoria, przykłady, zadania. Wyd. Wydawnictwo Naukowe PWN, Warszawa.