

Impact of COVID-19 on animal production in the Czech Republic

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Implications

- The COVID-19 crisis has not had a strong impact on animal breeding, identification, performance recording, or genetic evaluation.
- The crisis has affected DNA analysis and basic and applied research.
- Production of raw milk and cattle slaughtering has not been affected by the crisis.
- Impacts on prices have affected farmers, processing companies, consumers, and the international trade in agricultural products.

Key words: animal breeding, COVID-19, Czech Republic, impact of crisis, prices, services

Introduction

The COVID-19 crisis has had a negative impact on macroeconomic development in the Czech Republic, with the second quarter of 2020 seeing the most severe downturn since the formation of the Czech Republic in 1993. The Czech Statistical Office recorded a year-on-year decrease in GDP of 11% (CZSO, 2019). The analysis presented here focuses on the impact of the COVID-19 crisis on selected aspects of animal breeding and summarizes the situation up until 1 October 2020.

Impact of COVID-19 Crisis on Animal Breeding

We carried out a short survey analyzing the impact of the COVID-19 crisis on animal breeding in a selection of livestock

animals. Based on the outcomes of this survey, we conclude that the crisis has not impacted on data collection, performance recording, or the prediction of breeding values in cattle, sheep, goats, and pigs. Some specific changes, which notably affect cattle milk recording methodologies, were observed. More flexibility was given to milk recording technicians when recording milk yield data at stables, while intervals between tests were extended. Some milk yield data were accepted without factoring in all milk samples due to various technical issues, which led to a slight decrease in the number of milk samples recorded. Restrictions were imposed on visits to organizations involved in milk recording, data processing, and the prediction of breeding values. For instance, restrictions on access to goat milk recording stables resulted in samples being delivered to collection points instead. Strict hygienic rules were introduced at all stables involved in performance recording. At the beginning of the COVID-19 crisis, there was a reduction in the supervision of animal breeding and related services. The survey revealed a major impact on DNA analysis in the areas of parentage verification and genomics. Due to the preference of suppliers to prioritize deliveries to human health laboratories tasked with analyzing Covid-19 virus samples, DNA analysis laboratories encountered problems with purchasing materials and experienced significant increases in costs. The crisis has not had an impact on animal identification and registration or ear tag logistics (Personal communication, Czech-Moravian Breeders' Corporation) (Figure 1).

Impact of the COVID-19 Crisis on Animal Breeding Research and Other Activities

The crisis negatively affected the organization of various breeder events, conferences and exhibitions both nationally and internationally. Many of these events were canceled. Some laboratory providers of animal breeding and veterinary services were enlisted to assist in the analysis of human COVID-19 samples (Biology Centre, CAS, 2020; State Veterinary Administration, 2020). The crisis not only negatively impacted research projects, particularly those that are international in scope, but also created practical issues with regard to sample taking and maintaining contact with breeders.

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Increased interest in the scientific aspects of the virus has led to the establishment of a new COVID-19 research center at the Czech University of Life Sciences in Prague. This centre is involved in researching infectious diseases among animals, as well as humans (Votruba, 2020).

Practical Examples of Impacts on Breeders

Several studies carried out by agricultural associations reveal that the crisis has had a particular impact on small farmers reliant on independent production. The almost complete cessation of agritourism dealt a hammer blow to direct sales at these farms. Public farmers' markets were also required to cease trading and, in some cases, takings dropped by almost 50%. The shuttering of restaurants and schools had impacts on the demand for foodstuffs and semifinished goods. For example, sales between beef cattle breeders and restaurants and other outlets were immediately affected once restrictions came into force, with breeders compelled to find alternative customers. Not only did demand decrease but also slaughterhouses began to offer lower prices than before the crisis. As a result, the Ministry of Agriculture put in place various supports for farmers and food processing plants. Various large farms encountered labor shortages due to the quarantine, with milking and feeding particularly affected (Czech Beef Breeders' Association, 2020; Pýcha, 2020).

Trends in Raw Milk Production and Pig and Cattle Slaughtering by Live Weight

A total of 3.1 million tonnes of milk were produced in the Czech Republic in 2019 (CZSO, 2020a). The first half of 2020 saw the biggest annual rise in milk production since 2015, with 1.6 million tonnes of milk produced. Based on this data, the crisis has had no effect on milk production.

In 2019, the production of cattle for slaughterhouses amounted to 167,900 tonnes by live weight. Production of slaughtered cattle grew by 2.6% during the first half of 2020, representing the biggest rise in production for the period 2017–2020 (CZSO, 2020a).

Over recent years, pig slaughterhouse production by live weight has undergone a long-term economic depression nationally. Production at pig slaughterhouses in 2018 decreased from 302,019 tonnes by live weight in 2018 to 286,762 tonnes in 2019 (CZSO, 2019). Production decreased from 152,024 tonnes during the first half of 2018 to 140,148 tonnes by live weight for the first half of 2020. Reflecting a sharp and long-term decline in production, slaughtered pigs amounted to 286,800 tonnes by live weight in 2019. In the first half of 2020, production decreased by 1.2% year-on-year in line with this previous downward trend (CZSO, 2020b).

Impact on Markets, Prices, and Foreign Trade

The restriction measures introduced led to rapid reversals in food demand. The most direct results of these measures were

the cessation of public consumption within the catering industry, panic buying at retail outlets, and an overall increase in online shopping. As a part of AC Nielsen Czech Republic's retail monitoring, we examined the sales of nine foodstuff categories of animal origin at the largest retail chains nationwide, namely pork cuts (ham, shoulder, and neck), drinking milk, yoghurts (white and flavored), butter, chicken, and eggs. In the first quarter of 2020, year-on-year sales grew by between 2% (flavored yoghurt) and 15% (pork shoulder) in seven of the nine categories assessed. Sales of pork ham and neck fell by 25% and 35%, respectively. This sharp decrease was probably reflective of the limited ability of producers to satisfy the feverish increase in demand. In what was a completely unprecedented situation, supplies of various meats and cuts disappeared from retail chains for days at a time or parts of days. In the second quarter, year-on-year sales in seven of the categories assessed increased by between 1% (with pork neck) and 19% (with white yoghurt). Sales of drinking milk and flavored yoghurt remained stable or slightly decreased (AC Nielsen Czech Republic, 2020).

Agricultural commodity and foodstuff prices were not unaffected. With regard to farm, processor, and retail sales, there was a generable variable reduction and, in exceptional cases, stabilization of animal product prices in all three categories between March and June (CZSO, 2020a,b,c). In somewhat simplistic terms, farms were worst affected, with processor prices declining only in some product categories and consumer prices decreased the least. Over the same 4 months, live pig (by 11.8%) and slaughtered cow prices (by 7.9%) fell sharply and rapidly compared to previous periods. In line with usual price volatilities, farm-gate milk and egg prices reduced by 5.6% and 6.8%, respectively (CZSO, 2020c). Processors were paid 11.9% less for pig ham and 0.7% and 0.9% more for beef forequarters and hindquarters, respectively (CZSO, 2020d). Consumers paid 4.2–7.6% less for various pork cuts, 0.6% more for beef sirloin, and 1.4% more for Edam cheese. Butter was 9.8% cheaper in June than in March (CZSO, 2020e).



Figure 1. Dairy cattle.

About the Authors



Michaela Brzaková is a researcher in animal breeding and genetics at the Institute of Animal Science. She has a PhD degree in biotechnology from the University of South Bohemia. Her fields of expertise are animal breeding and genomics. She is actively involved in the development of national

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Lubos Vostry is a professor at the Czech University of Life Sciences and a researcher at the Institute of Animal Science. His research focuses on livestock breeding, estimation of genetic parameters, prediction of breeding values and genetic diversity in livestock and domestic animals. He works closely with the agricultural sector, particularly breeder associations. He is a member of the International Society for Animal Genetics, the International Committee for Animal Recording and the Animal Science Days consortium.

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Resources from the Czech University of Life Sciences, Prague. He specialises in and animal breeding and performance recording, particularly cattle milk recording. Current work involves updating Section 2 of the ICAR Guidelines. As well as carrying out regular audits, he has extensive experience in the following areas: development of KPIs and general aspects of management and organisation. **Corresponding author: Pavel. bucek20@gmail.com**

Concerning foreign trade (Ministry of Agriculture, 2020), live cattle was the most severely affected. Net exports of live cattle, a traditional Czech export commodity, dropped by 14% in quantity and 20% in value year-on-year for the period from March to June 2020. Exports to Turkey and Netherlands in particular fell dramatically. The reduction in net exports of pigs and poultry, however, was less severe. On the other hand, exports of raw milk grew by 9%. The most important destinations are two German processing plants close to the Czech border. The lack of interruption to the supply chain is probably explained by the fact that processors largely use their own vehicles for the transportation of milk products and tend not to rely on hired containers. While a slowdown in certain net imports was observed, this was more the exception than the rule. For instance, although imports of beef, cheese, and butter decreased, net pork imports grew by 14% (frozen pork by 38%) year-on-year between March and June. There was a considerable increase in pork imports from Poland and Belgium. Summed up, the closure of national borders and the consequent disruptions to the availability of trucks and other means of transport did not cause a fatal blow to the sector. Over the same 4-month period, exports and imports of Czech animals and animal products decreased year-on-year by 1% and 0.7%, respectively.

Conclusion

Although the COVID-19 crisis has had an impact on prices for both customers and producers, no substantial effect on animal breeding has been observed. In terms of the long-term outlook, the crisis may result in the implementation of new distribution channels and encourage self-sufficiency among farmers and producers. It is reasonable to assume that consumer habits may also change over time. A number of new research projects have been established due to the impact of the COVID-19 crisis.

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