

Gordana GARIĆ PETROVIĆ*

Institute of History

Belgrade

MAIZE CULTIVATION IN SERBIA: A HISTORICAL PERSPECTIVE*

Abstract: The paper discusses the adoption and spread of maize cultivation in the territory of present-day Serbia. A hundred years had passed from the first mention of maize growing to the moment when maize became the second most important cereal grain, and in some parts of the country the most important. The adoption of maize production was profound and lasting. It changed the basic nutrition of the majority of the population. By the end of the 19th century, maize fields represented 31 percent of cultivated land in Serbia. Increased production of maize resulted in surpluses and export.

Keywords: maize, agriculture, Serbia, Balkans.

* gordana.garic.petrovic@iib.ac.rs

** The paper represents the extended version of the conference paper presented at the Rural History Conference, KU Leuven, Belgium, 11–14 September 2017. It refers to the territory of today's Republic of Serbia while the timeframe starts with the beginning of maize growing. It relies on the sources and literature related to agriculture and the spread of the maize culture in the Ottoman Empire, Habsburg Monarchy and the Principality (Kingdom) of Serbia. Among the most important sources are the Ottoman cadastral lists which were the basis for crop pattern determination for certain Serbian areas used as examples of the maize culture impact on the then prevailing agrosystem. Some of surveys made by the Habsburg administration are available in addition to the Ottoman lists. A well-developed statistical office of the Principality (Kingdom) of Serbia published several agrarian surveys made during the 19th and the beginning of the 20th century containing data on cultivation and trade of maize and other agricultural products.

The discovery of the New World introduced Europe to new plants whose expansion brought changes to agrosystems, eating habits and many other aspects of life in most European countries. These changes were gradual and slow in some areas, while in others they were relatively quick. The area of today's Republic of Serbia belongs to the latter group. A hundred years had passed from the first mention of maize growing to the moment when maize became the second most important cereal grain, and in some parts of Serbia the most important.¹

The adoption of maize cultivation was a major milestone in the agricultural system in the territory of Serbia. The breeding of maize started at the end of the 16th century and gained its momentum during the 17th century. Along with beans culture, it spread very quickly over the Balkan Peninsula, becoming a staple food of rural people. In the 19th century, for which there are statistical data, maize represents one of the most important crops grown in the territory of the Principality (Kingdom) of Serbia.

Studies in the history of Serbian agriculture have not been able to determine how maize got to Serbia. Some claim that it came from America to the Balkan Peninsula through Italy and the Adriatic Sea, where Venetians bred and used maize on their estates. According to others, maize was first introduced by the Turks, and its expansion progressed from the south to the north.² At the end of the 16th century, travel writers crossing the Balkan Peninsula noted fields of maize and the use of maize in nutrition near Constantinople, in today's Albania and in Dubrovnik.³ These notes are only a few decades later from the first remark on maize cultivation on the European soil dating from 1523.⁴

The Ottoman cadastral lists from the 16th century, which are the main sources for Serbian agricultural history of the day, record only contributions in the most important cereals grown back then – wheat, barley, rye and oats. Wheat, barley and rye were cultivated as winter and spring crops. In addition to these, mixed seeds of barley and wheat (*mešanica*, *sumješica*) and mixed seeds of rye

¹ О. Зиројевић, *Јело и ниће*, Приватни живот у српским земљама у освит модерног доба, Београд 2005, 239; Б. Миљковић Катић, *Пољопривреда Кнежевине Србије (1834–1867)*, Београд 2014, 120–121; О. Срдановић-Бараћ, *Српска аграрна револуција и пољопривреда Србије од Кочине крајине до прве владе кнеза Милоша (1788–1839)*, Београд 1980, 158.

² *Poljoprivredna enciklopedija*, t. 2, Zagreb 1970, 46; 3. Његован, *Пољопривреда средњовековне Србије*, Београд 1997, 105–106.

³ В. Храбак, *Izvoz žitarica iz Osmanskog carstva u XIV, XV i XVI stoleću*, Priština 1971, 471.

⁴ For further information on maize domestication and dispersal of this plant around the world see (with further readings): D. Bonavia, *Maize: origin, domestication, and its role in the development of culture*, Cambridge University Press 2013, 251.

and wheat (*surazića*) were also grown. All mentioned cereals were used in human nutrition. Their breeding was recorded in monastery charters of medieval Serbia as well.⁵ In the part of Serbia that belonged to the Kingdom of Hungary prior to the Ottoman conquest, the main cereals were wheat and barley. Rye was grown to a smaller extent, while oats and millet were used as fodder plants.⁶

The breeding of these traditional sorts of cereals continued after the Ottoman government was established in the conquered countries, and the production of cereals was the most important branch of agriculture.⁷ In central areas of the Balkan Peninsula cereal production had surpluses, which were partly exported from the territory of the Ottoman Empire. This export was not free and was under control of the state.⁸

Maize is found in Serbia at the end of the 16th century as a garden plant. According to one manuscript dating from 1682, maize was brought to Serbia by Greek merchants in 1576.⁹ In the first half of the 17th century, maize was grown on Kosmaj mountain, near Belgrade, and at the end of the same century, its import from the Balkans is frequently mentioned at the Hungarian customs offices.¹⁰ During the 17th century, the growing of maize in the territory of today's Serbia experienced fast expansion, suppressing the breeding of other true cereal grains. That was confirmed in Ottoman and Austrian surveys made during the 18th century. This crop was particularly spread along mountain areas. In 1714 maize was grown twice as much as wheat in the mountainous area of Eastern Serbia.¹¹ Widespread presence of maize is confirmed by Austrian earliest statistical data originating from the third decade of the 18th century. The Austrian administration made a survey in areas gained after the war with the Turks. This survey was conducted in 1722. It shows that maize was planted on 31% of the land under cereals in the Austrian Kingdom of Serbia, territory bordered by the rivers Sava, Danube, Poreč, Great and West Morava and Drina.

⁵ М. Благојевић, *Земљорадња у средњовековној Србији*, Београд 2004, 81–84.

⁶ P. Engel, *Realm of St. Stephen: A History of Medieval Hungary (895–1526)*, I. B. Taurus, London–New York 2005, 57.

⁷ Е. Миљковић-Бојанић, *Смедеревски санџак*, Београд 2004, 88–89; D. Amedoski, *Društveno-ekonomski odnosi u Kruševačkom sandžaku od sredine XV do kraja XVI veka*, Filološki fakultet, Univerzitet u Sarajevu 2013 (PhD thesis), 18–20.

⁸ В. Нрабак, *Izvoz žitarica iz Osmanskog carstva u XIV, XV i XVI stoleću*, 291–292; idem, *Београд као житно тржиште и житарство шире београдске околине у XVI веку*, *Годишњак Музеја града Београда* 4 (1957) 64, 67.

⁹ Ђ. Радић, *Све о кукурузу*, Београд 1872, 4.

¹⁰ О. Зиројевић, *Biljni i stočni fond u vreme turske vladavine*, *Naučno djelo akademika Branislava Đurđeva*, Sarajevo 2010, 118.

¹¹ О. Зиројевић, *Јело и ниће*, 239.

It also indicates that at the time maize was grown in a higher ratio in the districts of Rudnik (41.81%), Jagodina (42.74%), and Kragujevac (41.09%).¹²

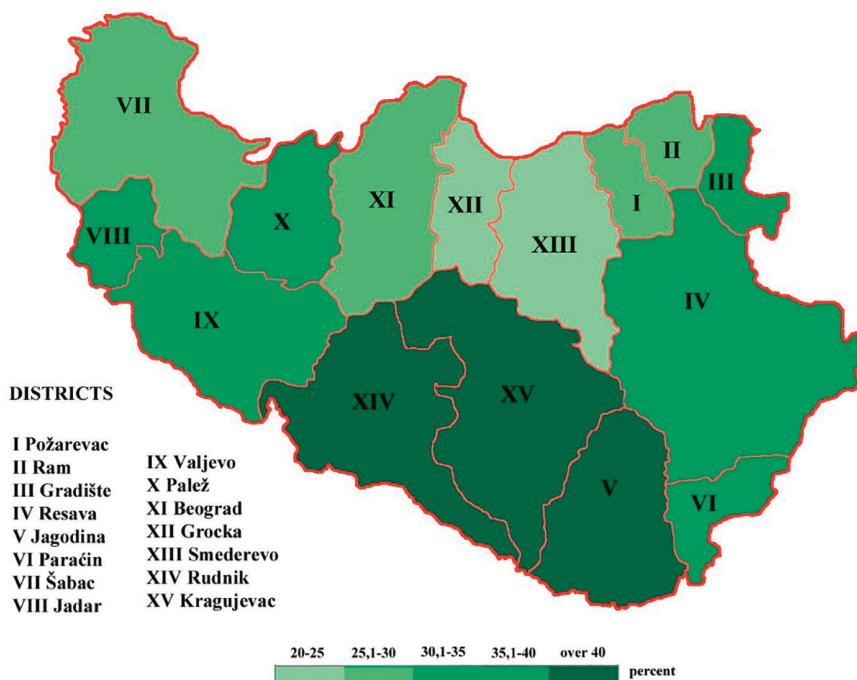


Figure 1: Map of districts in the Austrian Kingdom of Serbia ranked according to the ratio of maize cultivated areas to land planted in other cereals

Later Ottoman surveys show that maize was still an important crop.¹³ The spread of maize cultivation went from the south to the north. This route is evidenced by the Serbian term for this plant *kukuruz* which came from the Turkish term *kokoroz* (*momoroz*).¹⁴ From the Balkan Peninsula maize found its way to the northern territories and entered the Hungarian and Romanian

¹² J. Langer, *Serbien unter der kaiserlichen Regierung 1717–1739*, Mittheilungen des k. k. Kriegsarchiv, Vol. III, Wien 1889, 239–240.

¹³ O. Zirojević, *Jelo u nuže*, 239.

¹⁴ P. Skok, *Etimologijski rječnik hrvatskoga ili srpskoga jezika*, knj. 2, Zagreb 1972, 229. This plant was also called: kukuruza, trakinja, turčinak, turščica, turska pšenica, golokud, (p)čenka, rumetin, moruza, türkischer Weiz, grano turco, misir, urmetin, fermentun, furmentin(a), carevica, carevka, kolomboć. O. Zirojević, *Biljni i stočni fond u vreme turske vladavine*, 118.

languages.¹⁵ In southern parts of the Habsburg Monarchy, maize was grown as a garden plant for a long time. On feudal properties, it was planted by serfs on fallow land free from taxation.¹⁶ Maize was planted to a greater extent at the beginning of the 19th century, when the so-called Canadian sort became popular in Banat for being more profitable for growing and trade.¹⁷ By the middle of the century, maize became one of the most important crops. By 1869, it occupied 20% of all land under the cereals in present-day Vojvodina.¹⁸

Comparing the Ottoman censuses and 19th-century agricultural surveys for the Belgrade area, we can conclude that maize completely suppressed the grain mixture, while all other cereals were cultivated in a smaller percentage than in the 16th century.¹⁹

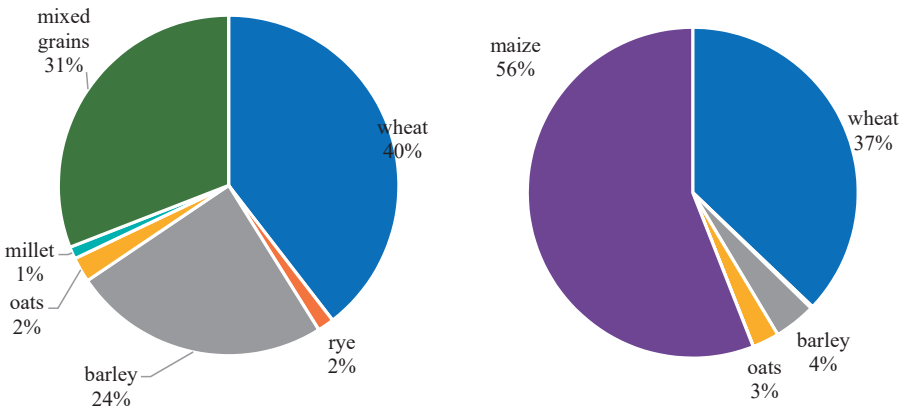


Figure 2: Production of cereals in the districts (nâhiye) of Železnik and Belgrade in 1536 and in the district (okrug) of Belgrade in 1901²⁰

¹⁵ Hungarian term for maize *kukorica* came from South Slavic languages. *Etimológiai szótár: Magyar szavak és toldalékok eredete*, Budapest 2006, 412; P. Skok, *Etimologijski rječnik hrvatskoga ili srpskoga jezika*, knj. 2, 229.

¹⁶ A. Hegediš, K. Čobanović, *Demografska i agrarna statistika Vojvodine 1767–1867*, Novi Sad 1991, 237.

¹⁷ A. Хегедиш, *Аграрни односи у Торонталској жупанији и Банату 1779–1848*, Нови Сад 1987, III.

¹⁸ В. Јакшић, *Статистична збирка из србских крајева*, Београд 1875, 284.

¹⁹ D. Amedoski, *Društveno-ekonomski odnosi u Kruševačkom sandžaku*, 18–20; *Попис обрађене земље у Краљевини Србији 1893. године*, Статистика краљевине Србије, књ. IX, Београд 1897, 260–261.

²⁰ X. Шабановић, *Турски извори за историју Београда: катастарски пописи Београда и околине 1476–1566*, књ. 1, Београд 1964, 247–397; *Статистички годишњак Краљевине Србије*, књ. 5, Београд 1904, 225–227.

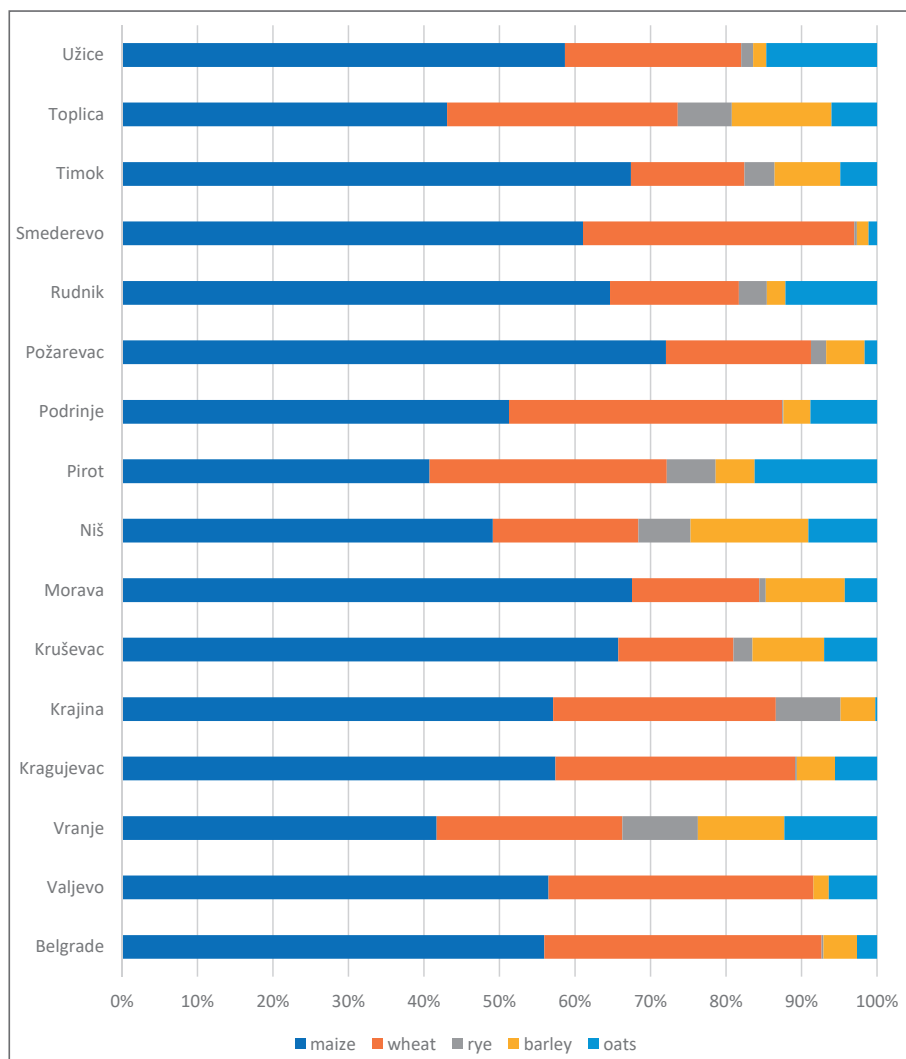


Figure 3: Ratio of yields of the main cereals in the districts of the Kingdom of Serbia in 1901²¹

Maize was accepted and expanded due to a lesser risk of damage, especially heavy rain. Also, unlike wheat and other cereals of bread-making quality, maize sowing requires a significantly smaller portion of the seeds. Because of that, in the first half of the 19th century in some parts of the Principality of Serbia maize grains represented more than 80% of total cereal

²¹ *Статистички годишњак Краљевине Србије*, књ. 6, 225–226.

production. In the middle of the 19th century the proportion of areas planted with stubble cereals and maize was settled. So, during the second half of the same century, maize was planted on around half the area intended for cereals.²²

Maize growing influenced not only the crop pattern, but also nutrition of the rural population, crop rotation, agricultural seasonal activities and auxiliary buildings in rural households. “Proja” – maize bread became the basis of rural people’s nutrition. It suppressed the traditional bread resembling Italian focaccia noted by foreign travel writers.²³ In addition to maize bread, a maize flour porridge named *kačamak* became a new staple food. In peasant households, maize was cooked, baked and fried as well. Maize flour replaced wheat flour and bran in the preparation of *kiselica*, an old fermented beverage. Maize was also used instead of millet in the preparation of *boza*, fermented beverage brought to the Balkans by the Turks.²⁴

The importance of maize for human nutrition was so large that in 1836 the Principality of Serbia established communal maize storages with the intention to prevent famine in the case of a bad harvest or a natural disaster. This famine prevention system was maintained with interruptions until World War I. The food for communal storages was collected from taxpayers who were obliged to give a certain amount of cereals, most often maize. In 1854, this obligation amounted to 50 ounces (63 kg) of maize.²⁵ One century later, the consumption of maize in human nutrition in Serbia was still high and it was 238 kg per capita, which was 120 kg more than the average in the Kingdom of Yugoslavia.²⁶

In addition to its use for human nutrition, maize was used in huge quantities for pig fattening, which was important because pigs were the main product of Serbian export trade. Unripe maize, cut from the flowering period to

²² Б. Миљковић Катић, *Пољопривреда Кнежевине Србије*, 120; Г. Гарић Петровић, *Земљорадња у Србији (1878–1912)*, Београд 2017, 114.

²³ О. Зиројевић, *Јело и пиће*, 239.

²⁴ С. Мијатовић, *Српска народна јела (са прилогом о пићима) у Левчу и Темнићу*, Српска народна јела и пића, књ. 1, Српски етнографски зборник, књ. 10, Београд 1925, 36–37, 44; С. Тројановић, *Старинска јела и пића*, Српски етнографски зборник, књ. 2, Београд 1898, 25, 30, 66, 69; С. Грбић, *Српска народна јела и пића из Среза бољевачког*, Живот и обичаји народни, књ. 14, Београд 1925, 193, 208; О. Зиројевић, *Јело и пиће*, 253.

²⁵ Б. Миљковић Катић, *Пољопривреда Кнежевине Србије*, 270–271; Б. Јованчић, *Опитински кошјеви са резервом хране у Србији од 1830. до 1930. године*, Зборник 6–7 (1991) 196–209.

²⁶ М. Николић, *Југославија и светска производња и промет кукуруза*, Београд 1931, 35–36.

the formation of embryos, was used as food for cattle and horses. All parts of maize plant were used, even stacks. After the maize harvest, they were bound, stored and used as animal food during winter.²⁷

A wide use of maize was enabled by the spacious area of its cultivation. Maize was grown in almost the entire territory of Serbia, excluding only high mountain areas where it could not fully mature. It was planted mostly on the fertile ground in valleys of great rivers, such as the Morava, Sava and Danube and their tributaries, where humidity and fertile deposits were particularly beneficial for its growth.²⁸ On this alluvial soil it was sown on the same tilled land for many years, sometimes even ten years in a row. Maize was sown on freshly cleared land, as well as on fields after clover and alfalfa. On inclined areas and less fertile land, the most common crop rotation was used – alternate sowing of maize and stubble cereals. The crop rotation with alternate growing of maize and winter wheat was particularly frequent. In that way, maize filled the void that existed due to the relatively limited planting of spring cereals.²⁹

In addition to the crop rotation, maize brought innovations in the system of seasonal agricultural activities as well. Late autumn and early spring ploughing of the land intended for maize, as well as two different types of hoeing called “dusting” (*prašenje*) and “covering” (*zagrtanje*) were introduced. Land intended for maize planting got a special name – maizefield (*kukuruzište*). The centuries-long maize growing resulted in established practices for the selection and preservation of seeds, the planting method depending on the later use of the yield, the planting of traditional side crops (pumpkins and beans), the manner of harvesting and keeping the yield. In the second half of the 19th century, all these activities were considered to be traditional work of Serbian peasants. That work was related to certain religious holidays and as such was noted and described in the ethnological literature written at the time.³⁰ A number of folk customs related to magic, divination, cult and folk medicine which included maize were also noted. This plant has its folk holiday – St. Andrew’s Day.³¹

²⁷ С. Мијатовић, Т. Бушетић, *Технички радови Срба сељака у Левчу и Темнићу*, Живот и обичаји народни, књ. 14, Београд 1925, 8, 12, 41–43; Ђ. Радић, *Све о кукурузу*, 43, 78, 80–86; Ђ. Радић, *Вођа при газдовању србском народу*, Нови Сад 1867, 54.

²⁸ М. Николић, *Кукуруз: употреба, особине, врсте, сорте и гајење*, Београд 1927, 55.

²⁹ М. Николић, *Југославија и светска производња кукуруза*, 23, 25; *Poljoprivredna enciklopedija*, 53; Г. Гарић Петровић, *Земљорадња у Србији*, 100.

³⁰ Г. Гарић Петровић, *Земљорадња у Србији*, 104–105, 107.

³¹ В. Чајкановић, *Речник српских народних веровања о биљкама*, Сабрана дела из српске религије и митологије, књ. 4, Београд 1994, 127–130.

In the rural household, a special maize-conservation building was established named *koš* or *salaš*, skillfully built of wattle to exploit natural conditions such as wind. There are also many references to the tradition of maize cultivation, such as numerous terms referring to dried maize leaves used for filling pallets and pillows, as well as the terms referring to maize stalk, used for animal feeding and as cover for smaller economic buildings within the rural household.³²

With the expansion of agricultural mechanization in the 19th century, modern tools and machinery related to maize cultivation began to be used in Serbia in addition to traditional tools such as hoe. Some of them were imported, like grain cleaning machines, and some were produced in Serbia – choppers, ploughs and covering machines.³³

In the Principality (Kingdom) of Serbia maizefields occupied about a third of all cultivated land during the second half of the 19th century.

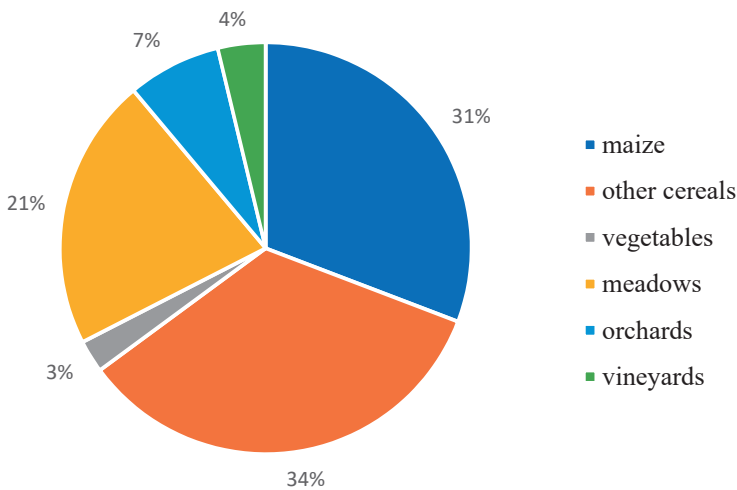


Figure 4: Structure of cultivated land in the Kingdom of Serbia in 1900

Proportionally, maize production was high. It increased from year to year, from 167,000 tons in 1847 to 740,000 tons in 1910. This production growth was a result of enlargement of the maize sown area from 167,000 ha

³² Г. Гарић Петровић, *Земљорадња у Србији*, 43, 110–111.

³³ Д. Спасић, *Употреба пращача и огртача при гајењу кукуруза*, Београд 1890, 1–40; Г. Гарић Петровић, *Земљорадња у Србији*, 51, 102.

in 1847 to 583,000 ha in 1910, enabled, among other things, by the state's expansion in 1878.³⁴

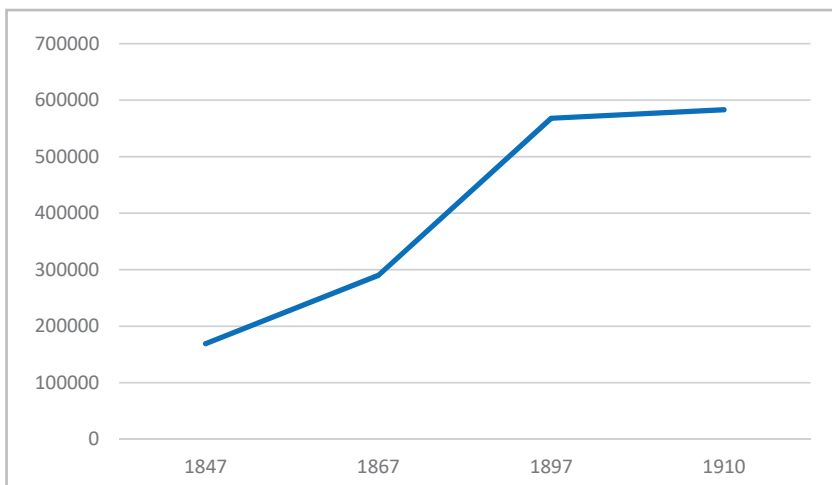


Figure 5: Maize cultivated areas in hectares in Serbia (1847–1910)³⁵

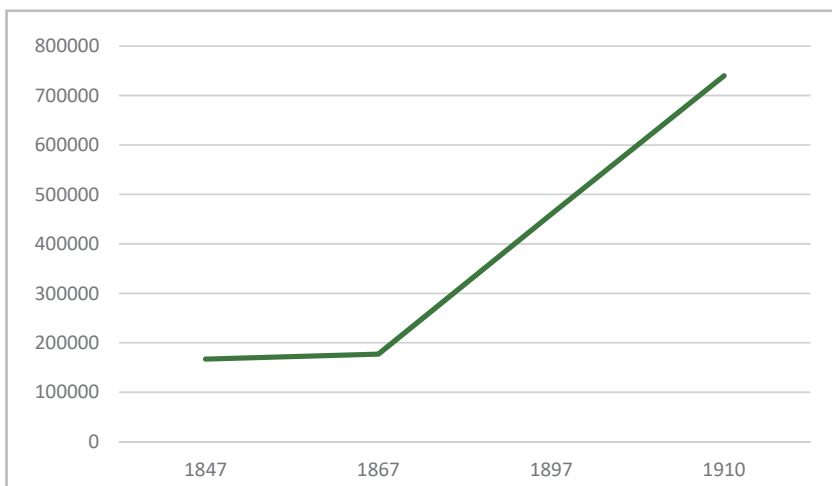


Figure 6: Maize yields in tons in Serbia (1847–1910)³⁶

³⁴ В. Јакшић, *Статистична збирка из србских крајева*, 302.

³⁵ *Два века развоја Србије: статистички преглед*, Београд 2008, 121.

³⁶ *Ibidem*.

With such maize production, the Kingdom of Serbia became one of the leaders in Europe. Considering the amount of maize produced per capita, which in 1867 was 2.44 hl, Serbia was far above the European average of 0.39 hl.³⁷ Large production also allowed the export of surpluses, so that during the last decade of the 19th century total of 279,649 tons of maize was exported. At the same time, only 2,740 tons of the same product was imported.³⁸

Development of the milling industry and export trade led to increased demand for wheat which led to a reduction in maize production. Nevertheless, maize has remained one of the most important agricultural plants in Serbia.³⁹

Besides maize and wheat, Serbia exported other agrarian products, and the basis of its economy was agricultural production. Therefore, when the national school system was established in the 19th century, there was a need for establishing special agricultural schools for peasant children. By 1914, six such schools were founded. Those schools offered agriculture classes and lessons about proper maize cultivation using methods that were new and modern at the time. There were adequate teaching tools, as well as arable land, machines and tools for practical learning. The Agricultural School in Kraljevo, specialized in training in the cultivation of crops, had a collection of 48 different varieties of maize, a seeding machine, and chopper for maize stalks.⁴⁰

A significant number of textbooks, professional and scientifically popular books in the field of agriculture were published for the needs of agricultural schools, as well as for the broader readership audience during the second half of the 19th and early 20th centuries. By the beginning of the 20th century, 369 titles were published in the Serbian language on various agricultural topics. Đorđe Radić's book *Sve o kukuruzu (All About Maize)*, published in 1872, was among them.⁴¹ The author, who is the first Serbian graduated agronomist, described his own experiments with maize, and those experiments are the first description of inter-cultivar hybridization.⁴²

Tests and experiments related to the cultivation of different maize breeds were subsequently continued on experimental fields that belonged to agricultural schools, state agricultural institutions and local agricultural stations. Since 1898, grain quality has been examined at the Agricultural Chemical

³⁷ *Ibidem*.

³⁸ *Статистички годишњак Краљевине Србије*, књ. 5, 336.

³⁹ Г. Гарић Петровић, *Земљорадња у Србији*, 195.

⁴⁰ Г. Гарић Петровић, *Извештај Сретена Л. Поповића из 1886. године о Ратарској школи у Краљеву*, Мешовита грађа – *Miscellanea* 37 (2016) 89.

⁴¹ О. Срдановић-Бараћ, *Библиографија српске пољопривредне књиге Србије и Војводине у XIX веку*, Београд 1965, 11–63.

⁴² Ђ. Радић, *Све о кукурузу*, 15–19; *Poljoprivredna enciklopedija*, т. 2, 56.

and Research Station in Belgrade. Local maize species were examined in that station in the early 20th century.⁴³

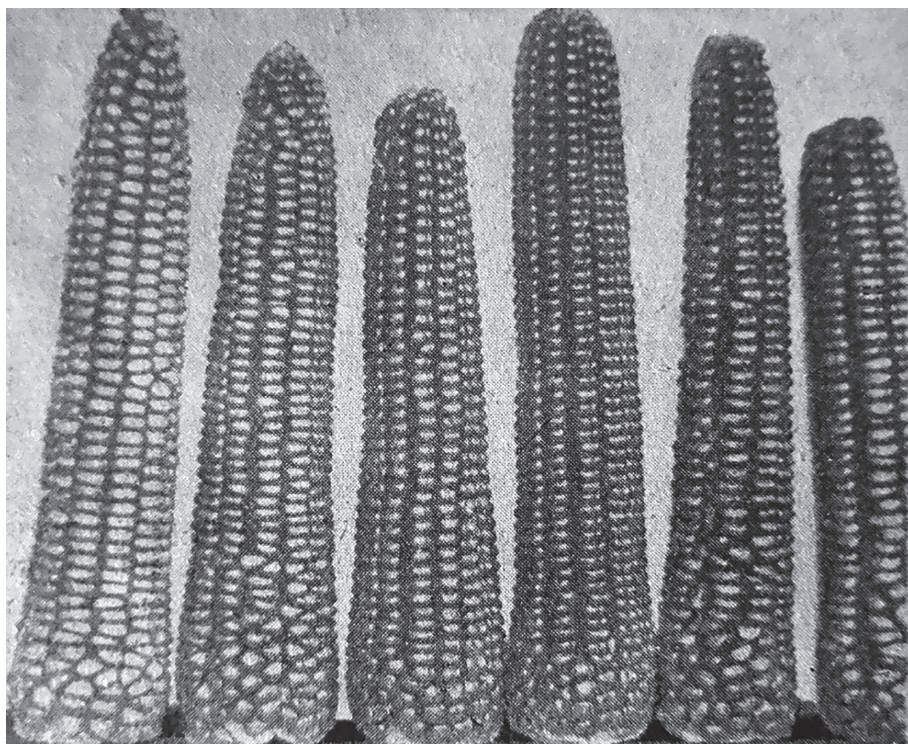


Figure 7: Maize varieties grown in the Valley of Resava

The most widespread maize species in Serbia were common maize (*zea mays vulgata*) and the so-called “white food” (*zea mays vulgaris* var. *alba*) with their varieties. They got different local names depending on the area they were grown on.⁴⁴ Zuban (*zea mays indentata*) and Italian cinquantin were grown on state agricultural properties.⁴⁵

⁴³ М. Бајић, *Анализе пољопривредних производа*, Београд 1911, 128–130.

⁴⁴ М. Николић, *Кукуруз*, 44, 48, 131–140.

⁴⁵ Г. Гарић Петровић, *Земљорадња у Србији*, 110.

The still traditional way of cultivation gave the products a significant quality confirmed at various exhibitions abroad. Thus, at the World Exhibition in Antwerp in 1885, the Kingdom of Serbia received 159 medals, prizes and diplomas for its products. Serbian maize got three silver medals, seven bronze medals and nine commendations. Seventeen years later, 142 maize specimens were presented at the Balkans exhibition in London.⁴⁶

In the Kingdom of Yugoslavia, ten stations for testing, control and selection were operating with the effort to improve maize cultivation. The Agricultural Experimental and Control Station in Topčider continued its work as well, and one of its duties was to examine maize quality.⁴⁷

A large part of the newly formed country had a long tradition of maize production and export, which was continued in the Kingdom of Yugoslavia. Therefore, in the period between the two world wars, Yugoslavia was one of the most important European producers of maize, taking the third place with an average annual production of 2,654,000 tons in the period from 1921 to 1928. The major part of this production was consumed in the country.⁴⁸

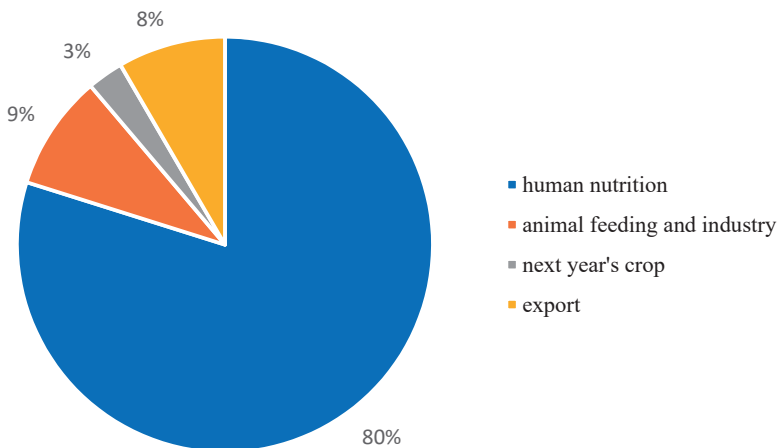


Figure 8: Structure of maize consumption in the Kingdom of Yugoslavia

⁴⁶ *Ibidem*, 107–108.

⁴⁷ *Извештај о раду пољопривредних, огледних, контролних и селекционих станица (од оснивања до краја 1932)*, вол. 1, Београд 1936, 100–197.

⁴⁸ М. Николић, *Југославија и светска производња кукуруза*, 65, 82.

The new momentum in maize production began in 1945. New hybrids and agrotechnical measures boosted maize production.

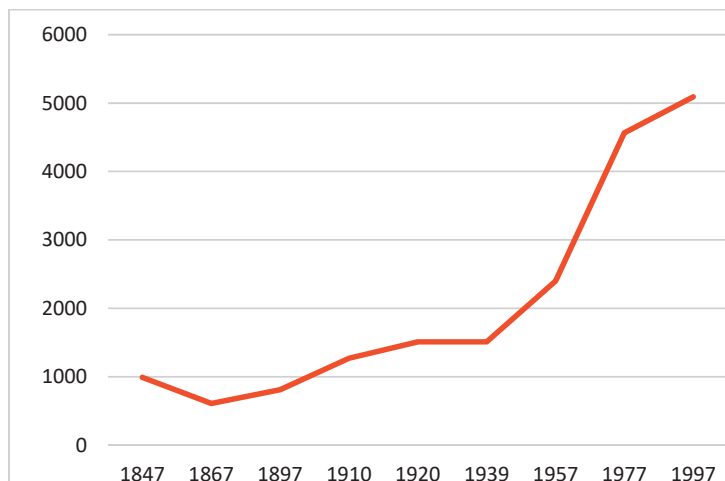


Figure 9: Maize yields in kg per ha in Serbia (1847–1997)⁴⁹

This improvement was mainly possible due to the establishment of the Federal Plant Breeding and Production Institute. It was later transformed into the Maize Institute “Zemun Polje”, which began its work on creating self-fertile inter-cultivar hybrids during the sixth decade of the last century. In 1960 this Institute began to collect local maize populations from the territory of former Yugoslavia. Today, this bank contains 6,000 specimens, which makes it one of the ten greatest banks in the world.⁵⁰

⁴⁹ *Два века развоја Србије*, 121.

⁵⁰ С. Становић, Д. Игњатовић-Мицић, Н. Делић, В. Колчар, *Институт за кукуруз „Земун поље“*, Београд 2015, 1–2, 8.

ЛИСТА РЕФЕРЕНЦИ – LIST OF REFERENCES

Извори – Primary Sources

- Извештај о раду пољопривредних, огледних, контролних и селекционих станица (од оснивања до краја 1932)*, вол. 1, Београд 1936. [*Izveštaj o radu poljoprivrednih, oglednih, kontrolnih i selekcionih stanica (od osnivanja do kraja 1932)*, vol. 1, Beograd 1936]
- Попис обрађене земље у Краљевини Србији 1893 године*, Статистика краљевине Србије, књ. IX, Београд 1897. [*Popis obrađene zemlje u Kraljevini Srbiji 1893 godine*, Statistika Kraljevine Srbije, knj. IX, Beograd 1897]
- Статистички годишњаци Краљевине Србије*, књ. 1–12, Београд 1893–1913. [*Statistički godišnjaci Kraljevine Srbije*, knj. 1–12, Beograd, 1893–1913]
- Шабановић Х., *Турски извори за историју Београда: катастарски пописи Београда и околине 1476–1566*, књ. 1, Београд 1964. [Šabanović H., *Turski izvori za istoriju Beograda : katastarski popisi Beograda i okoline 1476–1566*, knj. 1, Beograd 1964]

Литература – Secondary Works

- Amedoski D., *Društveno-ekonomski odnosi u Kruševačkom sandžaku od sredine XV do kraja XVI veka*, Filozofski fakultet, Univerzitet u Sarajevu 2013. (PhD thesis)
- Bonavia D., *Maize: origin, domestication, and its role in the development of culture*, Cambridge University Press 2013.
- Engel P., *Realm of St. Stephen: A History of Medieval Hungary (895–1526)*, I. B. Taurus, London–New York 2005.
- Etimológiai szótár: Magyar szavak és toldalékok eredete*, Budapest 2006.
- Hegediš A., Čobanović K., *Demografska i agrarna statistika Vojvodine 1767–1867*, Novi Sad 1991.
- Hrabak B., *Izvoz žitarica iz Osmanskog carstva u XIV, XV i XVI stoleću*, Priština 1971.
- Langer J., *Serbien unter der kaiserlichen Regierung 1717–1739*, Mittheilungen des k. k. Kriegsarchiv, Vol. III, Wien 1889, 159–247.
- Poljoprivredna enciklopedija*, t. 2, Zagreb 1970.
- Skok P., *Etimologijski rječnik hrvatskoga ili srpskoga jezika*, knj. 2, Zagreb 1972.
- Zirojević O., *Biljni i stočni fond u vreme turske vladavine*, Naučno djelo akademika Branislava Đurđeva, Sarajevo 2010, 117–124.
- Бајић М., *Анализе пољопривредних производа*, Београд 1911. [Вајић М., *Analize poljoprivrednih proizvoda*, Beograd 1911]
- Благојевић М., *Земљорадња у средњовековној Србији*, Београд 2004. [М. Благојевић, *Zemljoradnja u srednjovekovnoj Srbiji*, Beograd 2004]
- Два века развоја Србије: статистички преглед*, Београд 2008. [Dva veka razvoja Srbije: statistički pregled, Beograd 2008]
- Гарић Петровић Г., *Земљорадња у Србији (1878–1912)*, Београд 2017. [G. Garić Petrović, *Zemljoradnja u Srbiji (1878–1912)*, Beograd 2017]
- Гарић Петровић Г., *Извештај Сретена Л. Поповића из 1886. године о Ратарској школи у Краљеву*, Мешовита грађа – Miscellanea 37 (2016) 85–121. [Garić Petrović G., *Izveštaj*

- Sretena L. Popovića iz 1886. godine o Ratarskoj školi u Kraljevu, Mešovita građa – Miscellanea 37 (2016) 85–121]*
- Грбић С., *Српска народна јела и пића из Среза бољевачког*, Живот и обичаји народни, књ. 14, Београд 1925, 171–336. [Grbić S., *Srpska narodna jela i pića iz Sreza Boljevačkog, Život i običaji narodni*, књ. 14, Београд 1925, 171–336]
- Зиројевић О., *Јело и ниће*, Приватни живот у српски земљама у освит модерног доба, Београд 2005. [O. Zirojević, *Jelo i piće, Privatni život u srpskim zemljama u osvit modernog doba*, Београд 2005, 233–258]
- Јакшић В., *Статистична збирка из србских крајева*, Београд 1875. [Jakšić V., *Statistična zbirka iz srbskih krajeva*, Београд 1875]
- Јованчић Б., *Општински кошеви са резервом хране у Србији од 1830. до 1930. године*, Зборник 6–7 (1991) 196–209. [Jovančić B., *Opštinski koševi sa rezervom hrane u Srbiji od 1830. do 1930. godine*, Zbornik 6–7 (1991) 196–209]
- Мијатовић С., *Српска народна јела (са прилогом о пићима) у Левчу и Темнићу*, Српска народна јела и пића, књ. 1, Српски етнографски зборник, књ. 10, Београд 1925, 5–69. (S. Mijatović, *Srpska narodna jela (sa prilogom o pićima) u Levču i Temniću*, *Srpska narodna jela i pića*, књ. 1, Српски етнографски зборник, књ. 10, Београд 1925, 5–69)
- Мијатовић С., Бушетић Т., *Технички радови Срба сељака у Левчу и Темнићу*, Живот и обичаји народни, књ. 14, Београд 1925. [Mijatović S., Vušetić T., *Tehnički radovi Srba seljaka u Levču i Temniću, Život i običaji narodni*, књ. 14, Београд 1925]
- Миљковић Катић В., *Пољопривреда Кнежевина Србија (1834–1867)*, Београд 2014. (Miljković Katić V., *Poljoprivreda Kneževine Srbije (1834–1867)*, Београд 2014]
- Миљковић-Бојанић Е., *Смедеревски санџак*, Београд 2004. [E. Miljković-Bojanić, *Smederevski sandžak*, Београд 2004]
- Николић М., *Југославија и светска производња и промет кукуруза*, Београд 1931. [Nikolić M., *Jugoslavija i svetska proizvodnja i promet kukuruza*, Београд 1931]
- Николић М., *Кукуруз: употреба, особине, врсте, сорте и гајење*, Београд 1927. [Nikolić M., *Kukuruz: upotreba, osobine, vrste, sorte i gajenje*, Београд 1927]
- Његован З., *Пољопривреда средњовековне Србије*, Београд 1997. [Njegovan Z., *Poljoprivreda srednjovekovne Srbije*, Београд 1997]
- Радић Ђ., *Вођа при газдовању србском народу*, Нови Сад 1867. [Radić Đ., *Vođa pri gazdovanju srbskom narodu*, Novi Sad 1867]
- Радић Ђ., *Све о кукурузу*, Београд 1872. [Radić Đ., *Sve o kukuruzu*, Београд 1872]
- Спасић Д., *Употреба прашача и огртача при гајењу кукуруза*, Београд 1890. [Spasić D., *Upotreba prašaća i ogrtača pri gajenju kukuruza*, Београд 1890]
- Срдановић-Бараћ О., *Библиографија српске пољопривредне књиге Србије и Војводине у XIX веку*, Београд 1965. [Srdanović-Barač O., *Bibliografija srpske poljoprivredne knjige Srbije i Vojvodine u XIX veku*, Београд 1965]
- Срдановић-Бараћ О., *Српска аграрна револуција и пољопривреда Србије од Кочине крајине до прве владе кнеза Милоша (1788–1839)*, Београд 1980. [Srdanović-Barač O., *Srpska agrarna revolucija i poljoprivreda Srbije od Kočine krajine do kraja prve vlade kneza Miloša (1788–1839)*, Београд 1980]
- Становић С., Игњатовић-Мицић Д., Делић Н., Колчар В., *Институт за кукуруз „Земун Поље“*, Београд 2015. [Stanović S., Ignjatović-Micić D., Delić N., Kolčar V., *Institut za kukuruz „Zemun Polje“: juče, danas, sutra*, Београд 2015]
- Тројановић С., *Старинска јела и пића*, Српски етнографски зборник, књ. 2, Београд 1898. [Trojanović S., *Starinska srpska jela i pića*, Српски етнографски зборник, књ. 2, Београд 1898]

- Хегедиш А., *Аграрни односи у Торонталској жупанији и Банату 1779–1848*, Нови Сад 1987. [Hegediš A., *Agrarni odnosi u Torontalskoj županiji u Banatu 1779–1848*, Novi Sad 1987]
- Храбак Б., *Београд као житно тржиште и житарство шире београдске околине у XVI веку*, Годишњак Музеја града Београда 4 (1957) 59–70. [Hrabak B., *Beograd kao žitno tržište i žitarstvo šire beogradske okoline u XVI veku*, Godišnjak Muzeja grada Beograda 4 (1957) 59–70]
- Чајкановић В., *Речник српских народних веровања о биљкама*, Сабрана дела из српске религије и митологије, књ. 4, Београд 1994. [Čajkanović V., *Rečnih srpskih narodnih verovanja o biljkama*, Sabrana dela iz srpske religije i mitologije, knj. 4, Beograd 1994]

Гордана ГАРИЋ ПЕТРОВИЋ

УЗГОЈ КУКУРУЗА У СРБИЈИ: ИСТОРИЈСКА ПЕРСПЕКТИВА

Резиме

Прихватање културе кукуруза представљало је велику прекретницу у земљорадњи на тлу Србије. Узгој кукуруза започиње већ крајем 16. а замах добија у току 17. века. Заједно са културом пасуља, веома се брзо раширила по Балканском полуострву постајући основ исхране сеоског становништва. Пре појаве кукуруза, у Србији су се узгајала стрмна жита о којима су нам сачувани подаци у средњовековним и османским изворима.

Кукуруз се на подручју Србије јавља крајем 16. века и то као баштенска биљка. Према једном рукопису из 1682. године, кукуруз су у Србију донели грчки трговци 1576. године. У првој половини 17. века је узгајан на планини Космају, у близини Београда а крајем истог века често се помиње његов увоз са Балкана на мађарским царинарницама. Током 17. века узгој кукуруза је на простору данашње Србије узео пун замах, потискујући узгој стрмних жита. То потврђују и османски и аустријски пописи вршени током 18. века. Ширење узгоја кукуруза одвијало се са југа ка северу. Са Балканског полуострва он доспева и у области које су припадале средњовековној мађарској држави.

У областима јужно од Саве и Дунава кукуруз постаје главно хлебно жито. Прихватање и ширење ове културе било је узроковано и чињеницом да је постојао мањи ризик од штете, а за сетву кукуруза био је потребна знатно мањи проценат семена него код стрмних жита.

Кукуруз је врло брзо потпуно потиснуо узгајање проса, мешанице и суражице. Он не само да је изменило до тада устаљену заступљеност појединих култура у укупној обрађеној површини и количини приноса, већ је донело велике промене у начину исхране сеоског становништва, плодореду, организацији сезонских радова и појави нових помоћних зграда у домаћинству.

Кукуруз је коришћен у људској исхрани, као и за исхрану животиња. Широку употребу кукуруза омогућио је пространи ареал његовог узгоја. Вишевековни узгој кукуруза резултирао је устаљивањем појединих радова који су већ у другој половини 19. века сматрани традиционалним радовима српских сељака, а кукуруз је имао и свој празник – дан Св. Андрије.

У Кнежевини (Краљевини) Србији површине под кукурузом су током 19. века представљале највећи део ораница. Сразмерно томе и производња кукуруза је била висока а Краљевина Србија је спадала међу веће произвођаче кукуруза у Европи. По количини произведеног кукуруза по глави становника који је 1867. године износио 2,44 hl она се налазила далеко изнад европског просека од 0,39 hl. Велика производња омогућила је и извоз вишкова.

Прва истраживања кукуруза везана су за Ђорђа Радића, нашег првог агронома. Он је у својој књизи “Све о кукурузу”, која је штампана 1872. године, први описао међусортну хибридизацију.

У Србији је био најраспрострањенији жути осмак и бели осмак. На државним пољопривредним добрима узгајани су секлерски (секелски) зубан и италијанки чинкватин.

Прави замах у унапређењу производње кукуруза започиње 1945. године, када је основан Савезни завод за оплемењивање и производњу биља. Из њега је настао Институт за кукуруз „Земун Поље“, који је током шесте деценије прошлог века започео стварање самооплодних међусортних хибрида. У њему данас чува 6.000 узорака и спада међу десет највећих на свету.

Кључне речи: кукуруз, пољопривреда, Србија, Балкан.

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