

UDC 94(477) «179/1917»

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AGRICULTURE, CATTLE BREEDING AND POPULATION OF THE FOREST-STEPPE UKRAINE IN THE PRE-REFORM PERIOD (1846–1863)

The Forest-Steppe Ukraine is the largest region of our country in terms of size and population. For a long time, it was the center of the formation of the Ukrainian ethnic group, and later the nation. On the map of 1648 by the French engineer Guillaume L'Asselier de Beauplan, it is called Ukraine. Later, as a politonym, this name was extended to the entire territory of the modern Ukrainian state, and the region itself remained nameless. At the end of the 19th century, there was an attempt to transfer to the Right-Bank the then official name of the lands of the former Hetmanship and Slobozhanshchyna – Malorossiya, but it lasted only a few decades, until the start of the Ukrainian revolution in the spring 1917. A few years ago, the author of these lines proposed to extend to more recent times the practice, long known among archaeologists, and to call the former Ukraine of Beauplan the Forest-Steppe Ukraine. In the 19th century, it included six large Ukrainian provinces: Kyiv, Podillia, and Volyn on the Right-Bank, and Poltava, Chernihiv, and Kharkiv east of the Dnieper. Favorable natural landscape and mild climate, significant population contributed to ancient traditions of agriculture, cattle breeding, crafts, and trade. At the beginning of the 1860s, here on the territory of 282,230 square versts 10,437,800 people lived. In quantitative terms, the peasantry prevailed, almost completely enslaved on the Right-Bank and represented mainly by Cossacks and state peasants on the Left-Bank. The focus of the author's attention is the problem of the ratio of growth rates of agriculture, animal husbandry and the population of the Ukrainian Forest Steppe region in the pre-reform period, marked, according to the state of the sources, by the years 1846-1863. On the basis of the method of using mass statistical sources developed by the author, it is concluded that in the pre-reform period, the agrarian sector of the Forest-Steppe Ukraine's economy was in a state of transition from stagnation to crisis, since the growth of the main indicators did not correspond to the growth rate of the population.

Key words: *Ukraine, Forest-Steppe Ukraine, agriculture, cattle breeding, population.*

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СІЛЬСЬКЕ ГОСПОДАРСТВО, ТВАРИННИЦТВО ТА НАСЕЛЕННЯ ЛІСОСТЕПОВОЇ УКРАЇНИ У ПЕРЕДРЕФОРМЕННИЙ ПЕРІОД (1846–1863)

Лісостепова Україна – найбільший за розмірами та кількістю населення регіон нашої країни. Довгий час він був осередком формування українського етносу, а пізніше й нації. На карті 1648 року французького інженера Гійома Лавасера де Боплана він так и називається – Україна. Пізніше ця назва у якості політоніма була поширена на усю територію сучасної української держави, а сам регіон залишився без назви. Наприкінці 19 століття була спроба перенести її на Правобережжя тодішню офіційну назву земель колишньої Гетьманщини і Слобожанщини – Малоросія, але вона тривала недовго, до початку української революції весни 1917 року. Багато років поспіль автор цих рядків запропонував поширити на більш близькі до нас часи практику, давно відому серед археологів і називати колишню Україну Боплана Лісостеповою Україною. У 19 столітті до неї належали шість великих українських губерній Київська, Подільська, Волинська на Правобережжі та Полтавська, Чернігівська, Харківська на схід від Дніпра. Сприятливий природний ландшафт і м'який клімат, значна залюдненість сприяли давнім традиціям землеробства, скотарства, ремесел, торгівлі. На початок 1860-х років тут на території у 282 230 кв. верст приживало 10 437 800 чоловік населення. У кількісному відношенні переважало селянство, майже повністю покріпачене на Правобережжі і представлене переважно козаками й державними селянами на Лівобережжі. У центрі уваги автора статті проблема співвідношення темпів приросту землеробства, тваринництва і населення регіону Українського Лісостепу у передреформений період, позначений, у відповідності до стану джерел, 1846–1863 роками. На основі розробленої автором методики використання масових статистичних

джерел робиться висновок, що у передреформений період аграрний сектор економіки Лісостепової України знаходився у стані, перехідному від стагнації до кризи, оскільки приріст основних показників не відповідав темпам зростання населення.

Ключові слова: Україна, Лісостепова Україна, землеробство, скотарство, населення.

Introduction. The Forest-Steppe Ukraine is a historical and geographical region of Eastern Europe, becoming part of the Russian Empire during the 18th century. The administrative development of the Ukrainian Forest-Steppe territory by the Russian Empire was accompanied by the creation of six provinces here – Kyiv, Podillia, Volyn, Poltava, Chernihiv and Kharkiv. Below is a brief introduction to each of them.

The Kyiv province (central city – Kyiv). Created in 1708 and received its final borders in 1797 and 1844. The territory of province in the 1840s was 4,152,260 desiatins (des.)¹, of which 2,352,973 des. arable, 445,460 des. meadows, 56,070 des. pastures, 817,990 des. forests, 214,080 des. under water and settlements. It was divided in 12 districts. In 1846 its population was 1,730,100 people and increased by 1863 to 2,012,090. The main occupations of inhabitants were field cultivation, gardening, beekeeping, cattle breeding, sugar production and other industries and crafts, trade (Статистические труды И. Ф. Штукенберга, 1860: XXVI, 4–16; Военно-статистическое обозрение ... Киевская губерния, 1848: tab. 1; Бойко, Левчук, 2022: tab. 1.2.2, 1.3.2).

The Podillia province (central city – Kamianetspodilskyi). It was formed in 1796. The entire territory of the province in the middle of the 19th century was approximately 3,844,870 des., including 2,439,530 des. under fields, 58,580 des. under gardens, 98,916 des. under meadows, 145,240 des. under pastures, 175,840 des. under water, 138,340 des. under settlements. All territory was divided into 12 administrative districts. The population in 1846 was 1,540,250 and in 1863 it reached 1,868,860. The main occupations of the population were agriculture (field cultivation, gardening, grassland farming, beekeeping etc.), forestry, cattle breeding, sugar production, crafts and trade (Статистические труды ...: XXXIX, 29–35; Военно-статистическое обозрение ... Подольская губерния, 1849: tab. 1; Бойко, Левчук, 2022: tab. 1.2.2, 1.3.2).

The Volyn province (central city – Zhytomyr). Founded in 1796. The territory by the mid-1840s was about 6,376,200 des., of which arable land 2,108,480 des., hayfields and meadows 763,927 des., under pastures, roads and bushes 245,523 des., under forests 2,686,430 des., under rivers, lakes, swamps 206,916 des., under settlements 361,100 des. The entire territory was divided into 12 administrative

districts. The population of the province in 1846 was 1,413,480 people, and in 1863 it grew to 1,602,720. The occupations of the inhabitants were agriculture, cattle breeding, forestry, crafts, and trade (Военно-статистическое обозрение ... Волынская губерния, 1850: tab. 1; Бойко, Левчук, 2022: tab. 1.2.2, 1.3.2).

The Poltava province (central city – Poltava). Founded in 1801–1802 from a part of the former Malorossian province. The total area was 4,540,848 des.: fields 1,774,790 des., steppes, meadows, pastures 1,613,840 des., forests 251,790 des., swamps, reservoirs, sands 493,440 des. In the mid-1840s, 1,688,050 people lived in the province, and in the early 1860s 1,911,800 inhabitants. Administratively the province was divided into 15 districts. The main occupations of the local population were agriculture, cattle breeding, crafts, and trade (Статистические труды ...: XXVII, 3–38; Военно-статистическое обозрение ... Полтавская губерния, 1848: tab. A; Бойко, Левчук, 2022: tab. 1.2.2, 1.3.2).

The Chernihiv province (central city – Chernihiv). It was established in 1796 and consisted of 15 administrative districts. Its dimensions at different times were determined in different ways and refined. As of 1847, its area was determined at 4,618,661 des., which included 254,632 des. occupied by settlements, 329,095 des. of meadows, 4,587 des. of pastures, 789,000 des. of forest, 176,904 des. were covered by roads and reservoirs, 3,064,460 des. were under arable land. In 1846, 1,403,080 people lived here, and in 1863 the population was 1,487,400. The main occupations of inhabitants were agriculture, gardening, beekeeping, cattle breeding, forestry, crafts and trade (Статистические труды ...: XXV, 9–30; Бойко, Левчук, 2022: tab. 1.2.2, 1.3.2).

The Kharkiv province (central city – Kharkiv). In 1764–1765 the Sloboda-Ukrainian province was founded and in 1780 it was renamed Kharkiv. In 1796, the old name was returned to it. In 1802, three districts of this province were annexed to Voronezh province, and in 1824 Starobilskyi district was transferred from the latter in connection with the establishment of a military settlement. Since 1835, the province again became known as Kharkiv. In 1838, the entire area of the province was calculated at 4,835,339 des., of which 1,906,469 des. were under arable land, 1,240,503 des. under meadows, 539,467 des. under forests, 489,366 des. under villages, roads, reservoirs. The administrative territory of the province was

¹ Desiatina (des.) = 1.09 ha = 2.7 ac.

divided into 11 districts. The population in 1846 was 1,425,260, in 1863 1,590,940. The main occupations of the inhabitants were agriculture, cattle breeding, sugar production, various crafts and trade (Статистические труды ...: XXXVIII, 3–31; Бойко, Левчук, 2022: таб. 1.2.2, 1.3.2).

In the proposed study, for the first time the task was set to determine the state and development trend of the main resource components (agriculture, cattle breeding, population) of the Forest-Steppe Ukraine regional system in the middle of the 19th century.

The main range of sources consists of statistical materials and analytical descriptions of agriculture and population of the region, the active publication of which began in the mid-19th century. Links to these publications are provided in the text of the article. Of the available studies, only one work is devoted to the issues of demography and sociology of the Forest-Steppe Ukraine in the mid-19th century (Бойко, Левчук, 2022). Other authors in their studies only partially draw on numerous sources on the history of the Ukrainian Forest-Steppe, without considering it as a single region (Економічна історія України, 2011: 545–555, 601–611; Гуржій, 1954: 53–56, 60–64, 66–74, 83–95, 99–104, 115–117, 120–122, 140; Subtelny, 2009: 251–278; Істрія українського селянства, 2006: 321–331, 357–388).

1. Agriculture

1.1. Fields and field farming

The Kyiv province belonged to the zone of three-field arable farming. Everywhere the fields were divided into three parts, one of which was sown in spring, the second was winter, and the third was under the rest. In the southern districts with black soil ground, the fields were not fertilized. In the northern part of Polissia, sandy soils were fertilized with manure, which, in the absence of livestock, was at best at half the winter wedge. Lack of fertilizers compensated by deforestation with partial burning in place. As a power pulling plow for the cultivation of fields, almost everywhere used oxen. Horses were rarely used in forest areas. To cultivate the soil served plow, soha, ralo and harrow. The Ukrainian plow consisted of a wooden frame with two handles, an iron plowshare weighing between 8 and 12 pounds, iron cutter for soil and wooden shelf for turning. For plowing, it was attached to the front end with two wheels drawn by three pairs of oxen. Such a plow cost 8 rubles and served for a long time. In the north of the province with light soils it was enough one or two pairs of oxen. In Polissia, instead of a plow, often used a single- or double-toothed ralo, drawn by a pair of oxen or horses. Field work started at the end of March after the snowfall. First of all, the

field was plowed with ralo across the autumn plow plowing for the first spring crops. Until April 15 (in the Julian style – Yu. B.) sowed peas, barley and oats. From April 15 to May 15, millet, flax, hemp, beets, cabbage, potatoes, and buckwheat were sown. From June 15th, the mowing began, first in lowlands, then in high places and finally in the forest. Since mid-June, the harvest of winter bread began and in two to three weeks the same of springtime. At first, rye was collected, and then barley, wheat, oats, peas, millet, buckwheat, flax and hemp, which lasted until October 1. When harvesting winter rye and wheat were always cut with a sickle, and a spring crops with a scythe. The harvest was left for several days in the field for drying, then tied up in sheaves and folded to fourteen, covering the fifteenth. The harvest was considered «cops» of 60 sheaves each. The grain was threshed in open places and after drying kept in sheds. From September 1 peasants began to prepare fields for the next harvest. They firstly plowed the plow, then across the field using ralo, harrowed, plowed again, sowed and again harrowed on heavy soils. The field works ended with the first frosts. In the Kyiv province under the fields there were 2,352,973 des. of arable land, or 56.7% of the province territory. In different years yield was not the same. According to I. I. Fundukley, the best winter crop during the period 1836–1845 was in 1843: in Lypovetskyi district self-10², and in Chyhyrskyi self-9. The yield of the self-7 met quite often, especially in Kanivskyi district. The smallest were the harvests of 1839–1840, when the peasants scarcely turned back the spent seed. In Skvyrskyi district 600 thousand quarters³ of only spring bread were collected in 1844, but in the following 1845, even seeds did not return. The average yield in the northern districts was self-2 – self-3, and in the southern self-5 (Статистическое описание Киевской губернии, 1852: 14–19, 29). Potatoes tried to grow all groups of farmers: the landlords in the fields mainly for distillation, the peasants in most on the vegetable beds to compensate for the shortage of cereals. Where it was sown in large numbers (districts Kyivskyi, Radomyshlskyi, Skvyrskyi, Lypovetskyi, Zvenihorodskyi) they used a plow landing, taking small whole clubs. The peasants planted potatoes with a hoe, or doing holes by hands. The dug potatoes peasants were brought to the farmstead and stored in the pits, logs. In the landlords' fields, the potato harvest was laid in pyramids, shifting each layer with

² The ratio of the yield obtained to the volume of seed in the same units of measurement.

³ A quarter was = 2.099 hectoliters. In trade, 9.5 poods of wheat, 6.25 poods of rye, 7.25 poods of barley, 6 poods of oats were counted as a quarter.

straw and filling the entire pyramid on top with sand or earth. Some about 186,207 quarters of potatoes were planted in 1845, and 1,025,144 quarters were harvested, that is, the crop of this culture in the province on average was self-5.5 (Статистическое описание Киевской губернии, 1852: 38–39, 317).

The Podillia province. In terms of soil quality, the province was divided into two parts – forest-steppe and steppe. The first belonged to the most of districts, except Olhopolskyi and Baltskyi together with the Dniester coast. In the forest-steppe part, solid black earths were only in Kamianetskyi and Proskurivskyi districts. The districts of Letychiv, Lityn, Vinnytsia and Bratslav, divided in half by the Southern-Bug River, had black soils on the left bank, and along the right there was a long strip of forests, many already cut down in Vinnytskyi and Bratslavskyi districts. The system of farming was three-fields, with the exception of two steppe districts, where used and the deposit, leaving the part of area to rest for some years. For plowing a heavy plow was used, drawn by three pairs of oxen or a pair of oxen and a pair of horses. They plowed twice in winter, and once in spring. Wheat and rye were sown on the plowed fields in the winter wedge; in spring peasants sowed barley, oats, millet, buckwheat, peas, lentils. Rye was better on forest soils, and wheat, oats, buckwheat on black soil. The average yield in winter and spring was self-6 – self-8. Potatoes in the province grew slightly (for example, in 1846 they collected 156,707 quarters) only for own consumption (Военно-статистическое обозрение ... Подольская губерния, 1849: 90–94, 97).

The Volyn province. Peasants of the southern part of Volyn have long been called Volynians, and the inhabitants of northern Polissia – Polischuks. Agriculture was not the only means of the existence of the Polischuks, largely because of the scarcity of soils. The farming system was three-fields, but in some of the northern districts for lack of qualitative lands was used and two-fields. In some farms of Zhytomyrskyi, Zaslavskyi, Novohradvolynskyi and Ostrozhskyi districts, a fourth field for the cultivation of forage grasses and potatoes was created. But such experiments, as a rule, did not last for a long time. Fertilizers were badly needed on poor Polissia soils and desirable in the south of the province. Manure was brought to the fields partly in the winter, and partly in the summer after planting was completed in the spring. Rye occupied the leading position among winter crops in the Volyn. Wheat was not grown everywhere and in much smaller quantities, usually in forest-steppe areas. For plowing, depending on the soil, used a heavy wheel plow or ralo. Three pairs of oxen or five horses were harnessed to the plow.

After the first plowing in winter, in mid-June, cattle grazed on the field. Since August, the field began to plow and harrow. Peasants sowed rye and wheat at the rate of one quarter of seeds per desiatina of the field. In some places with excessive soil moisture, after sowing, the owners made shallow furrows at a distance of 4 to 6 arshins for a melioration. In Polissia on sandy soils, oats were sown without additional cultivation, yielding good crops. In general, farmers tried to sow oats wherever possible, because of its unpretentiousness to the composition of the soil. Barley and millet with buckwheat were sown on the fields with black soil, starting in mid-April. The buckwheat grew better in Polissia, where it was sown from mid-May to late June. Harvesting began in mid-July and lasted until September. The field for winter crops was prepared from the beginning of summer. It was treated with a plow, a harrow and left to rest before sowing. Usually, they used one quarter of the seeds of rye or barley on the desiatina of the field. The harvest of winter rye and wheat was self-3 – self-7, and the spring crop was self-2 – self-5. Potatoes yielded 1,700–2,000 thousand quarters, especially in Zhytomyrskyi, Ovrutskyi, Rivnenskyi, Lutskyi, Kovelskyi and Volodymyrvolynskyi districts. It almost used to the food and distillery, compensating part of the grain that was sent to the market. Generally, in the mid-late 1840's, the Volyn province had 2,108,485 des. of arable lands under fields, or one third of its total area (Военно-статистическое обозрение ... Волынская губерния, 1850: 72–73, 79–82; Материалы и исследования Волынской губернии, 1868: 53, 55–69, 77, 79–82, 87–88).

The Poltava province. Soils in the Poltava province were quite diverse with a predominance of loams and black soil. The most powerful black soils were disposed in Pyriatynskyi, Prylutskyi, Romenskyi, Konstantynohradskyi, Khorolskyi, and partly in Myrhorodskyi districts. In economic terms, the soils of Poltava province contributed to the development of agriculture. Organic fertilizers were applied irregularly, except for tobacco and hemp plantations.

Grain crops consisted of the following varieties: winter, common, bushy and multi-fruited, and spring rye; ordinary and Himalayan barley; ordinary, black or Arabic and English oats; ordinary yellow and red millet. Buckwheat gave good harvests and occupied an important place in nutrition. It was used to make flour and bake bread, which local poor people preferred over rye. Buckwheat gave cheap bread, destroyed weeds in the field, loosened the soil. After buckwheat, winter crops were sown even without plowing the soil, only passing with a harrow or a light cultivator. After burning, buckwheat straw produced

ash with a rich content of potash, so it was widely used in saltpeter plants. Most buckwheat was grown in the Zolotonoshskyi district. Peas and lentils were grown from leguminous crops. Oil was obtained from the seeds of flax and hemp, less often sesame and madia, sunflower, mustard. In Romenskyi, Lokhytskyi, Prilutskyi, Mirhorodskyi, Zenkivskyi districts, tobacco was grown in fields and gardens. The cultivation of the land was carried out with a plow, with the exception of part of the Konstiantynohradskyi district, where the single-dwellers, brought from Russia to build a defense line in the 1730s, continued to use the soha. Ralo was used on light sandy soils. Working the land with a heavy plow is very time consuming and requires at least 3 pairs of oxen. For this purpose, middle-class peasants combined their capabilities by working the fields in turn. The use of a heavy plow in many places was redundant, since there were almost no virgin areas for which it was intended. But tradition dictated so. Harrows were wooden with iron or wooden teeth. The crop rotation was three-field. The degree of grain yield largely depended on the wet spring. On average, the harvest of winter crops amounted to self-15 – self-20 due to losses during harvesting. The fact is that spring and winter crops ripened at the same time, and the crop was produced mainly with sickles and a lot of grain fell to the ground. With the help of a scythe, peas and buckwheat were collected. Spring sowing began in late March-early April. Buckwheat was sown in June, and on sandy soils in mid-July. Winter sowing began at the end of July. The cultivation and processing of tobacco were concentrated in the northern districts of the province, and primarily in Lokhvytskyi, Pyriatynskyi and Hadiatskyi. The features of the process were associated with the need to use a large number of organic fertilizers and manual work. The main varieties of tobacco produced in the northern part of Poltava province originated from the American one, but differed in quality and processing methods. Turkish and Virgin tobaccos were also used as initial varieties. Seedlings were grown in greenhouses and planted at the end of April. The frames of the greenhouses were glazed or tightened with calico soaked in vegetable oil. Some farms received products up to 400 poods per year (Арандаренко, 1848: 16–17, 23, 30–32; Арандаренко, 1849: 314–320; 19, 13–19).

The Chernihiv province. The soils here were sandy, gray-sandy and blacks in the south of the province. In the north, with soils easy to cultivate, ralo and sokha were used for plowing, in the south – a heavy wheeled plow. In economic terms, the province was divided into three natural-geographical regions. Southern with fertile soils, Kozeletskyi, Nizhynskyi,

Borznianskyi, Konotopskyi, southern parts of Hluhivskyi, Krolevetskyi and Sosnytskyi districts. Here, in addition to growing grain crops, they successfully engaged in cattle breeding, the landlords had factories of fine-fleeced sheep, thoroughbred horses, tobacco growing and beekeeping developed. The standard of living of the native population was sufficient. The central region, the northern parts of Hluhivskyi, Krolevetskyi and Sosnytskyi, as well as Novhorod-siverskyi, Horodianskyi, Chernihivskyi, Osterskyi districts, due to insufficient soil fertility, grew cereal plants only for their own consumption. Cattle breeding was underdeveloped here. In the vicinity of sugar factories, peasants grew sugar beets. Peasants and landowners received their main income from the forest. The northern region of the province, Starodubskyi, Mhlinskyi, Surazhskyi and Novozybkivskyi districts, due to forest and swampy soils, were mainly engaged in the cultivation of hemp, which took all organic fertilizers and a third of the fields were not sown. The average grain yield was low – self-3 in the north ore center and self-6 in the south of the province. The land was plowed for winter crops in June, then a second time in August, when rye was sown for winter crops. For spring grain, the fields were plowed very early in the spring, then back in June, when buckwheat was sown. Peas, millet, wheat and other crops were plowed for the first time in late autumn, and then sown in the spring. The winter crop (rye) was harvested with sickles, less often with scythes, knitted into sheaves and stacked in stacks of 60 sheaves. The spring crop was harvested with scythes. After the sheaves were transported closer to housing and stacked in the threshing floor. They threshed by hand, first for sowing, which began in mid-August and ended in September. Potatoes were grown, but more in the northern districts, where crops grew poorly. Sugar beets grown by peasants for sugar factories, receiving from a good income. From 1 desiatina they received 1000 poods of this beet, getting from 50 to 75 rubles in silver. Growing tobacco has become a high source of income in Sosnytskyi, Nizhynskyi, Konotopskyi, Borznianskyi, Osterskyi and Kozeletskyi districts. Up to 500,000 poods of local tobacco were sold at Nizhyn fairs a year. Flax was sown throughout the province exclusively for their own needs. Hemp was grown mainly in the northern districts, where this industry was the main one and brought the main income (Военно-статистическое обозрение ... Черниговская губерния, 1849: 76–79, 83).

The Kharkiv province. The soil of the province mainly fertile. Sandy spaces were located in Vovchanskyi, Zmiivskyi, Kharkivskyi, Bohodukhivskyi, Starobilskyi and Iziumskyi districts. Fertile soils

almost did not require fertilizers and withstood a three-field economy for almost 15 years in a row. After that, the fields were turned into pastures and hayfields for 5 years, after which their fertility was restored. Starobilskiyi, Zmiivskiyi and Akhtyrskiyi districts were considered the most fertile. The fields were divided into three parts, two of which were sown with spring and winter crops, and the third was left for grazing for a year. Plowing for spring crops began in late March – early April, for winter crops after the end of the harvest. Winter wheat was successfully cultivated only in the northwestern part of the province. The average harvest over many years was 6 quarters of a desiatina. Surplus products were exported to Kursk province. Spring wheat was represented mainly by varieties of arnautka and red rye. Arnautka was grown mainly in the steppe part of the province on virgin lands or old fallows. The best varieties of this wheat were grown in Starobilskiyi and Kupianskiy districts. The average harvest was 5.5 quarters per desiatina. The surplus was exported to the ports of the Azov Sea, mainly to Taganrog, and in the form of cereals to the neighboring Voronezh and Kursk provinces. Red wheat was also grown in the southern districts and brought an average yield of 5.5 quarters per desiatina. The most common grain crop was winter rye, especially in the northwestern part of the province. The average harvest was 6 quarters per desiatina. Rye, unlike wheat, was completely consumed in the province itself, partly for food, and partly for distillation in the form of rye flour. Spring rye was not grown here. Oats were grown in significant quantities for local consumption. The average harvest was 8 quarters per desiatina. Barley was grown in much smaller quantities, with about 5 quarters of a desiatina. Used for the manufacture of cereals, flour, partly for brewing or distilling. Buckwheat was also grown for local consumption at 5 quarters of a desiatina. For themselves, they also grew peas with a yield of 6 quarters from a desiatina. Lentils and beans were grown in small quantities. Millet crops were also insignificant, mainly in the south of the province with an average yield of 8 quarters per desiatina. Of the root crops in field cultivation, potatoes and beets were used. Potatoes were grown with success throughout the province, although their yield in a dry climate was not very high. Sugar beet was grown mainly in the north-west of the province. With relatively small yields, about 70 berkovets⁴ per desiatina, local varieties were distinguished by increased sugar content. Flax was grown mainly for seed production in the southern part of the province. Hemp also did not receive industrial distribution.

⁴ Berkovets = 10 poods = 164 kg.

The imperfection of technologies did not allow to obtain high-quality hemp for weaving ropes from it, and it was estimated at 25% cheaper than hemp from the Oryol and Chernihiv provinces. Sunflowers were grown in small quantities for the seeds, which were a delicacy of the locals. Cultivation of tobacco was far from meeting the capabilities of the province. It received no more than 12 thousand poods a year. The highest grades of American tobacco were bred in the estates of landowners, mainly in Valkovskiyi, Bohodukhivskiyi, Lebedynskiyi and Sumskiy districts. The main amount of low-grade tobacco was produced by the peasants of the Lebedynskiyi and Sumskiy districts (Военно-статистическое обозрение ... Харьковская губерния, 1851: 9, 100, 114–116; Кочетов, 1855: 82–88).

1.2. Horticulture, vegetable growing and melon fields

In the Kyiv province a small garden was an integral part of the Ukrainian peasant homestead, as well as beds for vegetables and some other cultures. In such a garden, each owner had the fruit trees of simple varieties – cherries, wild plums, forest apple and pears. Berry bushes, too, did not differ much from the forest. Gardening was more developed in southern districts and near major cities. Here, walnut trees were grown, turquoise, improved varieties of more common cherries, apple trees, pears, and plums. Proper care of the garden plants in the peasant environment was unknown. Even in the estates of the landlords, scientific gardening was not distributed. Growing vegetables was widespread in the Kyiv province. The beds were sown with potatoes, cabbage, onions, garlic, cucumbers, dill, beetroot, pumpkin and melon. There was corn in every garden. In sugar factories, peasants in farmsteads also grow sugar beets. Some peasants grew hops, tobacco. Hemp or flax grew in every peasant household. Near the cities, vegetables were grown in large quantities: parsley, celery, onions, poppy seeds, green peas, radishes, beans, red asparagus, cauliflower and other crops for sale. Sometimes gardeners switched to a narrow specialization. Thus, in the four villages of Vasylkivskiyi district there were cabbage plantations, from which sales to Kyiv 4,000 rubles were received. In Radomyshl'skiy district near Chernobyl were put up fields with onions for sale in Kyiv (Статистическое описание Киевской губернии, 1852: 40–45).

The Podillia province. In this territory, gardening was more successfully developed in the northern districts and in Transnistria. The peasants did this solely for the purpose of obtaining additional funds for the tax payment. Many owners leased orchards to Old Believers-Pilipones, who hired that peasant to work

in their gardens, while the collected fruits were sold in bulk to Berdychiv. Many garden trees belonged to improved breeds, which we did not see in other Right-Bank provinces. In peasant homesteads, potatoes, corn, beets, carrots, beans, cucumbers, parsley, onions and garlic were grown. In the southern Podillia required vegetables were grown on fields with pumpkins, watermelons, melons, beans and potatoes (Военно-статистическое обозрение ... Подольская губерния, 1849: 104–105).

The Volyn province. In the local gardens dominated pears, apple trees, cherries and plums. The best varieties of cherries were lotus and shpanka, and among the plum Hungarian. Many gardens there were in Starokonstantynivskiy, Novohradvolynskiy and Zaslavskiy districts. In most cases, the owners gave the gardens for rent to Jews or burghers of the nearest towns. The harvest was sold in Volyn and partly in Podillia province. Some specialization was also traced. So, in the village Svytiaz Volodymyrvolynskiy district in the early 1860's about 140 farms were engaged in growing red onions, getting all together up to 2,500 rubles annual profit. Seeds of sugar beet were concentrated near the factories in Zaslavskiy, Kremenetskiy, Starokonstantynivskiy districts (Материалы и исследования Волынской губернии, 1868: 97–102, 120–122).

The Poltava province. Garden vegetables were represented by cabbage of all kinds, beets common, table, and sugar, various types of peas, Turkish beans, corn, carrots, parsley, parsnips, celery, dill, eggplants, onions, garlic, radishes, potatoes. In addition, Jerusalem artichokes, water gourds, cucumbers, various melons, pumpkins (especially in Kobeliakskiy district), various useful herbs were grown. Apple trees, pears, plums, lingonberries, cherries, peaches, apricots, mulberries, walnuts, wild chestnuts, dogwoods, prunes, hawthorns, dogwoods, rose hips, raspberries, currants, gooseberries grew in the gardens, and they gave good fruits without special care from the human side. Grapes were grown in orchards of Konstantynohradskiy and Poltavskiy districts. Crimean and ranets were known among apple trees, and bergamot and French among pears. Among the plums, the best were rengolts, hungarians and opishnianskas. Favorable climate and soil contributed to the spread of gardening throughout the province, but Poltavskiy, Zenkivskiy, Lubenskiy and Lokhvitskiy districts were especially famous for their gardens. Very good apples grew in Zenkivskiy district. In the town of Opishnia, the famous plums were grown, large and sweet, suitable for drying for prunes, salting and pickling. Local residents sent them to Kharkiv and the Don Cossacks Region. Another variety of plums, Hungarian, was

grown for sale in the village of Mgar, Lubenskiy district. In the village of Chernobaika, Zolotonoshskiy district, large and tasty pears were grown. Cherry-shpanka were especially good in the village of the landowner Manko, Lokhvitskiy district. Almost all vegetables were grown by the locals themselves. They specialized in watermelons and melons in the town of Kishinka, Kobeliakskiy district. Local products were also sold in other provinces, as well as onions and garlic, which were grown in large quantities in Myrhorodskiy district (Арандаренко, 1848: 32–33, 54–55; Арандаренко, 1849: 349; Табаководство в Полтавской губернии, 1859: 13–19).

The Chernihiv province. Fruit trees grew well throughout the province. Good gardens were only in the estates of the landowners and brought a good income. Peasants did not develop gardening. Local residents were willing to grow various vegetables: cucumbers, cabbage, beets, radishes, carrots, onions and pickles. In the southern districts melons, watermelons, pumpkins, corn, lentils and beans also grew well. Parsley, celery and other spicy roots were grown only by landowners (Военно-статистическое обозрение ... Черниговская губерния, 1849: 83–84).

The Kharkiv province. Back in the early 19th century, the Kharkiv province was famous for its gardens and the local population received considerable income from the sale of fruits to Moscow and the inner provinces of Russia. By the middle of the century, this branch of agriculture was experiencing a noticeable decline. The reason for this was the negligent attitude of local owners to the business, and on the other hand, the rapid development of horticulture in the neighboring Kursk province. From there, a large number of fruits, especially apples, as well as grafted trees were imported to the Kharkiv province. The very cold winters of 1835–1836 and 1848–1849 also contributed to the decline of local horticulture. The most extensive gardens were found south of Kharkiv, in the northern part of the Valkivskiy district. The landowners Alferovs in the village of Korotich occupied 1,000 desiatins of gardens. One continuous garden was located between the villages of Liubotyn, Ogulsi, Cheremne and the city of Valky. However, most local orchards were created by grafting wild apple and pear trees and cutting down other forest trees that grew between them. Vast glades formed between fruit trees, and such gardens gave relatively small incomes. Large gardens were also found in Zmiivskiy and Bohodukhivskiy districts. Melon growing was a significant part of the agricultural industry near cities and large villages, where there was a good market for the sale of products. The best specialists in this business were con-

sidered by the peasants, who came in many from the Pavlovskiy district of the neighboring the Voronezh province. For renting a desiatina of virgin land, they paid 5–10 kopecks in silver, receiving an income of 100 or more rubles in silver. The best tasting watermelons grew on sandy lands. Italian and Persian melons ripened well only in greenhouses. In the open air, melons of two varieties grew – early and late. The use of early melons in large quantities, as soldiers and recruits from the northern provinces did, was unhealthy. In general, watermelons and melons were eaten mainly by ordinary people, sometimes as the main food with bread in August and September. Cucumbers were cheap, about 10 kopecks per cart, so with a significant harvest they were distributed free of charge. In small quantities, potatoes, beets, corn, and sunflowers were grown on melons. In the gardens, poorly developed, they limited themselves to the cultivation of cabbage. In Lebedynskiy district, state peasants specialized in onion cultivation. It was sold partly in the province itself, and partly transported south to the Azov Sea, where it was exchanged for fish. The village of Yampol was famous for its cultivation of capsicum in large quantities (Военно-статистическое обозрение ... Харьковская губерния, 1850: 121–123; Кочетов, 1855: 89–95).

1.3. Meadows and pastures

In the *Kyiv province* the meadows were divided into three categories – marshy, floodplain and forest. Marsh grasses were less nutritious for livestock, so in *Kyiv Polissia* such meadows were small in size. Floodplain vegetation was more suitable for horses than for cattle. The best meadows and pastures were located in the steppe areas of the Right-Bank. In *Polissia* the harvest of forage grasses was considered normal, when they received 7 carts each of 25 poods from 10 desiatins of meadows; one desiatina of meadows in the steppe gave 120 poods of hay. In the *Podillia province*, hay harvest was 3,956,640 poods per year, an average of 45 poods per desiatina of swamp meadows, 38 poods in forest hayfields, 30 poods in the steppe. The income from one desiatina of hay in the *Kyiv province* was 5 rubles 76 kopecks, in *Volyn* 6 rubles 45 kopecks (Статистическое описание Киевской губернии, 1852: 63–66; 2, p. 97; Военно-статистическое обозрение ... Подольская губерния, 1849: 106–107; Военно-статистическое обозрение ... Волынская губерния, 1850: 84). In the *Poltava province* hayfields were located mostly in the steppes, less often in forests, and meadows only along the banks of the Dnieper. Steppe hayfields gradually fell into disrepair from the mass breeding of sheep hayfields were located mostly in the steppes, less

often in forests, and meadows only along the banks of the Dnieper. Steppe hayfields gradually fell into disrepair from the mass breeding of sheep (Арандаренко, 1849: 320). There were many meadows in the *Chernihiv province*, mainly along the banks of the Dnieper, Desna and other rivers. Specially grasses were not sown, because there was no need for this. Haymaking began in mid-June and lasted until the end of July. Hay was stored in the meadows in haystacks. Up to 35 million poods of hay were collected throughout the province a year. Approximately 7 million poods remained unused for domestic needs. Some of the pastures were rented out by the landowners for herds of cattle, which were driven through the province to Moscow and St.-Petersburg (Военно-статистическое обозрение ... Черниговская губерния, 1849: 84–85). In the *Kharkiv province* the lack of land for most of the population did not contribute to the development of grassland. Only some of the richest landowners, whose estates were located on the left banks of the Vorskla and Donets rivers, had rather large meadows. Most of the meadows were located in the northern part of the province, while in the southern districts parts of the steppes were used, the hay from which was considered the best. There were also pastures for sheep and horses. Field hayfields were located in small areas where horses were used on the farm. On average, from one desiatina they received up to 200 poods of hay (Военно-статистическое обозрение ... Харьковская губерния, 1850: 123).

2. Livestock breeding

The Kyiv province. In 1846, there were 1,817 thousand livestock in the province, including: 112 thousand horses, 567 thousand cattle, 821 thousand sheep, 296 thousand pigs, 21 thousand goats. In 1863, all livestock numbered 1,846 thousand heads, including: horses 135 thousand, cattle 530 thousand, sheep 820 thousand, pigs 330 thousand, goats 31 thousand. Peasants of the *Kyiv province* did not engage in horse breeding, both due to the lack of sufficient haymakers, and due to the use of oxen for cultivating heavy soils. In some large villages there was not a single horse. The local medium and small horses were hardy enough for work, although the peasants kept them in small numbers, about five times less than cattle. Horses were faded on pasture in the summer, hay and spring straw in the winter. Oats were given only on the road or at work. Only some peasants shoes horses in winter. Landowners bought horses for themselves from herds brought to fairs from *Novorossia*, *Bessarabia*, and *steppe Ukraine*. In the middle of the 19th century, there were 9 private horse farms in the entire *Kyiv province*, the most important of which are:

Vasylkivskiy district. Count Branytskyi: 220 mares of various breeds.

Zvenihorodskiy district. Landlord Fundukley: 64 mares of English, Arab, Ukrainian breeds.

Chyhyrnskiy district. Prince Lopukhin: 100 mares of non-pure Arabian and English breeds.

Kanivskiy district. Prince Lopukhin: 71 mares of the Ukrainian breed.

Umanskiy district. Landowner Naryshkina: 67 mares of various breeds; Count Moshchynskiy: 110 mares of various breeds.

Skvyrskiy district. Landlord Rila: 20 mares of Arab, Turkish, Persian breeds.

The largest horse fairs were held in Kyiv (1500–2000 horses), Berdychiv (up to 2000), Bila Tserkva (up to 2000).

In the north of the Kyiv province, cattle were of the local breed prevailed, and in the south, with an admixture of Hungarian cattle, quite common in the neighboring Podillia province, larger in stature, long-horned. This allowed the peasants not only to use animals as draft animals in agriculture, but also to actively engage in transportation on a commercial basis. In addition, there were more distilleries and sugar factories in the southern districts, which provided good fodder for the winter maintenance of cattle. In Polissia, according to experts at the time, it would be more expedient to replace oxen with horses, but this did not happen due to the inability of local villagers to care for horses. In general, good barns were rarely found in the province, and cattle spent the winter under sheds, suffering from pneumonia and other diseases. There was no regular feeding either. Simple peasant cows did not give milk for 3–6 months a year. They milked them, keeping in sight the calf that had already suckled. The highest yields were 6–8 quarts of milk per day after the third calf for 6–8 weeks, and the lowest were around 2 quarts per day. For sale, milk was flooded in jugs. The milk itself was quite fatty, yielding a lot of butter, sour cream, and cheese. Three-year-old oxen were used for work. The yoke was always made in pairs, even though some poor peasants could harness their single ox to the drawbar like horses. Poor peasants sometimes used non-milking cows for work instead of oxen. Working oxen were sold for meat after 3–5 years of use, being first fed for 16–20 weeks with milled grain. In the Kyiv province, landlords were almost not engaged in improving cattle breeds due to the unprofitability caused by periodic epizootics. Improvement of breeds at the expense of Swiss and Hungarian breeds took place in some farms for their own needs and did not bring profit. Small domestic animals in the peasant economy were represented by simple sheep, pigs, goats. Sheep were

shorn once a year, and rams twice a year, yielding 4 to 7 pounds of wool from each animal. Black and white wool were mixed and woven into gray peasant cloth. In the summer, the sheep were grazed, in the winter they were kept in cold barns, fed spring straw mixed with chopped oats. Fine-wool sheep breeding developed almost exclusively in manor estates. In the Kyiv province in 1845, there were 255 thousand sheep of this breed, for summer grazing of which more than 100 thousand desiatins of meadows were needed. An important place in elite sheep breeding was occupied by the Kanivskiy district, followed by the Berdychivskiy, Radomyshl'skiy, Skvyrskiy, Vasylkivskiy, and Kyivskiy districts. Such sheep farming required appropriate specialists and significant costs, which led to its concentration in the large estates of the Poniatovskies, Radzivils, Olizars, Lopukhins, and other magnates. The net profit per head of fine-wool sheep for the year was 14 kopecks. Elite sheep-breeding in manor estates reduced the land funds necessary for the maintenance of peasant livestock, increased the number of poor among the peasants, and undermined the economic potential of field farming and meadow farming. Many pigs were kept not only in villages, but also in towns and cities. Animals slaughtered in the first year yielded 3–4 poods of meat each, and 7–9 poods in the second or third year. Pigs were fattened not in closed barns, but always free. Goats were kept only where there was a sale of their milk and it was mainly done by Jews. Poultry breeding was more profitable near large cities. Peasants brought ducks, chickens, geese, and turkeys for sale in cages of 30–40 pairs each. Geese were bred mainly by Jewish families. According to experts of those times, cattle breeding in the Kyiv province, as well as in the entire Forest-Steppe Ukraine, was not a special branch of the economy. Most of the livestock was intended for domestic use. The lack of horses was replaced by a large number of oxen, which were equally used for plowing and for transporting goods. It was believed that for every desiatina of arable land there were 0.33 cattle and 0.5 small livestock; for each desiatina of meadows, 1.5 head of cattle and 2.5 of small livestock. It was impossible to count how many heads of cattle were per yard, since the largest part of the cattle belonged to landlords, one-dwellers and those rich peasants who were engaged in chumak-business. On the estates of the state peasants, where the economy was in the best condition, there were 3.75 head of cattle and 5.11 of small livestock for each peasant household (Статистическое обозрение коннозаводства, 1847: 211–215; Военно-статистическое обозрение ... Киевская губерния, 1848: 91–93, 98–99; Арсеньев, 1848: 306; Статистический временник,

1866: 158, 242–243; Скотоводство в Киевской губернии, 1857: 6–7).

The Podillia province. According to data from 1846, there were 1,380 livestock in Podillia, including: 95 thousand horses, 407 thousand cattle, 683 thousand sheep, 190 thousand pigs, 8 thousand goats. In 1863, the total number of livestock in the province was about 1,796 thousand heads: horses 160 thousand, cattle 440 thousand, sheep 779 thousand, pigs 392 thousand, goats 25 thousand. Horse breeding of the Podillia peasants was not developed, the horses were short and weak. Horses of the Polish breed, mixed with English and Turkish, prevailed among the landlords. In earlier times, huge herds of wild horses roamed the steppes of the Baltic region without supervision. The herd keeping of horses was preserved in the middle of the 19th century, but under supervision so that the breeds did not mix with each other. At that time, there were 28 private horse farms in Podillia. The largest of them were:

Haisynskyi district. Landlord Podgorskyi: 150 and landlord Charnovskyi: 100 horses of the Asian breed.

Olhopolskyi district. Count Hudovich: 145 horses of the Arabian breed.

Baltskyi district. Landlord Yanyshevskyi: 150 horses of the Armenian breed.

Yampilskyi district. Landlord Huzhitskyi: 150 horses of the Polish breed.

The good condition of factories was determined not only by horses, the maintenance of which involved significant expenses, but also by a good breed of breeding stallions. However, in general, there were not enough horse farms in Podillia, as evidenced by the horse fairs. Horse fairs in the Podillia province took place in two places – Balta and Yarmolyntsi. In the city of Balta, up to 20 thousand herd horses were driven to Sviatoduhiv fair, and about 4 thousand herd horses to Petrivka. In the town of Yarmolyntsi, Proskurivskyi district, up to 2 thousand factory and herd horses were brought to the auction. The best conditions for keeping a significant number of high-breed cattle were only in the south-eastern districts Baltskyi, Olhopolskyi, Yampilskyi, where this was mainly done by landowners. Peasant cattle were small local breeds, mixed with Moldavian ones. Milk and dairy products were obtained only for personal consumption and they were expensive in the cities. Negligence in keeping oxen and cows in the winter led to the fact that they were barely alive in the spring and were fattened throughout the summer. A pound of fresh meat cost 90–140 kopecks, and live young bulls were sold for 9–30 rubles. In the Podillia province, in Olhopolskyi district, cattle were raised in the estates of Prince Wittgenstein, in Baltskyi, in the economy

of Mr. Janyshevskyi, where 1,1 thousand cattle were kept, including the Hungarian breed. There was a cattle farm of Tyrolean and Hungarian breeds in the town of Zinkiv in Letychivskyi district, and 1,3 thousand heads of Tyrolean and Swiss breeds were counted in Proskurivskyi district. Many landowners were also engaged in elite sheep breeding. The most famous were the sheep farms of the Duke of Anhalt-Kettenskyi in Haisynskyi district, the landlords Sabanskyi and Barchevskyi in Olhopilskyi district, Suliatskyi in Mohilev-Podilskyi, Pototskyi, Ruzytskyi, Komar, Brzezhevskyi in Baltskyi district. In the mid-1840s, 18 thousand poods of wool were obtained from 300,3 thousand thin-fleece sheep in 51 Podillia sheep farms. The largest number of pigs were kept in Proskurivskyi and Letychivskyi districts with black-soils and forests. Town Jews kept more than 10 thousand goats, and landowners up to 700 donkeys. The largest number of livestock was in the Baltskyi, Kamianetskyi, Olhopolskyi districts, and the least in Ushytskyi, Bratslavskyi, and Vinnytskyi ones. On average, there were 3 cattle and 5 small cattle per peasant yard (Статистическое обозрение коннозаводства, 1847: 72–77; Военно-статистическое обозрение ... Подольская губерния, 1849: 99, 107–109; Арсеньев: 309–310; Статистический временник, 1866: 158, 242–243).

The Volyn province. In 1846, there were 1,96 thousand livestock throughout the province, including: 224 thousand horses, 412 thousand cattle, 997 thousand sheep, 304 thousand pigs, 23 thousand goats. In 1863, there were about 2,103 thousand livestock in the province: 215 thousand horses, 514 thousand cattle, 958 thousand sheep, 393 thousand pigs, 23 thousand goats. Peasant's horses were short, but stronger than in other forest-steppe provinces, even two-year-old were used for work, which caused them to stop growing and get sick. The peasants themselves did not breed horses, but bought them at fairs from other provinces. There were 22 horse farms in the province, but the most notable was only Prince Sangushko in Zaslavskyi district, where they kept 180 Arabian mares and 130 stallions at a price of up to 5 thousand silver rubles and more. The largest number of horses were kept in Starokonstantynivskyi, Zaslavskyi, Zhytomyrskyi and Volodymyrvolynskyi districts (15 to 20 thousand heads each). The main horse fair was held in the village of Kulchyn of Starokonstantynivskyi district (Статистическое обозрение коннозаводства, 1847: 216–218; Военно-статистическое обозрение ... Волынская губерния, 1850: 80, 87–89, tab. 1; Арсеньев, 1848: 308; Статистический временник, 1866: 158, 242–243).

The Poltava province. According to data from 1846, the number of domestic animals in the Poltava province was 3,043 thousand heads, including: horses 67 thousand, cattle 691 thousand, sheep 1,648 thousand, pigs 597 thousand, goats 4 thousand. In 1863, there were 3,260 thousand livestock: 170 thousand horses, 633 thousand cattle, 1,930 thousand sheep, 521 thousand pigs, 6 thousand goats. Throughout the province, the herd form of raising and keeping horses prevailed, as the most profitable for the landowners. In the summer, the horses were kept on pasture, and in the winter in simple pens, with the exception of those intended for sale, which were kept in stables. In large factories, stone or warm wooden barns were set up to keep stallions and selected queens. There was plenty of pasture almost everywhere, especially in the districts of Konstantynohradskyi, Khorolskyi, Hadiatskyi, Zolotonoshskyi and Pyriatynskyi. Horses were let out for fodder starting from April 20, first in the designated stalls, then, after removing the hay, in the hayfields, and finally, after the harvest, in the fields, where they remained until late autumn. In winter, factory horses were kept on hay and partially on spring straw. Cossacks and state peasants of the Poltava province did not have horse farms. They kept from one to three horses for their own use. One-dwellers of Konstantynohradskyi district from the former Cossacks of the Zasichna Line sometimes had small herds of 40 or more horses. The breed of peasant's horses came from the Crimean-Tatar horses, but they were smaller in height. There were 463 horse farms throughout the province. The most significant among them were the following:

Zolotonoshskyi district. Prince Baryatynskyi had 15 stallions and 146 mares, a total of 326 horses of English and Arabian breeds; landlady Frolova-Bagreyeva had 6 stallions and 77 mares, a total of 215 horses of the English breed; landlord Neverovskyi: 28 horses of the English breed.

Poltavskyi district. Landlady Baranina: 77 horses of the English breed.

Kobeliakskyi district. Landlord Kozelskyi: 70 horses of the English breed.

Kremenchukskyi district. Landlord Rodzianko: 65 horses of the English breed.

Romenskyi district. Landlord Svieta: 58 horses of the English breed and landlord Novitskyi: 128 horses of the English breed.

Konstantynohradskyi district. Landlord von Ziegler: 150 horses of the English breed; landowner Poznańskyi: 92 trotting horses.

Prylutskyi district. Landlord Makarov: 55 horses of the Orlov breed; landlord Trifonovskyi: 103 horses of English and Arabian breeds; landlord Trotsyn:

85 horses of English and Arabian breeds; landlord Aleksandrovychev: 287 horses of English and Arabian breeds; landlord von Ritter: 162 horses of English and Arabian breeds.

Myrhorodskyi district. Landlord Markov: 82 horses of trotting, Arabian and English breeds.

Lokhvytskyi district. Heirs of landowner Savytskyi: 111 horses; heirs of landowner Manko: 163 horses of various half-breeds; landlord Martos: 156 horses of English and Arabian breeds.

Hadiatskyi district. Prince Repnin: 207 horses of the English breed.

Zynkivskyi district. Landlord Nezhintsov: 89 horses of Arabian and Ukrainian breeds; landlord Dublianskyi: 106 queens of the Ukrainian breed.

The horse factories of the Poltava province annually supplied the army with quite good horses, both for light and heavy cavalry. The Poltava breed of horses originated from the crossing of Spanish, Danish, English, Asian breeds with local breeds. The most important horse fairs in the Poltava province were the next. In the city of Romny: 1) Illinska (July 1 – August 1) up to 4 thousand horses; 2) Voznesenska (from the Ascension to the Trinity) brought up to 2 thousand horses. In the city of Kremenchuk there were up to 300–500 horses, as well as in Poltava and Lubny. Some factory horses were also sold at these fairs, but most of the repairers, horsemen and Jewish merchants bought horses directly from the factories. In addition to Russian repairmen, Austrian ones also came to the Illinska fair in Romny. During horse fairs in Poltava and Romny, peasant's horses were tested for running speed and carrying loads. At fairs, queens were sold for 10–15 silver rubles, and three-year-old stallions from 15 to 28 silver rubles. Cattle in the Poltava province occupied a honorable place in the herd of domestic animals. The Wallachian breed, which was also called Ukrainian or Cherkasy, prevailed. But the Cherkasy breed came from the Hungarian breed and had nothing to do with the Ukrainian breed, which was more suitable for work. The best variety of the latter was called Chumatskyi and was gray in color. The largest population of the Ukrainian breed was in the landlord's and peasant's farms of Zolotonoshskyi, Khorolskyi, Kobeliakskyi, Myrhorodskyi districts. In Poltava region, sheep breeding has long been quite developed. Russian and Crimean breeds were preferred among fine-wool breeds. Sheepskin and wool were traded at fairs in Poltava and Reshetylivka. To a large extent, the Cossacks-farmers of the southern districts of the province were engaged in sheep-breeding. Peasant's pigs were of medium height with short legs and a large body. An improved breed from crossing the local breed with the Jutland breed was known

in the landlord estates. The landlord's pigs were fattened mainly by bard at distilleries (Статистическое обозрение коннозаводства, 1847: 62–67; Военно-статистическое обозрение ... Полтавская губерния, 1848: 64–67, tab. А; Арсеньев, 1848: 317–318; Арандаренко, 1848: 71–72, 74, 79–83; Арандаренко, 1849: 321; Статистический временник, 1866: 158, 242–243).

The Chernihiv province. In 1846, the number of livestock in the Chernihiv province was 1,563 thousand including: horses 285 thousand, cattle 254 thousand, sheep 633 thousand, pigs 374 thousand, goats 16 thousand. In 1863, the domestic herd consisted of about 2,163 thousand heads: horses 420 thousand, cattle 400 thousand, sheep 790 thousand, pigs 480 thousand, goats 73 thousand. The peasants of the Chernihiv province had their own breed of horses, small but strong, mainly in Novozybkivskiyi and Horodianskiyi districts. Horses as a draft force prevailed in the northern districts, and oxen in the southern ones. There were 91 private horse farms in the province, the best of which were the following:

Sosnytskiy district. Landlord Lyzogub: 26 mares of the English breed.

Konotopskiy district. Landlord Tarnovskiy: 80 mares of the English breed; landlord Skoropadskiy: 40 mares of the English breed.

Nizhynskiy district. Landlord Brianken: 52 mares of English and Arabian breeds; landlord Romanovych: 49 mares of the English trotting breed.

Borznenskiy district. Landlord Zabila: 30 mares of the English breed; landlord Obolonskiy: 42 mares of the English breed; landlady Horeslavka: 40 queens of the English breed. In the five German colonies of this district, there were up to 600 mares, purchased from the best stud farms of Poltava province. Colonists' horses were sold at fairs from 70 to 200 silver rubles.

The most important horse fair took place in the city of Nizhyn, to which more than 700 factory breeding and herd horses were brought. Since 1845, as in other provinces, breeding stables were established in the Chernihiv province: 60 beautiful stallions wintered in the city of Chernihiv at the expense of the zemstvo fees. Since early spring, they were transported to different districts for free to improve the local horse population. As for the cattle, the landlords had mainly a mixture of Kholmogory and Ukrainian breeds, although English ones were also found. Elite sheep farms were established in the estates of Prince Razumovskiyi, Count Apraksin, Prince Golitsyn, Princess Urusova and Prince Kochubey (Статистическое обозрение коннозаводства, 1847: 78–81; Арсеньев, 1848: 315–317; Военно-статистическое обозре-

ние ... Черниговская губерния, 1849: 86–87, tab. 1; Статистический временник, 1866: 158, 242–243).

The Kharkiv province. As of 1846, there were 2,654 thousand livestock in Kharkiv province, including: 110 thousand horses, 584 thousand cattle, 1,463 thousand sheep, 494 thousand pigs, 3 thousand goats. In 1863, about 2,557 thousand domestic animals were kept in the province: 230 thousand horses, 651 thousand cattle, 1,242 thousand sheep, 422 thousand pigs, 12 thousand goats. The villagers of the Kharkiv province consisted of Ukrainians and Russians. The first gave preference to oxen, the second to horses in the farm. In general, peasant's horses were small and weak, they were sold for 200 paper rubles. There were 112 horse farms in the Kharkiv province, of which 4 were state-owned and 98 were private. State factories (Derkulska, Striletska, Lymarivska, Novo-Olexandrivska) were located in Starobilskiyi district under the common name of Bilovodsk. The most notable among the private were the following:

Vovchanskiy district. General Zadonskiy: 100 mares of English riding breeds, thoroughbred Arabian, trotting riding Orlov; Count Hendrykov: 60 mares of the Danish breed and the Orlov trotte; landlord Cousin: 80 mares of mixed English, Danish and trotting breeds. The first two of them were distinguished by high-quality keeping and careful sorting of horses; the last two specialized in repairing light and heavy cavalry.

Kharkivskiy district. Landlord Veselovskiy: 80 mares of selected riding English and trotting Orlov breeds.

Kupianskiy district. Landlord Soshalskiy: 40 mares of mixed English and Danish breeds; landowner Mechnikov: 40 mares of Arabian and English breeds.

Starobilskiy district. Landowner Teleshov: 75 selection mares of the Orlov breed; landlord Sukhanov: 70 mares of the riding English breed.

Iziumskiy district. Landlord Martynov: 25 mares of Arabian and Orlov breeds; landlord Horpinchenkov: 25 mares of the Orlov breed; landlady Bakhmetyeva: 20 mares of Arabian and Oryol breeds; landlord Bantysh: 20 mares of horse and carriage breeds of Razumovskiyi factory.

Zmiivskiy district. Landlords Stremouhovs: 30 mares of mixed English and Persian breeds.

Sumskiy district. Landlord Kondratiev: 60 mares of English, Danish and partially Oryol breeds; landlord Pokhvisnev: 40 mares of the English breed.

Valkivskiy district. Landlord Shidlovskiy: 30 mares of the Orlov breed.

The estimated number of mares at all horse farms of Kharkiv province was 14 thousand which could

produce 10 thousand horses, of which at least 3 thousand went to repair the cavalry. Keeping horses was not always of high quality. Where horses and sheep were kept together in the winter at factories, the best varieties of hay were given to sheep, and horses were kept almost exclusively on straw, little attention was paid to the quality of water at watering holes. The largest horse fairs in the Kharkiv province were held in the cities of Kharkiv (up to 1 million rubles) and Sumy (up to 2,7 thousand horses). Cattle were represented mainly by the Ukrainian breed, but gradually degenerated and became smaller. A pair of oxen cost 30 silver rubles. Breed improvement was carried out mainly in the estates of landowners. Sheep breeding was one of the most important branches of animal husbandry, and in terms of the number of Merinos, the province was second only to Tavrida province. All the wool was sold at the Kharkiv Fair and partly in Romny. Pigs were mainly kept by poor peasants (Статистическое обозрение коннозаводства, 1847: 68–71; Военно-статистическое обозрение ... Харьковская губерния, 1850: 126–128, tab. 1; Арсеньев, 1848: 319–320; Статистический временник, 1866: 158, 242–243).

3. Generalization

In the final part of our study, based on the above data, we will try to determine the state of the regional system vital resources in their most important manifestations. These include, first of all, agricultural land, the main types of domestic animals and, of course,

population – the main producer and consumer of agricultural products. It is important to note that the constant growth of the population was carried out in the conditions of the exhaustion of the possibilities of including new agricultural territories in circulation, as well as the low productivity of the manual labor of peasants. The last social category ranged from 75% of inhabitants on Volyn to 96% in the Kharkiv province. Before the reform of 1861, 60–68% of the rural residents of the Right-Bank provinces and 29–44% of the Left-Bank peasants were serfs (Бойко, Левчук: 132–140, tab. 2.2.11).

Agricultural land (tab. 1). The total area of six provinces of the Forest-Steppe Ukraine was about 29,321 thousand desiatins (des.) in the middle of the 19th century. The most extensive of them was the Volyn province with 6,518 thousand des. The sizes of the rest provinces ranged from 4,541 (Poltava) to 4,975 (Kharkiv) thousand des. These large areas were not fully used for agricultural needs. So, in the Volyn province was cultivated from 44.1% (1846) to 45.9% (1863) land, and other territory was occupied by forests, rivers, lakes, swamps, roads, sands, shrubs and settlements. In two other provinces of the Right-Bank, the Kyiv and Podillia, agricultural land occupied from 60.2% to 69.2%. On the Left-Bank, this figure was slightly higher – from 67.3% (the Chernihiv pr.) to 76.4% (the Kharkiv pr.). In general, the total size of agricultural land for the period from 1846 to 1863 increased by 508 thousand desiatins (2.7%),

Table 1

Agrarian landscape of the Forest Steppe Ukraine (1846–1863)

Case	Provinces					
	Kyiv		Podillia		Volyn	
Year	1846	1863	1846	1863	1846	1863
Province area*	4650	4650	3879	3879	6518	6518
Agricultural land*	2799	3125	2684	2631	2873	2990
Arable *	2353	2657	2440	2015	2109	2200
Meadows*	446	468	244	616	764	790
Agricultural land %	60.2	67.2	69.2	67.8	44.1	45.9
Arable %	50.6	57.1	62.9	51.9	32.4	33.8
Meadows %	9.6	10.1	6.3	15.9	11.7	12.1
Meadows to arable%	19.0	17.7	10.0	30.6	36.1	35.8
Case	Poltava		Chernihiv		Kharkiv	
Province area	4541	4541	4788	4788	4975	4975
Agricultural land	3209	3478	3394	3220	3777	3800
Arable	1775	2000	3065	2600	2269	2300
Meadows	1434	1478	329	620	1508	1500
Agricultural land %	70.7	76.6	70.9	67.3	75.9	76.4
Arable %	39.1	44.0	64.0	54.3	45.6	46.2
Meadows %	31.6	32.5	6.9	12.9	30.3	30.2
Meadows to arable%	90.8	73.9	10.8	23.8	65.6	65.4

*Thousand desiatins (des.). Sources: Calculated by the author.

of which a noticeable increase was in the provinces of Kyiv (326 thousand), Volyn (242 thousand) and Poltava (269 thousand), some reduction was seen in Podillia (-53 thousand) and the Chernihiv (-174 thousand) provinces. Preservation of the initial state was fixed in the Kharkiv province (23 thousand). All this was connected both with the further inclusion of previously unused lands in the agricultural fund, and with changes in the structure of agricultural lands themselves, which were divided primarily into arable and meadow.

Field farming occupied a fundamentally important place in the life of the local population, since it provided vital food, feed for most types of domestic animals, and industrial crops. In this regard, it is important to note that in the context of a noticeable population growth, the total size of arable land in the region decreased by 239 thousand des. (-1.7%) by 1863, primarily due to the provinces of Podillia (-425 thousand) and Chernihiv (-465 thousand). In Kyiv and Poltava provinces, on the contrary, the area of fields increased by 304 and 225 thousand des., respectively. In Volyn, the increase in arable land amounted to 91 thousand desiatins, while in Kharkiv province it was hardly noticeable (31 thousand desiatins).

Meadows and hayfields were intended for summer grazing of animals and the preparation of valuable fodder, mainly for sheep and horses. By the beginning of the 1860s, compared with the mid-1840s, the size of this category of agricultural land increased by 747 thousand des., or 15.7%. The leaders in this regard were the provinces of Podillia (an increase of 372 thousand des.) and Chernihiv (an increase of 291 thousand des.). The rest of the provinces, apparently, had previously reached the optimal ratio of arable and meadow lands for them and subsequently only made minor adjustments. In this regard, the indicator of the ratio of meadow and ara-

ble land in the provinces is very informative. The highest it was in the provinces of Poltava (80.8% in 1846 and 73.9% in 1863) and Kharkiv (65.6% in 1846 and 65.4% in 1863). Only in those two administrative areas 54.4% of all meadows and hayfields of the Forest-Steppe Ukraine were concentrated by the beginning of the 1860s. In Volyn, this ratio increased from 30.6% to 36.1%. It seems that the specified province has become a reference for some others, because as a result of structural changes in the Podillia province, the ratio of meadows and arable land increased here from 10.0% to 30.6%, and in the Chernihiv province from 10.8% to 23.8%. Only in the Kyiv province, we observe a different trend, not to growth, but to some reduction in the share of meadows compared to arable land.

A generalized idea of the common and special features of the size and structure of agricultural land in individual provinces and the region as a whole is given by a cluster analysis of the main parameters of the subsystem under consideration (fig. 1). On the presented dendrogram and the accompanying table of distances between objects in the Euclidean space, two clusters with internal structures of different levels of complexity are clearly traced. One of them united the Poltava and Kharkiv provinces with their stable and peculiar structure of agricultural lands within the framework of the Ukrainian Forest-Steppe, suggesting an important role for grassland. The core of another cluster was the provinces of Podillia and Chernihiv, where the initial decisive predominance of fields over meadows by the end of the period under review was partly violated in favor of meadows due to a significant reduction in arable land. Their nearest periphery in the cluster group was the Kyiv province, since all three provinces at the beginning of the period had the same type of structure of agricultural territories, but only the Kyiv province was able to maintain it, while

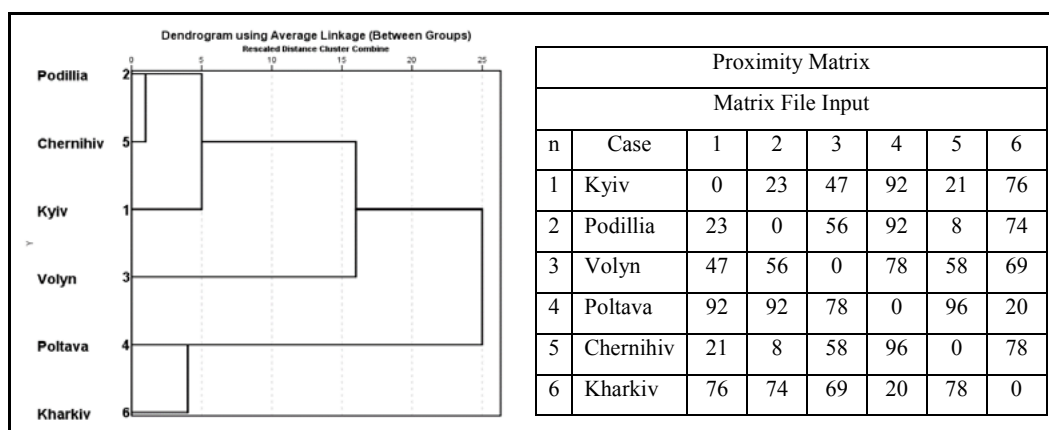


Fig. 1. Agricultural land: cluster classification of provinces (to tab. 1)

slightly increasing the size of arable land. On the far periphery of the group, we see the Volyn province, the structural parameters of which were gradually approaching the provinces of Podillia and Chernihiv.

Herd of domestic animals (tab. 2). Among the many animals that in one way or another accompanied the life of the local people, horses, cattle, sheep and pigs were of primary economic importance.

The main purpose of horses was to serve as draft animals on the farm. True, in the Forest-Steppe they often lost in this respect to the oxen more familiar to Ukrainians. At the beginning of the period under consideration, there were approximately 830 thousand horses in the entire region, and in the early 1860s their number reached 1,330 thousand heads (an increase of 48.9%). The difference in the number of horses between the Right-Bank and Left-Bank parts of the Forest-Steppe was at first insignificant and amounted to only 7.2% in favor of the Left-Bank. By the end of the period, there were already 60.8% more horses on the Left-Bank part than in the provinces to west of the Dnieper. Let's look how the noted changes occurred. In 1846, 509 thousand (57.0%) of all horses were concentrated in Volyn and in the Chernihiv province. Next, with a significant margin, were the provinces of Kyiv (112 thousand) and Kharkiv (110 thousand). Even fewer horses were in the Podillia (95 thousand) and Poltava (67 thousand) provinces. By the beginning of the 1860s, the Chernihiv and Volyn provinces

remained among the leaders in terms of the number of horses, when in the first of them the number of these animals reached 420 thousand (an increase of 47.4%), and in the second it even decreased by 9 thousand (-4.0%). The number of horses also increased rapidly in other provinces: in Poltava on 103 thousand (rise on 153.7% to 1846), in Kharkiv on 120 thousand (rise 109.1%), in Podillia on 65 thousand (rise 68.4%), but in the Kyiv province on 23 thousand (rise 20.5%).

Cattle were distributed across the Forest-Steppe region more evenly than horses. In the mid-1840s, there were about 2,915 thousand of these animals in six provinces, and their number increased by the end of the period to 3,168 thousand, or by 8.7%. Insignificant differences between the Right-Bank and the Left-Bank parts of the Forest-Steppe in terms of the number of bulls and cows persisted until the early 1860s, although they did not exceed 10.3–13.5% in favor of the Left-Bank. As of 1846, the largest number of cattle was noted in the provinces of Poltava (691 thousand), Kharkiv (584 thousand), Kyiv (567 thousand), and least of all in the Chernihiv province (254 thousand). In the future, up to 1863, the largest increase in the number of such kind of animals was observed in this province (57.5%) and in Volyn (24.8%).

Sheep were the most numerous domestic animals in the considered region of Ukraine in the middle of the 19th century. In 1846, their number was 6,245 thousand and increased by 1,863 (4.4%), despite the fact

Table 2

Livestock landscape of the Forest Steppe Ukraine (1846–1863)

Case	Provinces					
	Kyiv		Podillia		Volyn	
Year	1846	1863	1846	1863	1846	1863
Horses*	112	135	95	160	224	112
Cattle*	567	530	407	440	412	567
Sheep*	821	820	683	779	997	821
Pigs*	296	330	190	392	304	296
Horses %	12.5	10.2	10.6	12.0	25.1	12.5
Cattle %	19.5	16.7	14.0	13.9	14.1	19.5
Sheep %	13.1	12.6	10.9	11.9	16.0	13.1
Pigs %	13.1	13.0	8.4	15.4	13.5	13.1
Case	Poltava		Chernihiv		Kharkiv	
Horses	67	170	285	420	110	230
Cattle	691	633	254	400	584	651
Sheep	1648	1930	633	790	1463	1242
Pigs	597	521	374	480	494	422
Horses %	7.5	12.8	31.9	31.6	12.3	17.3
Cattle %	23.7	20.0	8.7	12.6	20.0	20.5
Sheep %	26.4	29.6	10.1	12.1	23.4	19.1
Pigs %	26.5	20.5	16.6	18.9	21.9	16.6

* Thousand heads. Sources: Calculated by the author.

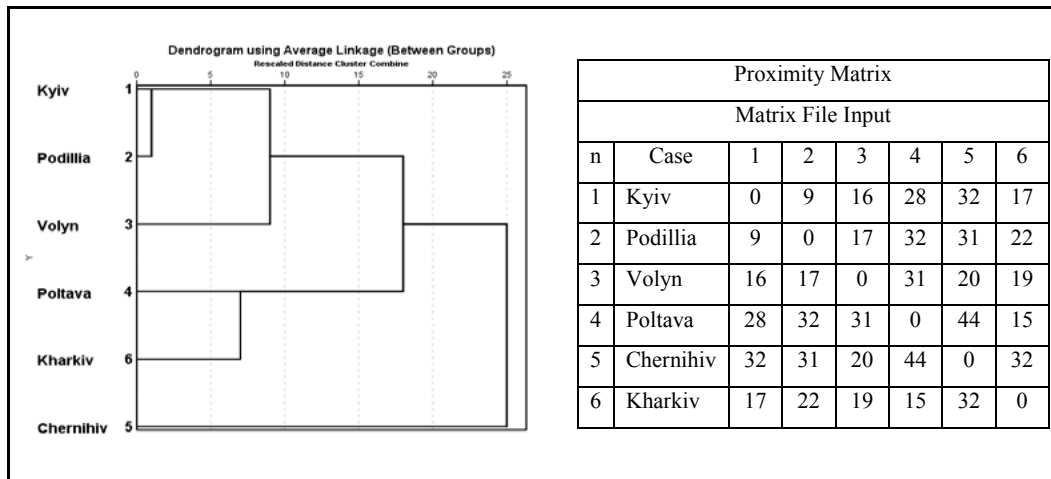


Fig. 2. Livestock: cluster classification of provinces (to tab. 2)

that almost 2/3 of the herds were on the vast pastures of the Poltava and Kharkiv provinces in the Left-Bank Forest-Steppe. By the beginning of the 1860s, both provinces retained their leading positions in sheep breeding, but if in the Poltava province the livestock increased by 17.1%, then in the Kharkiv province it decreased by 15.1%. At the same time, one cannot fail to note the growth in the importance of sheep breeding in the Chernihiv (by 17.1%) and Podillia provinces (by 14.1%). The Kyiv and Volyn provinces, apparently, by that time had already exhausted the possibilities for the extensive development of sheep breeding in the territories allotted to them.

Pigs, unlike horses, cows, bulls and sheep, are omnivores. Because of this, in a domesticated form, in some cases they act as a competitor to humans in the struggle for food. Despite the common tales about the immense love of Ukrainians for pork, there were not very many of these animals in the Forest-Steppe Ukraine in the middle of the 19th century, more than horses, but less than cattle and, especially, sheep. In 1846, according to various sources, there were about 2,225 thousand pigs in the entire region, and after the next 18 years – about 2,538 thousand, or 12.5% more. At the beginning of the period under review, the center of pig breeding was the Left-Bank of the Dnieper, where 65.0% of the total livestock was located in the Poltava, Kharkiv and Chernihiv provinces. By the early 1860s, this gap began to gradually narrow. The new leader in the increase in the number of pigs became the Podillia province (106.3%), significantly ahead of Volyn (29.3%) and Chernihiv (28.3%) ones. In the Kharkiv and Poltava provinces, the positive growth was replaced by a negative trend (-14.6% and -12.7%). Cluster analysis of the above data (fig. 2) made it possible to identify three groups of compared objects. The core of the first

of them became the provinces of Kyiv and Podillia, having Volyn as its near periphery. The second group was formed by the Poltava and Kharkiv provinces. The third group includes Chernihiv province, the only one where all the considered spheres of animal husbandry showed stable positive results, without recessions and distortions, as in other territories.

Population (tab. 3). In 1846, in all provinces of the Forest-Steppe Ukraine 9,200 people lived. The most populated were the Kyiv (1,730 thousand, 18.8%⁵), Poltava (1,688 thousand, 18.3%) and Podillia (1,540 thousand, 16.7%) provinces. The Volyn, Chernihiv, and Kharkiv provinces had a population of just over 1,400 thousand each, or 15.4%, 15.3% and 15.5% of the total population on the region. By 1863, the number of inhabitants of the Ukrainian Forest-Steppe increased to 10,474 thousand, or 13.8% more 1846. The leaders in terms of the number of inhabitants were the Kyiv (2,012 thousand or 19.2%), Poltava (1,912 thousand, 18.3%) and Podillia (1,869 thousand, 17.8%) provinces. The population of the Volyn (1,603 thousand, 15.3%) and Kharkiv (1,591, 15.2%) provinces increased noticeably and almost did not change quantitatively in the Chernihiv province (1,487 thousand or 14.2%). In the whole region, the proportional distribution of the population in 1863 compared to 1846 was as follows: the share increased in the Kyiv and Podillia provinces, remained at the same level in the Poltava, Volyn and Kharkiv provinces, decreased in the Chernihiv province. We can detail the last observation by referring to the indicator of relative population growth for the period 1846–1863 in each of the provinces separately. The undisputed leader in this case was the Podillia province with a population growth of 21.4%.

⁵ To profile of the year.

In the Kyiv and Poltava provinces, the population growth rates were quite high and the same – 16.3% and 16.5%. The Volyn (13.4%) and Kharkiv (11.6%) provinces lagged behind them noticeably. In the Chernihiv province, the population grew very slowly – 6% in 18 years. Thus, 53.9% of the population of the Forest-Steppe Ukraine in 1846 and 55.3% in 1863 were concentrated in three provinces with the most favorable natural conditions for agriculture, and the total population growth here was 16.8%. In the other three provinces, the total population increased by 10.3%, mainly due to the Volyn and Kharkiv provinces, where there were good conditions not only for agriculture, but also for cattle breeding.

Cluster hierarchical analysis (fig. 3) confirmed our conclusions: the Kyiv, Poltava and Podillia provinces were united into one group, the Volyn, Kharkiv and Chernihiv provinces into another. The closest neighbors in the groups were, on the one hand,

the Kyiv and Poltava provinces, on the other, Volyn and Kharkiv ones. The peripheral in the first group was the Podillia province with the highest population growth rates, and in the second group the Chernihiv province, where the demographic situation looked the most depressive.

The optimal option for comparing economic and demographic indicators that are different in nature in our case is to recalculate their values per capita. The resulting profiles for 1846 and 1863 are presented in tab. 4. The transformations made make it possible to assess the nature of changes in the resource component of the system that took place as the population of the region grew in the mid-19th century based on measuring deviations of the actual values of the characteristics in 1863 from their calculated values, taking into account the rate of population growth. In practice, the latest data are taken from all those included in the tab. 4 profiles of 1846 with the introduction

Table 3

Population landscape of the Forest Steppe Ukraine (1846–1863)

Case	Provinces					
	Kyiv		Podillia		Volyn	
Year	1846	1863	1846	1863	1846	1863
Number*	1730	2012	1540	1869	1414	1603
Part to profile 1846 %	18.8	–	16.7	–	15.4	–
Part to profile 1863 %	–	19.2	–	17.8	–	15.3
Increase 1863 to 1846 %	–	16.3	–	21.4	–	13.4
Total increase %	13.8	13.8	13.8	13.8	13.8	13.8
Case	Poltava		Chernihiv		Kharkiv	
Number	1688	1912	1403	1487	1425	1591
Part to profile 1846 %	18.3	–	15.3	–	15.5	–
Part to profile 1863 %	–	18.3	–	14.2	–	15.2
Increase 1863 to 1846 %	–	16.5	–	6.0	–	11.6
Total increase %	13.8	13.8	13.8	13.8	13.8	13.8

* Thousand. Sources: Calculated by the author.

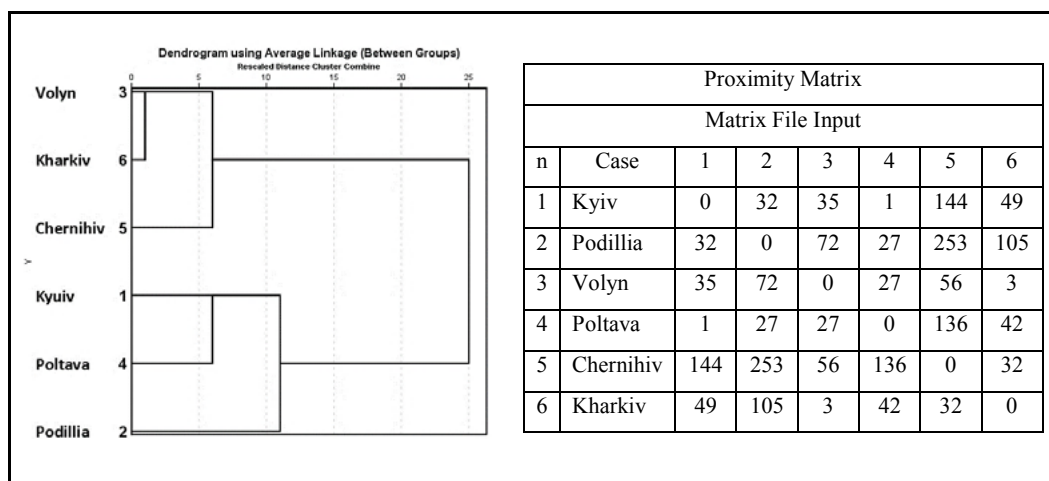


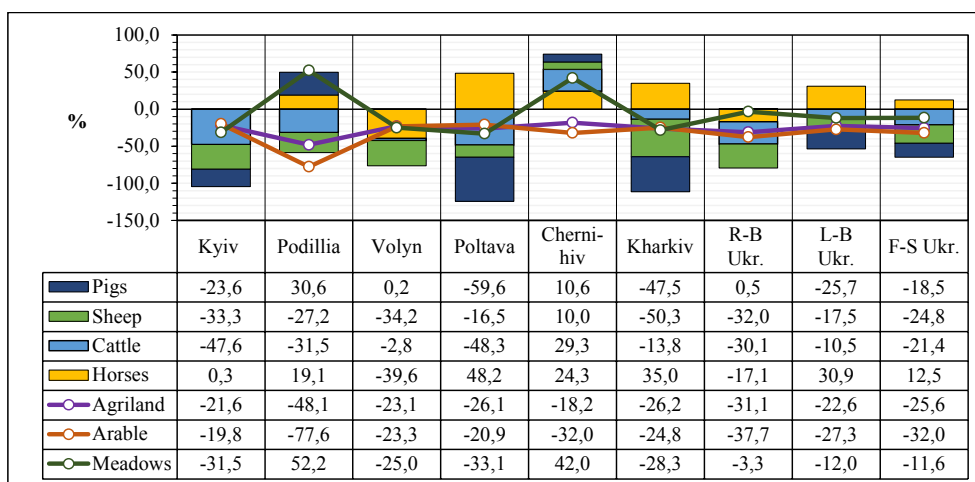
Fig. 3. Population: cluster classification of provinces (to tab. 3)

Table 4

Agricultural land and domestic animals: distribution per capita

Case	Agriland	Arable	Meadows	Horses	Cattle	Sheep	Pigs
Kyiv 1846	1.62	1.36	0.26	0.06	0.33	0.47	0.17
Kyiv 1863	1.55	1.32	0.23	0.07	0.26	0.41	0.16
Podillia 1846	1.72	1.58	0.13	0.06	0.26	0.44	0.12
Podillia 1863	1.41	1.08	0.33	0.09	0.24	0.42	0.21
Volyn 1846	2.03	1.49	0.54	0.16	0.29	0.71	0.22
Volyn 1863	1.87	1.37	0.49	0.13	0.32	0.60	0.25
Poltava 1846	1.97	1.09	0.88	0.04	0.42	1.01	0.37
Poltava 1863	1.82	1.05	0.77	0.09	0.33	1.01	0.27
Chernihiv 1846	2.42	2.18	0.23	0.20	0.18	0.45	0.27
Chernihiv 1863	2.17	1.75	0.42	0.28	0.27	0.53	0.32
Kharkiv 1846	2.65	1.59	1.06	0.08	0.41	1.03	0.35
Kharkiv 1863	2.39	1.45	0.94	0.14	0.41	0.78	0.27

Sources: Calculated by the author.



* 0.0 – The level, calculated on the population growth rate since 1846. R-B Ukr. – Right-Bank Ukraine, L-B Ukr. – Left-Bank Ukraine, F-S Ukr. – Forest-Steppe Ukraine. Sources: Calculated by the author.

Fig. 4. Deviation of the real values of agricultural resources indicators per capita in 1863 from those calculated, based on the population growth rate since 1846

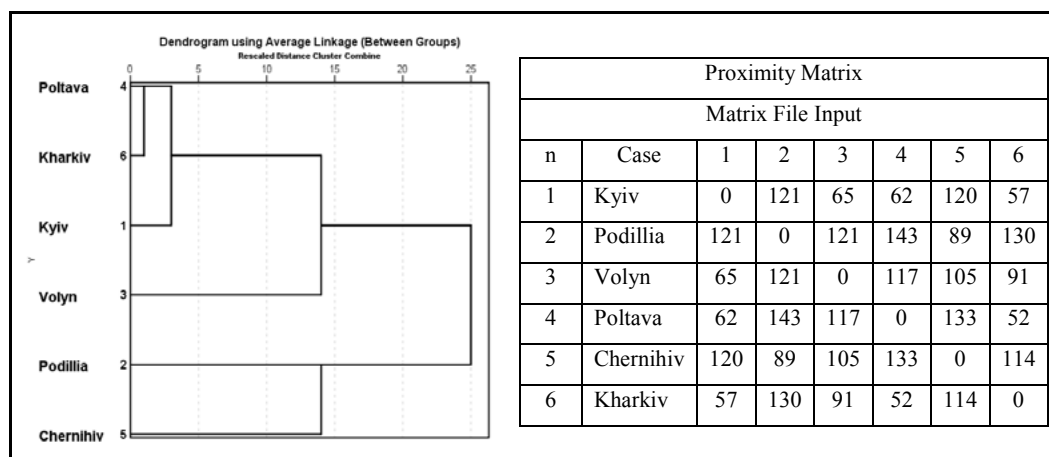


Fig. 5. Deviation: cluster classification of provinces (to fig. 4)

of increasing factors corresponding to the rate of population growth between 1846 and 1863 (tab. 3). The approximate coincidence of the real and calculated values of the characteristics in 1863 is interpreted by us as a state of homeostasis, the excess of real values over the calculated values as development, and the decrease as degradation of the element under study. The general results of the comparative analysis of real and calculated data are presented in fig. 4 and the results of cluster analysis data of the table placed on it in fig. 5. One can conclude, the general state of the resource components of the regional system should be defined as pre-crisis. The most dangerous was the tendency towards an increasing shortage of arable land as the number of inhabitants grew, which, without a doubt, was accompanied by a reduction in the production of grain crops – the basis of nutrition for the majority of the population, valuable feed for domestic animals, and the main article of foreign trade. The crisis nature of this phenomenon is clearly demonstrated by the example of the Podillia province with obvious signs of overpopulation (Бойко, Левчук, 2022: 32, 39, 43; fig. 1.4.2, 1.5.1; tab. 1.3.1, 1.4.2, 1.5.1).

Attempts to partially overcome the current situation most often came down to increasing the size of pastures at the expense of the fields (the Kyiv, Volyn, Poltava, Kharkiv provinces), which was accompanied by only a slight increase in the number of horses,

and less often pigs. This process took place most actively in the Podillia and Chernihiv provinces, where the growth of pastures and hayfields was accompanied by a sharp reduction in arable land. In the Podillia province, this only led to a noticeable increase in the number of pigs against the backdrop of a sharp increase in land hunger among the peasantry. In the Chernihiv province, the increase in pastures due to part of the inefficiently used arable land was accompanied by an increase in the number of all types of domestic animals. However, here the population and its growth rate were initially the lowest in the region, which made it possible for some time to balance on the brink between homeostasis and the onset of a systemic crisis. Such experiments were possible only on the farms of large landowners, who provoked the crisis of the agrarian economy.

In the region as a whole, field cultivation and livestock farming were in decline, as evidenced by the reduction in the amount of land and the number of domestic animals per capita. The general level of provision of the population of the Ukrainian Forest-Steppe with vital resources in the early 1860s was lower than the mid-1840s. The peasant reform of 1861 did not solve this problem, since it was not accompanied by a radical redistribution of land property and related resources in favor of the peasants and a crisis in landlords' field farming.

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