



UDC 631.115.11 : 640.122.6
JEL Classification: Q 15, D 13

Кропивко Максим

Candidate of Economic Sciences, Senior Research Fellow,
Doctoral Candidate,
National Scientific Center "Institute of Agrarian Economy"
Kyiv, Ukraine
E-mail: krop2002@ukr.net

PERFORMANCE ANALYSIS OF USING AGRICULTURAL LANDS OF PEASANT FARMS IN UKRAINE

Abstract

Introduction. History shows that despite constant attempts to change fundamentally land relations (from the landlord to the sole land ownership and the isolated farmstead system, from *dekulakization* to the socialization of land, from total collectivization to the consolidation of agricultural land in *latifundia*), it was impossible to destroy the striving of peasants and the majority of the urban population for family land ownership and agriculture by operating an individual household, home gardens, vegetable gardens, country gardens, and other forms of peasant farms.

Purpose of the article is to analyze the state and development prospects of peasant farms, productivity of the use of their agricultural lands and to provide suggestions on basic ways how to increase the volume of the of agricultural production by this organizational form of management.

Methods. The theoretical and methodological basis for research is general scientific and special methods of learning economic phenomena and processes, namely the dialectical method of scientific knowledge, mathematical statistics (grouping, comparative analysis), the index factor analysis and balance method.

Results show that in the post-reform period of agricultural development pace of peasant farms development is significantly behind the pace of agricultural enterprises development.

Factor analysis of productivity growth in crop production as a basic branch of agriculture showed that advance increase in gross crop production at the agricultural enterprises was provided by a sharp increase in productivity (increase is 230.1%) due to increasing crop capacity, and the structure improvement of using farmland (+22.0%) due to the deepening of specialization of high-yield crops cultivation and development of integration processes, while reducing the area of farmland (-39.7%). At the same time, if compared with 1999 the growth of gross crop production at peasant farms reached 39.0967 million UAH., or 118.2% mainly due to slow productivity growth (by 157.6%) and expanding areas of farmland (by 105.9%) while the structure of their use is worsening (-58.9).

Therefore, in order to increase agricultural production and thus income of household members of the population, we need to take measures in their peasant farms to increase crop capacity, deepening production specialization and the development of common with other economic entities production and sales activities.

Discussion. The obtained research results can be used in practical activity of peasant farms, in defining and substantiating trends and ways of agriculture development by scientists and experts, representatives of public authorities, local governments, teachers and graduate, students of higher educational institutions, landowners and land users.

Keywords: peasant farms, agricultural enterprises, agricultural products, factor analysis, productivity, crop capacity.

Introduction. History shows that despite constant attempts to change fundamentally land relations (from the landlord to the sole land ownership and the isolated farmstead system, from dekulakization to the socialization of land, from total collectivization to the consolidation of agricultural land in latifundia), it was impossible to destroy the striving of peasants and the majority of the urban population for family land ownership and agriculture by operating an individual household, home gardens, vegetable gardens, country gardens, and other forms of peasant farms.

However, activity of peasant farms is estimated ambiguous in a society, as public authorities, mainly dealing with the development of entrepreneurial forms of farming, not paying enough attention to the farms.

However, post-reformed period of agriculture has already reached during 15 years.

Enough factual data are accumulated for scientific analysis of the efficiency of peasant farms, productivity of use agricultural land, family labor intensity on appropriate land plots.

However, despite the importance of peasant farms as an important source of household income of population and factors for ensuring food security of the state, research on the effectiveness of their conducting as well as development prospects is not enough.

Analysis of recent research and publications. A lot of scientific researches of leading scientists and economists are devoted to the study of the major problems regarding the development of peasant farms, including: V.K. Zbarskyi [1], M.Y. Malik [2], V.Ya. Mesel-Veseliak [3], I.V. Prokopa [8] P.T. Sabluk [3], I.V. Svynous [4], Yu.A. Luzan [3], O.M. Shpychak [4, 5], O.M. Onyshchenko [6], V.V. Yurchyshyn [7] and many others.

Purpose. Analysis of the current state of productivity of using agricultural lands of peasant farms in Ukraine.

Methods. The theoretical and methodological basis for research is general scientific and special methods of learning economic phenomena and processes, namely the dialectical method of scientific knowledge, mathematical statistics (grouping, comparative analysis), the index factor analysis and balance method.

Results. As you know, the main parameter that characterizes the performance of agricultural lands is a measure of the value of agricultural production in terms of per 1 ha of agricultural lands.

Moreover, among the numerous publications of methodology for determination performance, we should highlight the fundamental work of scientific associations under Academicians of NAAS, including: P.T. Sabluk, V.Ya. Mesel-Veseliak and candidate of economic sciences Yu.Ya. Luzan with highlighting the results of the study regarding the efficiency of agricultural production in private farms of citizens [3], Academician of NAAS O.M. Shpychak [5] and Academician of NAAS O.M. Onyshchenko [6].

According to the methodology of comparative analysis of performance developed by these scientists and efficiency of the peasant farms productivity of peasant farms in the period of agricultural transformations (from 1991 to 1999) was higher than at agricultural enterprises. This is confirmed by the calculations presented in Table 1.

Table 1

**Rate calculation of the cost of final agricultural products net
per 1 hectare of farmland at peasant farms (PF) and agricultural enterprises (AE)***

| Indicators | 1999 | | 2014 *** | |
|---|---------------------------|---------------------------|----------|----------|
| | PF ** | AE *** | PF ** | AE *** |
| 1. The used agricultural area, thousand hectares | 7422.0 | 35153.4 | 15284.1 | 20548.9 |
| 2. The cost of gross agricultural products, mln. UAH. | <u>14155.0</u> 78450.2 | <u>10622.3</u> 59092.8 | 112380.2 | 139058.4 |
| 3. The cost of regulatory needs in forage, mln. UAH. | <u>7768.5</u> 43054.7 | x | x | x |
| 4. The cost of forage grown on the land used by PF, mln. UAH. | <u>1760.7</u> 9758,2 | x | x | x |

| | | | | |
|---|--------------------------|---------------------------|----------|----------|
| 5. The cost of forage that was received by PF from AE, mln. UAH. (p.3-p.4) | <u>6007.4</u> 33294.3 | x | x | x |
| 6. The cost of final agricultural products net, mln. UAH. (p.2 – p.5) | <u>8147.6</u> 45155.9 | <u>10622.3</u> 59092.8 | 112380.2 | 139058.4 |
| 7. The cost of final products net per 1 ha of farmland, UAH (p.6/p.1) | <u>1098.0</u> 6084.1 | <u>281.0</u> 1681.0 | 7352.8 | 6767.2 |
| 8. The ratio of final products net indicators per 1 ha of farmland in PF and AE | <u>3.9:1</u> 3.61:1 | | 1.08:1 | |

*Formed by the author.

**Calculated by the author for 1999 with 1996 prices based on [6].

***Calculated by the author for 2014 and recalculated for 1999 (in denominator) with 2010 prices based on the data of State Statistics Service of Ukraine [9].

Thus, according to O.M. Onyshchenko's calculations, in 1999 the ratio of indicators of final products net per 1 hectare of farmland of peasant farms to agricultural enterprises was 3.9: 1 (according to our calculations using 2010 prices – by 3.61 times). However, in the post-reform period since 2000, this ratio changed and in 2014 was already 1.08 to 1, i.e. agricultural land productivity at peasant farms and enterprises was almost equal (Table. 1).

We conducted a comparative analysis of crop productivity at peasant farms and agricultural enterprises to find the causes of these changes. A. Onishchenko noted that crop is the fundamental branch of agricultural [6].

Animal husbandry provides “recycling” of certain crop production into milk, meat and other kinds of animal products. The success of livestock is largely conditioned by developments of crop industry, productivity and efficiency.

Therefore, we analyzed the performance and intensity of conducting crop of peasant farms of Ukraine in this publication.

The results of the comparative analysis of gross crop production per 1 ha of agricultural lands of peasant farms and agricultural enterprises during 1980-1999 and in 2014 are shown in Table 2.

Table 2

Comparative analysis of gross crop production per 1 ha of agricultural lands, hrn.*

| Indicators | 1980 ** | 1990 ** | 1999 *** | 2014 *** | from 2014 to 1999, % |
|--|---------|---------|----------|----------|----------------------|
| Peasant farms (PF) | 2175.8 | 2259.5 | 4457.2 | 7352.8 | 165.0 |
| Agricultural enterprises (AE) | 381.1 | 473.2 | 1235.5 | 6880.0 | 556.9 |
| Ratio of indicators at PF to indicators at AE, times | 5.7 | 4.8 | 3.6 | 1.07 | x |

*Formed by the author.

Calculated by the author in comparable prices of 1996 based on [6, p 12]. *Calculated by the author in comparable prices of 2010 based on the data of State Statistics Service of Ukraine [9].

As it can be seen from the table, production of gross output of crop per 1 ha of agricultural land in farms in the pre-reform period (up to 1990) was more than four times higher than at agricultural enterprises.

During the period of agrarian transformations (until 1999) difference in crop productivity at peasant farms and agricultural enterprises was reduced to 3.6 times. In 2014 (in the post-reform period) productivity of crop at agricultural enterprises is almost equal to that was at peasant farms.

At the same time productivity of agricultural lands at peasant farms increased by 65.0%, and at agricultural enterprises – more than 5.5 times during this period.

It is advisable to track changes in crop yields in connection with such impressive changes as one of the main factors of increasing crop productivity both at peasant farms and agricultural enterprises

(Table. 3).

Table 3

Comparative analysis of productivity of agricultural crops, quintal / ha *

| Species of agricultural crops | Peasant farms (PF) | | | Agricultural enterprises (AE) | | | PF in % to AE | |
|----------------------------------|--------------------|----------|-------------------|-------------------------------|----------|-------------------|---------------|-------|
| | 1999 ** | 2014 *** | 2014 in % to 1999 | 1999 ** | 2014 *** | 2014 in % to 1999 | 1999 | 2014 |
| Grains and grain legumes | 24.8 | 33.9 | 136.7 | 19.3 | 47.5 | 246.1 | 128.5 | 71.4 |
| Sugar beets | 286.0 | 323.6 | 113.1 | 147.8 | 490.2 | 331.7 | 193.5 | 66.0 |
| Sunflower | 11.8 | 14.7 | 124.6 | 10.0 | 20.5 | 205.0 | 118.0 | 71.7 |
| Potato | 82.6 | 174.6 | 211.4 | 56.6 | 256.4 | 453.0 | 145.9 | 68.1 |
| Vegetable | 120.0 | 195.2 | 162.7 | 82.3 | 346.4 | 420.9 | 145.8 | 56.4 |
| Feed root crops | 276.8 | 322.8 | 116.6 | 184.8 | 348.2 | 188.4 | 149.8 | 92.7 |
| Hay of sown grass | 35.8 | 48.9 | 136.6 | 17.7 | 34.9 | 197.2 | 202.2 | 140.1 |
| The fruits and berry plantations | 88.3 | 112.5 | 127.4 | 10.9 | 53.7 | 492.7 | 810.1 | 209.5 |
| Vineyards | 97.3 | 154.2 | 164.6 | 21.1 | 76.4 | 362.1 | 461.1 | 199.5 |

*Formed by the author.

**Calculated by the author based on [6, p. 14].

***Calculated by the author based on the data of State Statistics Service of Ukraine [12].

According to the data from this table the yield of agricultural crops at peasant farms increased, depending on their species at 11-64% for 14 years. At the same time, the yield of these crops at agricultural enterprises increased much more – from 2 to 4 times.

Therefore, it is expedient to carry out the complex of measures to improve the productivity of agricultural crops in rural households of the population, including use varietal seed for sowing, improve the culture of agriculture (to comply with crop rotation, applying of fertilizers, plant protection products), to introduce innovative technologies, etc.

Along with increasing crop capacity the structure of agricultural land use also has a significant impact on increasing crop productivity. At the same time agricultural enterprises have more opportunities to adapt to ever changing requirements at agricultural markets than peasant farms. Because peasant farms have to conduct diversified economic activity with the aim of growing diversified agricultural products to meet the needs of household members in food. This is confirmed by a comparative analysis of structural changes in the use of agricultural land (tab. 4). In the table the structure of using arable land is calculated on the basis of the areas which actually were harvested.

As it can be seen from the table a significant increase in productivity at agricultural enterprises is obtained not only from higher crop capacity, but also due to structural changes in the use of agricultural land. In particular, arable land was increased by 12.7% mainly by decreasing areas under pastures by 8.1% and hayfields by 3.1%. Particularly significant changes took place in the structure of using arable land: increase in corn acreage by 18.0%, sunflower by 10.9%, soybeans by 9.0%, rape by 4.5% mainly due to the areas which were allotted for forage crops (-26.0%), barley (-3.3%) and sugar beet (-2.3%).

Thus, tendency towards deepening specialization of agricultural enterprises on producing export-oriented, high-tech, labor-saving, and therefore highly profitable crops – wheat, maize, sunflower and rape was evident.

Changes in this direction have also been at peasant farms, but in a much smaller scale, due to those farms that conduct private peasant farm with a focus on market. So, sowing of grain crops and leguminous crops increased by 18.0% and sunflower – by 11.5% at peasant farms. Such changes occurred by reducing the areas under potatoes (-24.4%) and vegetables (-5.2%).

Table 4

Comparative analysis of structural changes in the use of agricultural lands, %*

| | Peasant farms | | Agricultural enterprises | | from 2014 to 1999, g.p. | |
|--|---------------|----------|--------------------------|----------|----------------------------|--------|
| | 1999 ** | 2014 *** | 1999 ** | 2014 *** | PF | AE |
| Structure of agricultural lands: | | | | | | |
| Arable | 73.3 | 74.2 | 81.2 | 93.9 | 0.9 | 12.7 |
| Perennial plantings | 6.2 | 3.8 | 2.5 | 0.9 | -2.4 | -1.6 |
| Mowing | 6.5 | 7.4 | 5.0 | 1.9 | 0.9 | -3.1 |
| Pastures | 14.0 | 13.8 | 11.3 | 3.2 | -0.2 | -8.1 |
| Fallow | x | 0.8 | x | 0.1 | 0.8 | 0.1 |
| Structure of the use of arable lands: | | | | | | |
| Grains and grain legumes | 30.1 | 49.0 | 51.5 | 56.5 | 18.9 | 5.0 |
| Including: wheat | 8.0 | 18.8 | 25.7 | 23.9 | 10.8 | -1.8 |
| barley | 10.2 | 16.6 | 12.7 | 9.4 | 6.4 | -3.3 |
| maize | 8.4 | 10.7 | 1.6 | 19.6 | 2.3 | 18 |
| Industrial crops | 4.8 | 17.1 | 16.9 | 38.4 | 12.3 | 21.5 |
| Including: sugar beets | 1.2 | 0.1 | 3.9 | 1.6 | -1.1 | -2.3 |
| Sunflower | 3.5 | 15.0 | 11.6 | 22.5 | 11.5 | 10.9 |
| Soybean | x | x | x | 9.0 | 0.0 | 9.0 |
| Rape | x | x | x | 4.5 | | 4.5 |
| Potato and vegetable, melons and gourds | 48.1 | 18.0 | 0.95 | 0.4 | -30.1 | -0.95 |
| Including: potato | 38.4 | 14.0 | 0.15 | 0.2 | -24.4 | 0.05 |
| vegetable | 9.2 | 4.0 | 0.5 | 0.2 | -5.2 | -0.3 |
| Forage crops | 17.0 | 15.9 | 30.65 | 4.7 | -1.1 | -25.95 |

*Formed by the author.

**Calculated by the author based on [6, p. 15].

***Calculated by the author based on the data of State Statistics Service of Ukraine [9].

Significant changes in the structure of economic use of agricultural land and a significant increasing in crop yields greatly changed the vectors of the development of these sectors of agriculture and affected the performance of using agricultural lands.

So, factor analysis of crop productivity growth as basic branch of agriculture (table 5) showed that anticipatory increase in gross crop production at agricultural enterprises in 1999-2014 (62098.1 mln.hrn., or 143%) in compared with peasant farms (118.2%) provided by sharp increasing in productivity (increase of 230.1%) by increasing crop yield, and improving the structure of using agricultural lands (+ 22.0%) due to the deepening of specialization for growing high-yield crops and development of integration processes, at simultaneous reduction of areas of agricultural lands (- 39.7%).

Opposite pattern is observed at peasant farms of population. Thus, since 1999, growth of gross crop production reached 39096.7 mln. hrn. in 2014 or increased by 118.2%, mainly due to slower productivity growth (by 157.6%) and the expansion of areas of agricultural lands (by 105.9%) due to deterioration of the structure of their use (- 58.9).

In general, we can state that peasant farms developed rather low in the post-reform period, especially compared with agricultural enterprises that have embarked on the deep specialization and the development of integration.

Consequently, it is advisable to find rational approaches for deepening specialization and development of integration processes in peasant farms.

Table 5
Factor analysis of the impact of changes in performance, areas and structure for using agricultural lands to increase the gross crop production at peasant farms and agricultural enterprises (in comparable prices of 2010) *

| Species of agricultural crops | The area of agricultural lands, thousand hectares | | Gross output of crop production, mln. t/m | | Average productivity, t/m/ha | | Increase (+) or decrease (-), in whole | | Increase (decrease) of gross output (in %) through: | | |
|---|---|-----------|---|-------------|------------------------------|-----------|--|-------------------|---|-----------------------------------|---|
| | 1999 ** (So) | 2014 (St) | 1999 ** (UoSo) | 2014 (U1St) | 1999 (Uo) | 2014 (U1) | 000. t/m (U1St-UoSo) | % (U1St/UoSo)-100 | Changes in productivity (U1St/ UoSt)-100 | Changes of areas (UoSt/ UoSo)-100 | Changes of structure (UoSt/ UoSo)/ (St/ So)-100 |
| At peasant farms: | | | | | | | | | | | |
| Grains and grain legumes | 1637.5 | 5557.0 | 831.4 | 14871.1 | 1186.63 | 2676.10 | 12928.0 | 665.3 | 125.5 | 239.4 | x |
| Industrial crops | 261.2 | 1939.3 | 181.9 | 5206.7 | 1628.25 | 2684.83 | 4784.1 | 1124.2 | 64.9 | 642.5 | x |
| Potato and vegetable, melons and gourds | 2616.8 | 2041.3 | 6323.2 | 42413.4 | 5647.74 | 20777.64 | 27634.4 | 187.0 | 267.2 | -22.0 | x |
| Forage crops | 924.8 | 1803.2 | 349.9 | 3081.1 | 884.30 | 1708.68 | 2263.3 | 276.8 | 93.2 | 95.0 | x |
| Fruit and berries crops and grapes | 460.2 | 580.8 | 1644.3 | 5314.4 | 8352.67 | 10871.90 | 2470.5 | 64.3 | 30.2 | 26.2 | x |
| Other plant products | 1521.5 | 3362.5 | 4823.3 | 291.7 | 86.75 | 7408.39 | -10980.9 | -97.4 | 0 | 121.0 | x |
| In whole | 7422.0 | 15284.1 | 14155.0 | 72178.4 | 4457.2 | 4722.41 | 39086.7 | 118.2 | 157.6 | 105.9 | -58.9 |
| At agricultural enterprises: | | | | | | | | | | | |
| Grains and grain legumes | 15262.6 | 10801.9 | 32336.5 | 52702.0 | 23097.6 | 4834.20 | 20365.5 | 63.0 | 128.2 | -28.4 | x |
| Industrial crops | 5008.5 | 7602.4 | 5028.7 | 45305.5 | 7633.0 | 1094.03 | 40276.8 | 800.9 | 493.5 | 51.8 | x |
| Potato and vegetable, melons and gourds | 281.5 | 77.2 | 2088.8 | 4083.9 | 572.8 | 7420.25 | 52900.26 | 1995.1 | 612.9 | -72.6 | x |
| Forage crops | 9084.4 | 906.9 | 827.1 | 1406.7 | 82.6 | 91.05 | 1551.11 | 579.6 | 1603.6 | -90.0 | x |
| Fruit and berries crops and grapes | 3406.5 | 184.9 | 2710.5 | 1169.9 | 147.1 | 795.68 | 6327.20 | -56.8 | 695.2 | -94.6 | x |
| Other plant products | 1021.1 | 875.6 | 440.3 | 862.0 | 440.3 | 502.8 | 984.5 | 421.7 | 795.8 | -14.2 | x |
| In whole | 34064.6 | 20548.9 | 43431.9 | 66500.0 | 31973.5 | 1275.0 | 62088.1 | 143.0 | 230.1 | -39.7 | 22.0 |

*Formed by the author.

**Calculated by the author in comparable prices of 2010 (by indicators in denominator). Indicators for 1999 were formed on the basis of the data of State Statistics Service of Ukraine [17] and [6].

Conclusions and prospects. The research shows that in the post-reform period of agricultural development pace of peasant farms development is significantly behind the pace of agricultural enterprises development. Factor analysis of productivity growth in crop production as a basic branch of agriculture showed that advance increase in gross crop production at the agricultural enterprises was provided by a sharp increase in productivity (increase is 230.1%) due to increasing crop capacity, and the structure improvement of using farmland (+ 22.0%) due to the deepening of specialization of high-yield crops cultivation and the development of integration processes, while reducing the area of farmland (-39.7%).

At the same time, if compared with 1999 the growth of gross crop production at peasant farms reached 39.0967 million UAH., or 118.2% mainly due to slow productivity growth (by 157.6%) and expanding areas of farmland (by 105.9%) while the structure of their use is worsening (-58.9).

So, it is necessary to implement measures to increase productivity, deepening specialization of production and development of joint production and sales activities with other entities in order to increase agricultural production and hence income of household members of the population at their peasant farms.

References

1. Zbarsky, V.K. & Kaninsky, P.K. (2008). Trends in private farms *AhroInKom. Agricultural Information Scientific Production Journal*, №5-6, 56-62. doi:10.1109/iembs.2011.6090487 [in Ukr.].
2. Malik, M.I. (2014). Formation and development of cooperative relations in agriculture economy Ukraine. *Economy AIC*, № 7(237), 188 p. doi:10.1109/iembs.2011.6090487
3. Sabluk, P.T., Mesel-Veselyak, V.Y. & Luzan, U.Y. (2001). *Efficiency of agricultural production in private households of citizens (based on surveys)*. Kyiv: IAE Agrarian Sciences. [in Ukr.].
4. Shpichak, A.M. (2001). *Product sales subsidiary farming - the cost, price, efficiency, monograms* [Product sales subsidiary farming - the cost, price, efficiency, monograms]. Kyiv: NNC IAE.
5. Shpishchak, A.M. (2001). *Personal farms Ukraine - analysis of the costs and efficiency of agricultural production*. Kyiv: NNC IAE. [in Ukr.].
6. Onishchenko, A.N. (2003). *Households: productivity, efficiency, prospects*. Kyiv: University of Economics NASU. [in Ukr.].
7. Yurchishin, V.V. (2005). Rural areas as system-factors of the agricultural sector. *Economy AIC*, № 3,(125), 3-10. doi:10.1109/iembs.2011.6090487. [in Ukr.].
8. Prokopa, I.V. & Berkut, T.V. (2003). *Households in agricultural production and rural development*. Kyiv: Institute of Economics. and forecasting NAAS of Ukraine, 240 p. [in Ukr.].
9. Osaulenko, O.G. *Statistical Yearbook. (2015). Agriculture in Ukraine in 2014*. State Statistics Service of Ukraine; Ed. Kyiv: SE "Information-analytical agency". [in Ukr.].
10. Osaulenko, O.G. *Statistical Bulletin. (2014)/ Gross and productivity in agriculture Ukraine 2014 (at constant prices in 2010)*. [Gross and productivity in agriculture Ukraine 2014 (at constant prices in 2010)]. State Statistics Service of Ukraine; Ed. Kyiv: SE "Information-analytical agency". [in Ukr.].
11. Osaulenko, O.G. *Statistical Yearbook. (2003). Agriculture in Ukraine in 2002*. State Statistics Service of Ukraine; Ed. Kyiv: SE "Information-analytical agency". [in Ukr.].
12. Osaulenko, O.G. *Statistical Yearbook. (2015). Plant Ukraine in 2014*. State Statistics Service of Ukraine; Ed. Kyiv: SE "Information-analytical agency". [in Ukr.].

