



## Influence of the farming, soil cultivation and Fertilization on the yield of wheat

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### Abstract.

The Maize Research Institute-Kneja experimental field has been collecting data on typical chernozem soil type over the last half-century. The years 2000–2010 are included in the research. Wheat improves performance in terms of hectoliter weight, grain production, and performance mass per thousand grains when grown in a unit with maize. Grain yield improved by 16, 69% as compared to monoculture wheat. There is no correlation between increasing the depth of plowing in monoculture wheat to 10-12 cm and an increase in grain output (A2). There is no mathematical proof since the variations in the test are so small. Grain yield and performance mass per thousand grains are both improved by fertilization. Grain yield rises by 1228 kg/ha for A1, 880 kg/ha for A2, 953 kg/ha for A3, 804 kg/ha for A4, and 908 kg/ha for A5, as shown in the mathematical LSD- 0,1%. This is in comparison to variations without fertilization.

Keywords: wheat, monoculture, tillage, fertilization

### Introduction

Our country's grain bread tradition relies heavily on wheat. Extent that has expanded to around 12 million decimeters. Its potential for production is diminished since it necessitates planting the wheat portion behind (short monoculture). The production of maximum wheat productivity is driven by meteorological factors, including rainfall, average autumn and winter temperatures, and the manner of cultivation (Drumalieva, 1974; Test is a control variety without fertilization). This has been confirmed by a number of domestic and international research. The following herbicides were used: Maton 1200 ml/ha during the tillering phase and Puma Super 7.5 EV 1000 ml/ha throughout the 3-5 leaf weeding phases, which included wild oats. In order to combat diseases and pests, fungicides and insecticides were applied to the crop at the appropriate times, exceeding the approved harmfulness threshold. Using the variance analysis, we can determine the resultant yield.

### Material and methods

They vary from 317 to 330 n/m<sup>2</sup> on average during the research period when fertilization was not an option (B). Including the intense fertilization factor increased the number in all examined versions, with unit A1 showing the largest rise of 33.54%. When compared to monoculture, the number of wheat stalks per ear was 7.32% higher after average fertilization and control variation (B0), wheat-maize rotation. Plow sinkage of 18–20 cm (A3), 23–25 cm (A4) In the experimental field of the Maize Research Institute - index, the values of this type were not affected by 30-35 (A5) monoculture, as shown by 50 years of experience with normal Chernozem soil and comparisons with A2 (plowing of 10-12 cm). You are Kneja. The years 2000–2010 are included in the research. Corn is cultivated in Table 2 shows that the mass of 1000 grains is determined in most units with monoculture and maize. With a vintage parcel size of 25 m<sup>2</sup> and the following factors: amount of grains in 1 wheat ear, weather conditions during the pouring of grain crop density, and the block technique. Grain weights ranging from 47.53 to 48.79 grams were produced by the control variations that were tested during the research period. A. Tilling; N10P10 fertilisation raises grain weight 1.87 to 2.80%.



In the A1 unit, plow the soil for 10–12 cm; in the A2 wheat monoculture, till the soil for 10–12 cm; in the A3 and A4 units, till for 18–20 cm; in the A5 and A6 units, till for 23–25 cm; and in the A6 units, till for 30–40 cm.

There is a 2.1-fold increase in grain mass from growing maize to growing wheat monoculture. Wheat monoculture yields are unaffected by plowing depths of 18–20 cm (A3), 23–25 cm (A4), and 30–35 cm (A5).

till the soil with a 30–35 cm plow. This indicator was doubled during pre-sowing cultivation using harrow tillage. Table 3 shows the hectoliter weight of the control variant's seed in the

Active substance (N100P100 kg/ha) for Factor B, fertilization.

**Table 1.** Number of wheat –ears /m<sup>2</sup>

Variants	N <sub>0</sub> P <sub>0</sub>	N <sub>100</sub> P <sub>100</sub>	Average, n/dka	% to A <sub>1</sub>	% to A <sub>2</sub>
A <sub>1</sub> - plowing 10-12 cm	322	430	376	100.00	-
A <sub>2</sub> - plowing 10-12 cm	323	374	348.5	92.68	100.00
A <sub>3</sub> . plowing 18-20 cm	322	369	345.5	91.88	99.13
A <sub>4</sub> - plowing 23-25 cm	317	377	347	92.28	99.56
A <sub>5</sub> -plowing 30-35 cm	330	383	356.5	94.81	102.29

**Table 2.** Mass of 1000 grains, g

Variants	N <sub>0</sub> P <sub>0</sub>	N <sub>100</sub> P <sub>100</sub>	Average, n/dka	% to A <sub>1</sub>	% to A <sub>2</sub>
A <sub>1</sub> - plowing 10-12 cm	48.79	50.16	49.47	100.00	-
A <sub>2</sub> - plowing 10-12 cm	48.24	49.32	48.78	98.60	100.00
A <sub>3</sub> . plowing 18-20 cm	47.53	49.81	48.42	97.87	99.26
A <sub>4</sub> - plowing 23-25 cm	47.85	48.80	48.32	97.67	99.05
A <sub>5</sub> -plowing 30-35 cm	48.48	49.39	48.93	98.90	100.30

**Table 3.** Hectolitrelly weight / kg

Variants	N <sub>0</sub> P <sub>0</sub>	N <sub>100</sub> P <sub>100</sub>	Average, kg/ha	% to A <sub>1</sub>	% to A <sub>2</sub>
A <sub>1</sub> - plowing 10-12 cm	70.16	70.55	70.35	100.00	-
A <sub>2</sub> - plowing 10-12 cm	69.39	69.15	69.27	98.46	100.00
A <sub>3</sub> . plowing 18-20 cm	68.99	67.93	68.46	97.31	98.83
A <sub>4</sub> - plowing 23-25 cm	68.08	69.37	68.72	97.68	99.20
A <sub>5</sub> -plowing 30-35 cm	67.93	68.59	68.26	97.02	98.54



fertilization with minerals. Unit A1 - wheat-maize yields higher values. The difference between monoculture wheat and its 405

food grain. With plowing depths of 18–20 cm and 23 kg/ha in monoculture, as shown in LSD–0.1%, there is a general tendency toward declining hectoliter weight values. A3, 22–25 cm, and 30–35 cm depths of plowing had little effect on The grain yield figures are 25 and 30–35 cm. Grain yields in the range of 1554 to 1813 kg/ha were achieved using the soil's inherent nutrient stores (Table 4). Maximum grain production entered the wheat-maize (A1) unit. Greater crop yields are achieved by plowing to depths of 23–25 cm (A4) and 30–35 cm (A5) under monoculture.

### Conclusion

contrasted A2 (plowing 10–12 cm) with 3,91% and 8,40%. Wheat grows well when planted in the same unit as maize. N100P100 fertilisation resulted in a 1228 kg/ha grain yield for A1, 880 kg/ha for A2, 953 kg/ha for A3, 804 kg/ha for A4, and 908 kg/ha for A5, as shown in the mathematical LSD-0.1%. The wheat-on-performance mass, hectoliter weight, and grain yield from unit A1 were the greatest at 2427 kg/ha, regardless of whether the crop was fertilized or not. The grain yield of wheat was 16.69% higher as compared to monoculture. There is no correlation between increasing the depth of plowing to 10–12 cm in monoculture wheat and an increase in grain production (A2). The variations in the tests are so small that they cannot be used to establish

**Table 4.** Grain yield kg/ha

Variants	N <sub>0</sub> P <sub>0</sub>	N <sub>100</sub> P <sub>100</sub>	Average, kg/ha	% to A <sub>1</sub>	% to A <sub>2</sub>
A <sub>1</sub> - plowing 10-12 cm	1813	3041	2427	100,00	-
A <sub>2</sub> - plowing 10-12 cm	1582	2462	2022	83.31	100.00
A <sub>3</sub> - plowing 18-20 cm	1554	2507	2030	83.66	100.39
A <sub>4</sub> - plowing 23-25 cm	1645	2449	2047	84.34	101.23
A <sub>5</sub> - plowing 30-35 cm	1715	2623	2169	89.36	107.27
LSD - cultivation	LSD - fertilization				
5% - 13.65	5% - 29.23				
1% - 18.10	1% - 38.76				
0,1% - 23.43	0,1% - 50.18				

in a mathematical sense.wheat with varying saturation levels. Global gathering The performance mass 1000 is positively affected by fertilization.Dates: June 5th and 6th, Bulgarian science and ERA, On CD, Stara Zagora.

wheat and the yield of wheat. Variants without fertilizer grain were compared.D. Drumaliev, 1974. Maintaining and enhancing soil fertility. Increases in yield of 1228 kg/ha for A1, 808 kg/ha for A2, and 953 kg/ha for Nankov M. in 2007 are evident. Wheat quality and productivity after various In terms of mathematics, it is shown that A3 has an LSD of 0.1 percent, A4 804 kg/ha, and A5 908 kg/ha.



## References

Johann Christoph and Nikolay Pertov, 2009. The impact of prior soil cultivation and fertilizer on wheat output as measured by carbonate chernozem. Issue 4, pages 33–38, Journal of Agricultural Science. In 2008, Christoph and Angelova published a.s. Productivity of rotation in predecessors. The eighth international scientific practical conference was held at Agroeko in Plovdiv from LII to 107–110. In 2006, Nankov, Glogova, and Tsankova published a paper. Research on the wheat crop's dry matter and crude protein yields after harvesting. Plant studies 284–289 will be held at the Stara Zagora international scientific conference on June 1-2.

The year 2000 was a banner year for Penchev and Gramatikov. Aspects that affect the Mariana wheat variety's yield in the field. Botanical journal, 10, 899-901 (Bg). In 2000, Zarkov B. Winter barley produced as a monoculture for a short period of time and its genetic response. Science of plants, 10, 875–879 (Bg).