

## CHAPTER 2 SOIL CULTIVATION

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### "FORMATION OF NUTRIENT REGIME OF SOIL IN SHORT- ROTATION CROP ROTATION"

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**Formulation of the problem.** In today's economic conditions, there is a need for the development and implementation of dynamic, highly specialized crop rotation with short rotation, adapted to the zonal soil and climatic conditions that would ensure the maximum yield of products with good quality indicators and contributed to the improvement of soil fertility. Formation of high productivity of crops is possible with optimal provision of their nutritional elements when applied in crop rotation of scientifically substantiated fertilizer systems, an alternative component of the traditional organic manure – unmodified products of plant growing and green manure can act as alternatives.

**Presenting main material.** Determination of the dynamics of the content of nutrients in soil under crops of crop rotation showed that their number varied from the introduction of mineral and organic fertilizers, precursors and phases of development of plants. Thus, the highest content of alkaline hydrolyses nitrogen (13,68 and 11,49 mg/100 g of soil), mobile phosphorus (14,26 and 12,75 mg/100 g of soil) and exchangeable potassium (12,13 and 10,65 mg/100 g of soil ) under winter wheat in arable and underwater layers was at the time of the restoration of spring vegetation after the predecessor of winter wheat in grain crop rotation on the variant of direct introduction of this culture of manure and mineral fertilizers. On an alternative fertilizer system in the same crop rotation, the accumulation of alkaline hydrolyzed nitrogen decreased by 0,63 and 0,21, mobile phosphorus by 0,73 and 0,56, exchangeable potassium: by 0,41 and 0,18 mg / 100 g of soil

The direct application of potatoes in grain-driven and fertile crop rotation  $N_{90}R_{90}K_{90}$  and 40 t/ha manure provided the most intense accumulation of alkaline hydrolyses nitrogen 12,87-13,0 mg / 100 g soil, mobile phosphorus 13,47–13,58 mg/100 g soil, exchangeable potassium 11,69–11,85 mg/100 g of soil. An alternative system formed the nutrient regime of the soil for the elements of nutrition at the level of 12,31–12,47, 13,28–13,39 and 11,32–11,41 mg/100 g of soil in the arable layer.

**Conclusions.** On the formation of a nutrient regime of the soil under crops in short-rotation crop rotation, both organic-mineral fertilizer systems and predecessors have a significant influence. The combined application of manure with mineral fertilizers (traditional organic-mineral fertilizer system) and straw, green manure and half doses of mineral fertilizers (an alternative organic-mineral fertilizer system) provide an increase in the content of moving forms of nitrogen, phosphorus and potassium in both the arable and subsoil soils of the soil, an increase in the number of plant remains and contribute to the formation of positive values in the balance of these elements of nutrition.

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