UDC 633.521:631.4(477.86)

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CULTIVATING FLAX IN THE SOIL CONDITIONS OF IVANO-FRANKIVSK REGION

Ivano-Frankivsk region, which is located in the Precarpathian area, has extensive experience and established practices of flax cultivation. The natural conditions have long been favorable for flax to grow in the region. Mulch and sod-podzolic soils have developed naturally there. Due to rapid podzolization and gleying, such soils differ in their content of podzol and gley.

The research was conducted on sod-podzolic surface gley medium loam soil. It has a complex morphological structure, which is generally indicative of the low structure of podzolic and silty soil horizons. The poor structure of the soil is determined by its low content of humus, potassium and magnesium, which leads to compaction of subsoil horizons.

The examination of the agrochemical properties of sod-podzolic surface gley medium loam soil shows that in the plough layer have a high acidic reaction, which decreases with depth (pH 4,4–4,6). Acidic reaction slows down nitrification; therefore, soil acidity should be neutralized by liming and using organic and mineral fertilizers.

The study of the aggregate structure of the sod-podzolic soil involved identifying the share of the various fractions of stable aggregates in the samples obtained from each soil layer where different cultivation methods and fertilizers were used for growing flax. As regards dry sieving, the soil samples obtained from the depths of 0–20 cm and 20–40 cm vary in the amount of agronomically valuable aggregates, depending on soil cultivation methods. So the largest amount of agronomically valuable structural fractions in the plow layer (0–20 cm) at the time of planting was at minimum tillage (14–16 cm) and disk plowing (8–10 cm) comparing with control plow layer (20–22 cm).The combination of deep loosening (35–40 cm) contributed to the lagger number of agronomically valuable aggregates the plow layer (20–40 sm), comparing with control and variants of minimum tillage where it was not carried out. The similar results were observed during harvesting of flax.

The dynamic changes in the content of agronomically valuable structural fractions in the plow layer (0–20 cm) and the sub-plow layer (20–

40 cm) confirm that minimum tillage (14–16 cm) and disk plowing (8–10 cm) combined with loosening (35–40 cm) are highly effective for soil structure formation. On variants with use of green manure in the plow and sub-plow layers, which accumulate a great amount of organic residue such as stubble and ley, have better structural characteristics in comparison with control variants of experiment.

In Ivano-Frankivsk region, the wet climate and excessive soil humidity are favorable for cultivating flax, a water-loving yarn crop. However, the cultivation of flax in such moderately or excessively humid conditions requires a special approach to the basic treatment of sod-podzolic surface gley medium loam soil – carring out of shallow cultivation of the soil for getting loosened topsoil during sowing of flax, using of deep loosening (35–40 cm) with the aim of improvement of water permeability and structural-agregate compound of the soil.

It was established that minimum tillage (14–16 cm) and disk plowing (8–10 cm) combined with loosening (35–40 cm) on sod-podzolic soils of Precarpathians led to 56,4 and 58,4 % higher number of agronomically valuable structural fractions, respectively, at the time of sowing in the plow layer (0–20 cm), compared with control one. The plowing at 20–22 cm led to 52.3% higher number of agronomically valuable structural fractions.

The plowing of green manure of oil radish in the combination with shallow plowing at 14–16 cm and 8–10 cm disk plowing lead to an increase in agronomically valuable aggregates by 1,4–5,7 %, compared to the control (plowing at 20–22 cm), where arable soil contained 52,3 % of agronomically valuable structural factions.

It should be noted that the combination of deep loosening (35–40 cm) with primary tillage and plowing of green manure improved structural-aggregate composition of arable (0–20 cm) and subsoil (20–40 cm) layers. The similar results was observed for all experimental variants and during harvesting of flax.