

## NUTRIENTS IN THE ROOT RESIDUES OF SECONDARY CROPS

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**Annotation.** Modernization and diversification of the manufacturing sector, in particular, agricultural reform, increasing the share of diversified farms, processing of agricultural products in rural areas, introduction of modern technologies, directing foreign investment to rural areas, cultivation of non-traditional crops in the country including the expansion of soybean cultivation in the country from this year.

**Key words:** gross hydropower potential, electricity, micro hydropower, flow, low pressure.

After each crop, a certain amount of root residue remains in the soil layers. They are converted into various forms of nutrients under the influence of microorganisms over a period of time and have their effect on maintaining or increasing soil fertility. In this case, the effect of humus on the maintenance of soil fertility is significant, as humus synthesizes the biomass in the soil and increases its amount. This, of course, is directly related to the amount of organic residue left in the soil by plants, such as roots.

However, it should be noted that the amount of roots left in the soil depends not only on the type of crop, but also on their planting norms.

**Literature review.** The results of several scientific studies show that each crop absorbs a certain amount of nutrients from the soil. This, of course, is directly related to the type and variety of crops and their growing climatic conditions, as well as a number of factors such as the agro-technical measures

applied to them, including feeding, irrigation. If the above-mentioned factors are maintained in an optimal order, to obtain a high and quality product from crops.

**Research methodology.** In addition, the amount of root residues left in the crops and the amount of nutrients in them are acceptable, which has an impact on increasing soil fertility (Khalikov). Therefore, in our study, the root and root residues remaining after each crop were analyzed in the laboratory to determine the amount of nutrients they contain (Table 1).

**Table 1**

**The amount of nutrients in the roots and stems,% (average three-year), depending on the planting norms of acceptable repeat crops.**

| №             | Number of seedlings, piece | Contains root |       |       | In the mouth |       |       |
|---------------|----------------------------|---------------|-------|-------|--------------|-------|-------|
|               |                            | N             | P     | K     | N            | P     | K     |
| <b>Moss</b>   |                            |               |       |       |              |       |       |
| 1             | 60 thousand                | 1,399         | 0,872 | 1,057 | 1,192        | 0,288 | 1,584 |
| 2             | 80 thousand                | 1,419         | 0,882 | 1,115 | 1,229        | 0,323 | 1,640 |
| 3             | 100 thousand               | 1,452         | 0,922 | 1,135 | 1,239        | 0,332 | 1,685 |
| 4             | 120 thousand               | 1,429         | 0,917 | 1,133 | 1,230        | 0,321 | 1,679 |
| <b>Corn</b>   |                            |               |       |       |              |       |       |
| 5             | 60 thousand                | 0,45          | 0,17  | 0,23  | 0,15         | 0,70  | 0,70  |
| 6             | 70 thousand                | 0,50          | 0,20  | 0,29  | 0,19         | 0,38  | 0,34  |
| 7             | 80 thousand                | 0,54          | 0,25  | 0,35  | 0,24         | 0,15  | 0,14  |
| 8             | 90 thousand                | 0,58          | 0,30  | 0,40  | 0,29         | 0,19  | 0,18  |
| <b>Millet</b> |                            |               |       |       |              |       |       |
| 9             | 1,5 million                | 0,353         | 0,122 | 0,185 | 0,184        | 0,113 | 0,132 |
| 10            | 2,0 million                | 0,360         | 0,127 | 0,190 | 0,190        | 0,118 | 0,133 |
| 11            | 2,5 million                | 0,371         | 0,130 | 0,195 | 0,195        | 0,122 | 0,135 |
| 12            | 3,0 million                | 0,363         | 0,125 | 0,191 | 0,192        | 0,121 | 0,134 |
| <b>Soya</b>   |                            |               |       |       |              |       |       |
| 13            | 180 thousand               | 1,219         | 0,328 | 0,560 | 0,430        | 0,188 | 0,712 |
| 14            | 220                        | 1,249         | 0,360 | 0,587 | 0,451        | 0,201 | 0,738 |

|    |                 |       |       |       |       |       |       |
|----|-----------------|-------|-------|-------|-------|-------|-------|
|    | thousand        |       |       |       |       |       |       |
| 15 | 260<br>thousand | 1,263 | 0,375 | 0,604 | 0,469 | 0,221 | 0,752 |
| 16 | 300<br>thousand | 1,251 | 0,367 | 0,593 | 0,455 | 0,210 | 0,743 |

The data obtained in the first year of the study show that although the content of nutrients in the root residues of moss is higher than in other crops, we can see in Table 1 that the ratios of these amounts are definitely related to their seedling thickness. That is, as the seedling thickness of the moss crop increases, the amount of NPK in the root and stem remaining in the soil also increases. At the same time, their optimal ratios are relatively high in variant 3, where 100 thousand seedlings per hectare of seedling thickness were stored, with N-1.452%, P-0.922% and K-1.135% in root content, and 1,239 in NPK; Were 0.332 and 1.685 percent, respectively.

**Analysis and Results.** Seedling thickness is close to 3 variants in 4 variants with 120 thousand bushes per hectare, ie root content N -1,429%, P-0.917% and K-1,133%, root content N -1,230; R-0.321 and K-1.679 percent, respectively. The lowest values were recorded in variants 1 and 2, where 60 and 80 thousand bushes per hectare of seedling thickness were stored (root content N-1,399 and 1,419; P- 0.872 and 0.882; K-1,057 and 1,115%, root content N-1,192 and 1,229; P- 0.288 and 0.323; K-1,584 and 1,640 per cent, respectively).

Experimental data also confirmed the high content of nutrients in the root and stem residues of soybeans. However, it was found that the amount of nutrients in the rootstock that remained even in the variants planted in this crop was directly related to their seedling thickness. In other words, in the 15th variant, where 260 thousand bushes per hectare of soybean thickness were stored, the highest NPK content in the remaining root and root content was in the root content (N -1,263; P- 0.375; K-0.604 percent) and in the root content (N -0.469; P- 0.221). ; K-0.752 percent) in 13 variants with the lowest amount of experimental seedling thickness 180 thousand / ha (root content N -1.219; P-

0.328; K-0.560 percent, root content N -0.430; P- 0.188; K-0.712. percent) was observed.

All the years of our research have confirmed that millet is second only to corn in terms of the amount of root and root mass left over from the crop. However, it should be noted that the amount of nutrients in the roots and stems of this crop is much lower than in the moss and soybean crop (Table 1).

Although the seedling thickness in these crop variants also had an effect on the nutrient content of the root and stem, the seedling thickness differed sharply between the 2.5 million and 3.0 million bush-preserved variants (root content N -0.008; P- 0.005; K-0.004 percent). , N -0.003; P-0.001; K-0.001 percent) were not observed in the mouth.

The lowest values of root and stem content were observed in 9 variants of the experiment, where the seedling thickness was maintained at 1.5 million / ha, the root content was N-0.353; P-0.122; K-0.185 per cent, N-0.184 in the anus; P-0.113; K-0.132 percent. However, the data obtained in the corn planted variants are slightly different. In particular, the analysis of the remaining root and root composition of the 7th variant of corn, which has 80,000 bushes per hectare of seedling thickness, confirmed that the highest amounts of NPK are in this variant. That is, their root content is N -0.54; P-0.25; K-0.35%, while N -0.24 in the anus; P-0.15; K was 0.14 percent. The analysis of 60,000 seedlings per hectare showed the lowest levels of nitrogen, phosphorus and potassium. percent, the content in the mouth is N-0.15; P-0.7; K-0.7 percent).

In general, after the fall wheat, the return of a certain amount of nutrients to the soil in the form of organic residues at the expense of the roots and stalks left by them as a result of planting moss, soybeans, millet and corn as a secondary crop was once again confirmed. At the same time, first of all, along with the correct selection of crops, maintaining the optimal standards of their seedling thickness also serves to increase soil fertility. This, in turn, ensures that the following year, other types of agricultural crops are planted in the areas where these crops are planted, ensuring their good growth and productivity.

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