List of chemical analyses done

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**3.3. Adjustment of the soil amendment mixture recipe for manufacturing in industrial scale - development of prototypes, determination of their composition and quality.**

**3.3.Augsnes ielabošanas līdzekļa receptūras pielāgošana rūpnieciskajiem apstākļiem - prototipa izgatavošana rūpnieciskā apjomā, sastāva un kvalitātes pārbaude**

**Salaspils 2023**



Authors

Sindija Žīgure - text

Viktorija Vendiņa –responsible for measurements, data analysis

Ieva Ivbule – sampling

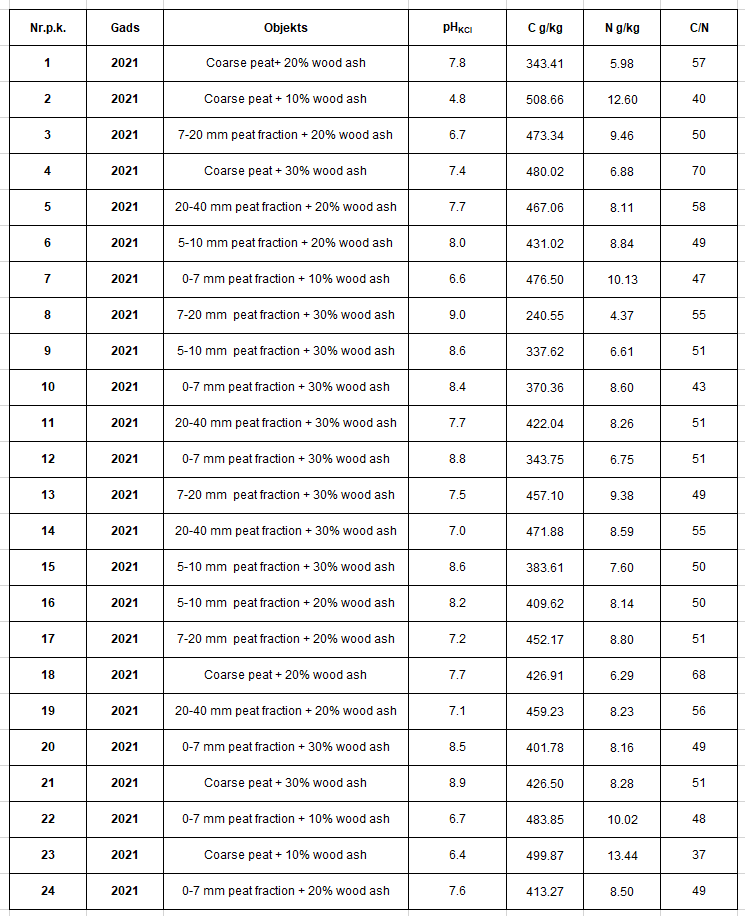
Toms Arturs Štāls – sampling

Dagnija Lazdiņa – idea and concept

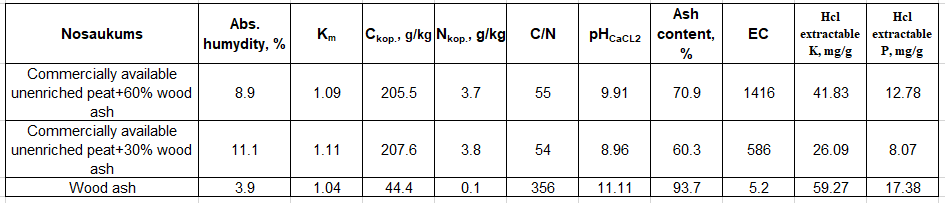
**Materiāls angļu valodā sagatavots analizējot LVMI Silava 2011-2023.gadā izgatavotos koksnes pelnu un kūdras maisījumus, īstenojot pētījumu: Inovatīvu Baltā vītola-daudzgadīgo zālaugu agromežsaimniecības sistēmu ierīkošana ar koksnes pelnu un mazāk pieprasīto kūdras frakciju maisījumiem ielabotās marginālās minerālaugsnēs**

Programma "Izaugsme un nodarbinātība" specifiskais atbalsta mērķis 1.1.1. "Palielināt Latvijas zinātnisko institūciju pētniecisko un inovatīvo kapacitāti un spēju piesaistīt ārējo finansējumu, ieguldot cilvēkresursos un infrastruktūrā"  
pasākums 1.1.1.1. "Praktiskas ievirzes pētījumi", 3. kārta Nr. 1.1.1.1/19/A/112

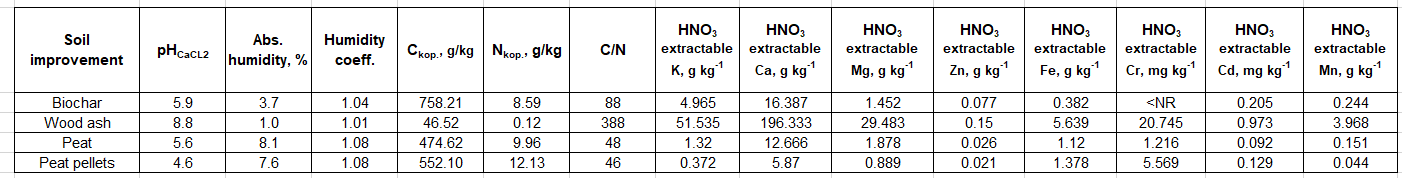
**The results of chemical analyses of the substrates and soil improvement mixtures created in 2021 were carried out in the Silavas laboratory.**

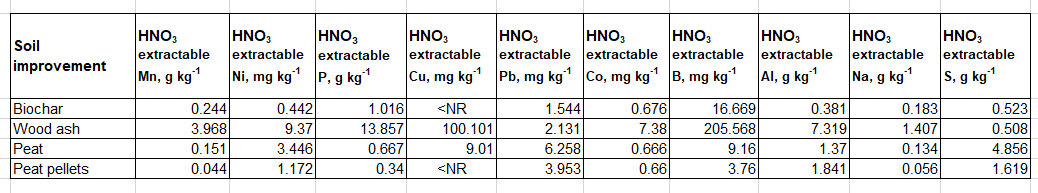


**The results of NPK analyses of the substrates created in 2021 were carried out in the Silavas laboratory.**



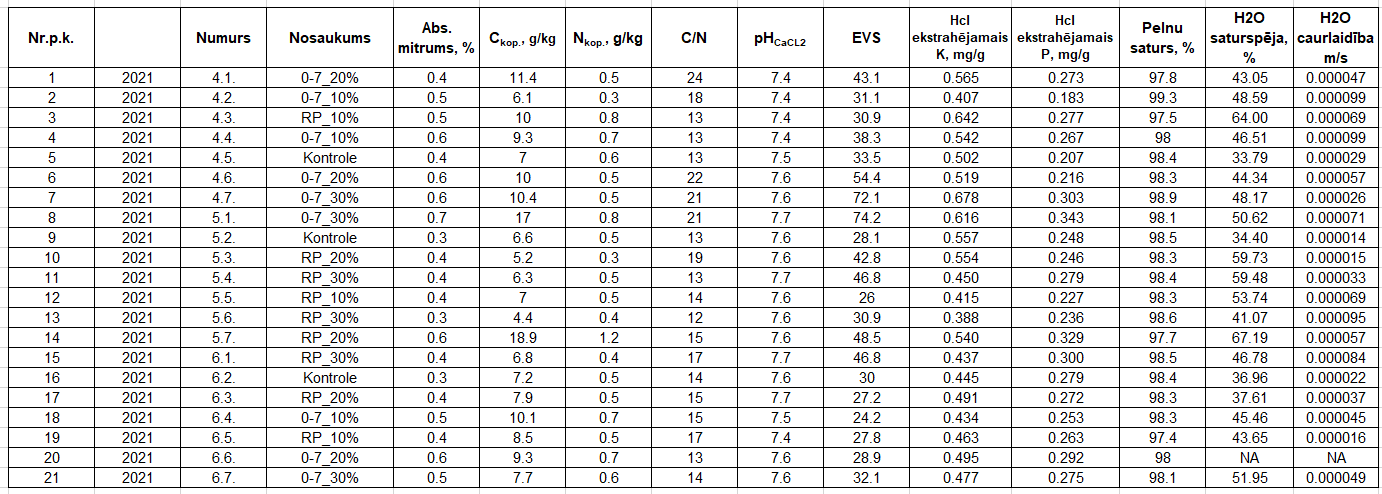
**Chemical analyses of the raw materials used in 2022 for creating soil improvements:**



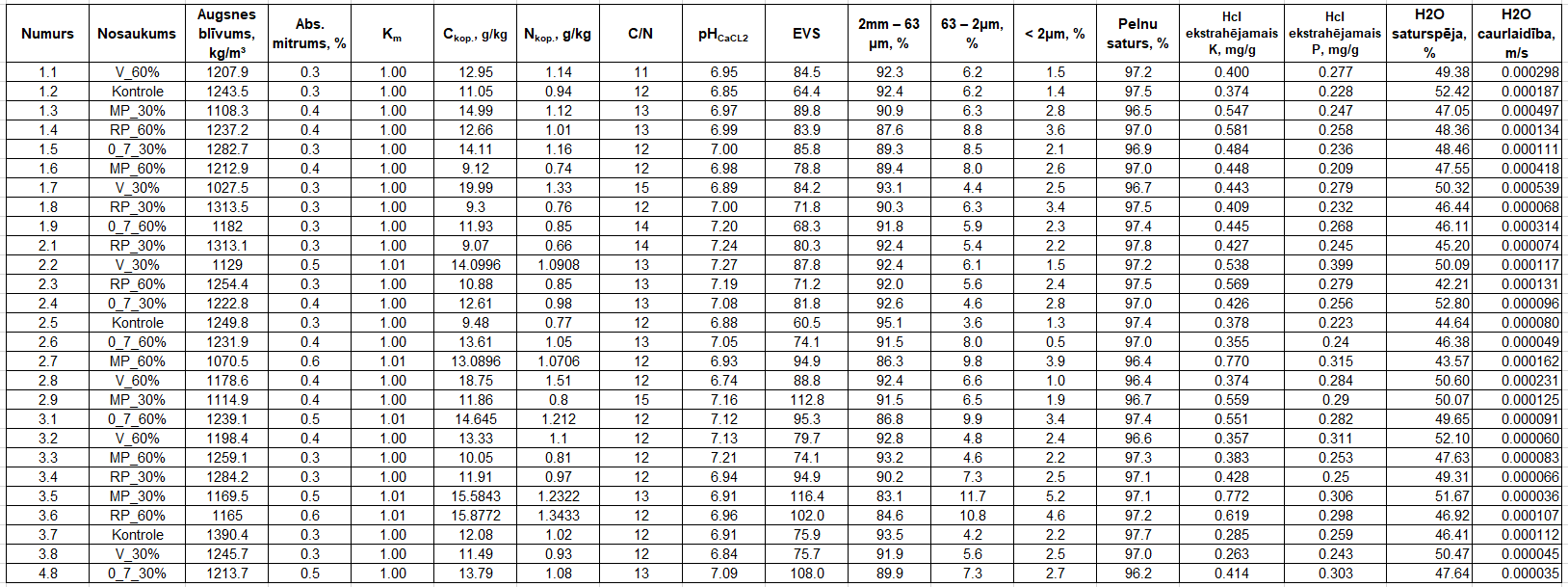


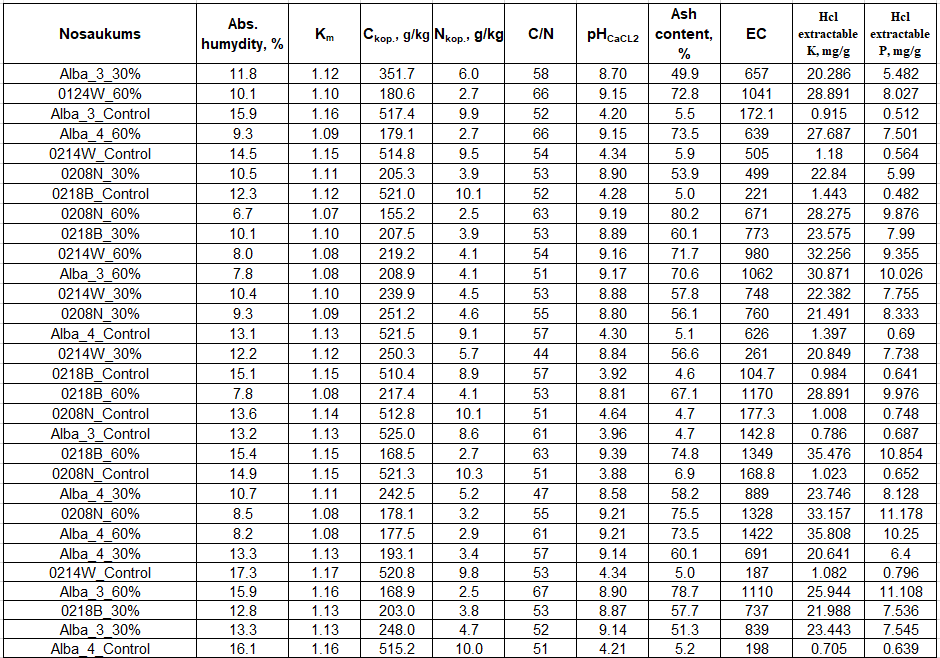
Elements such as cadmium (Cd), zinc (Zn), plumbum (Pb) are within normal limits to be able to create mixtures for substrates ( <https://likumi.lv/ta/id/276480-meslosanas-lidzeklu-un-substratu-identifikacijas-kvalitates-atbilstibas-novertesanas-un-tirdzniecibas-noteikumi>)

**2021 year planted Salix alba soil analyses from plastic tubs where Salix alba clones were grown for two years in a Climatic house**



**2022 soil analyses from plastic tubs where Salix alba clones were grown for two years in a Climatic house**

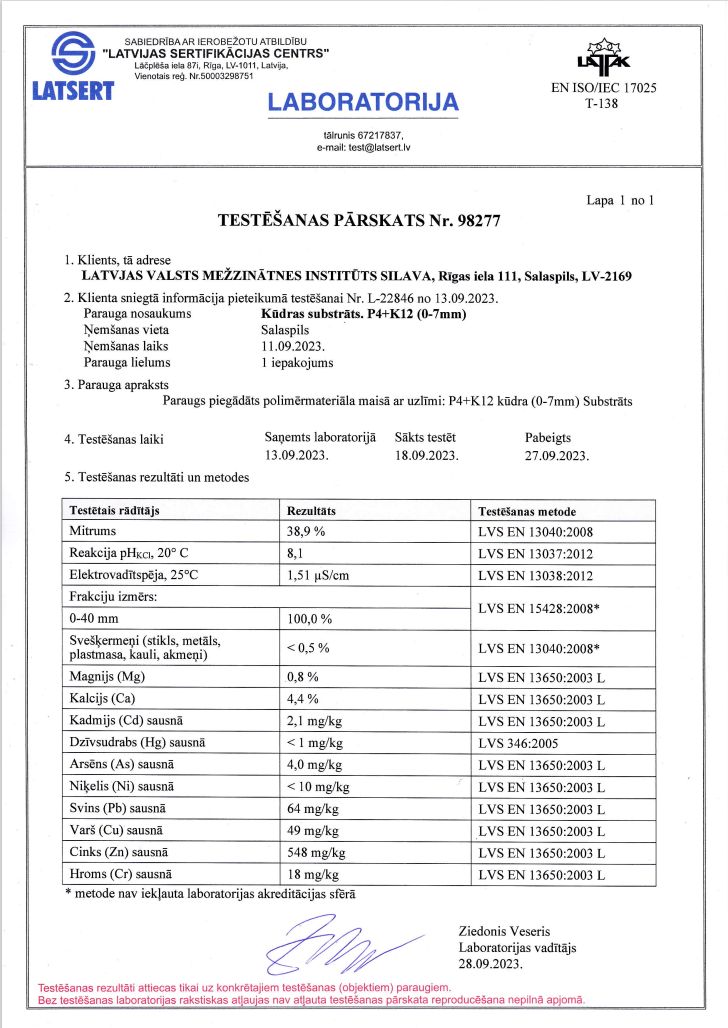


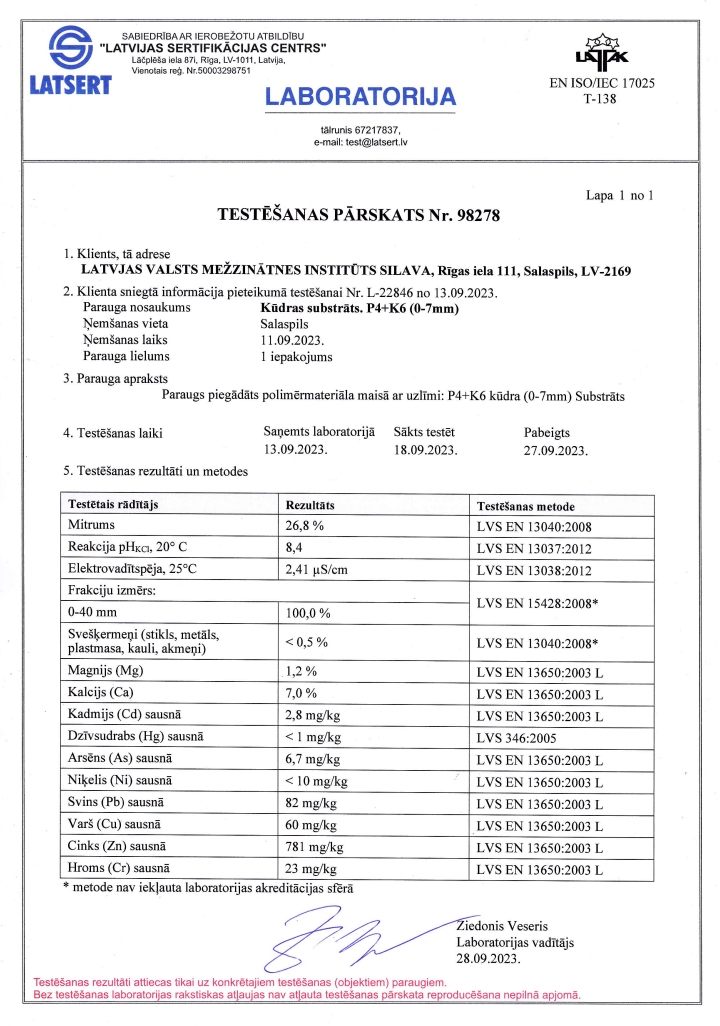


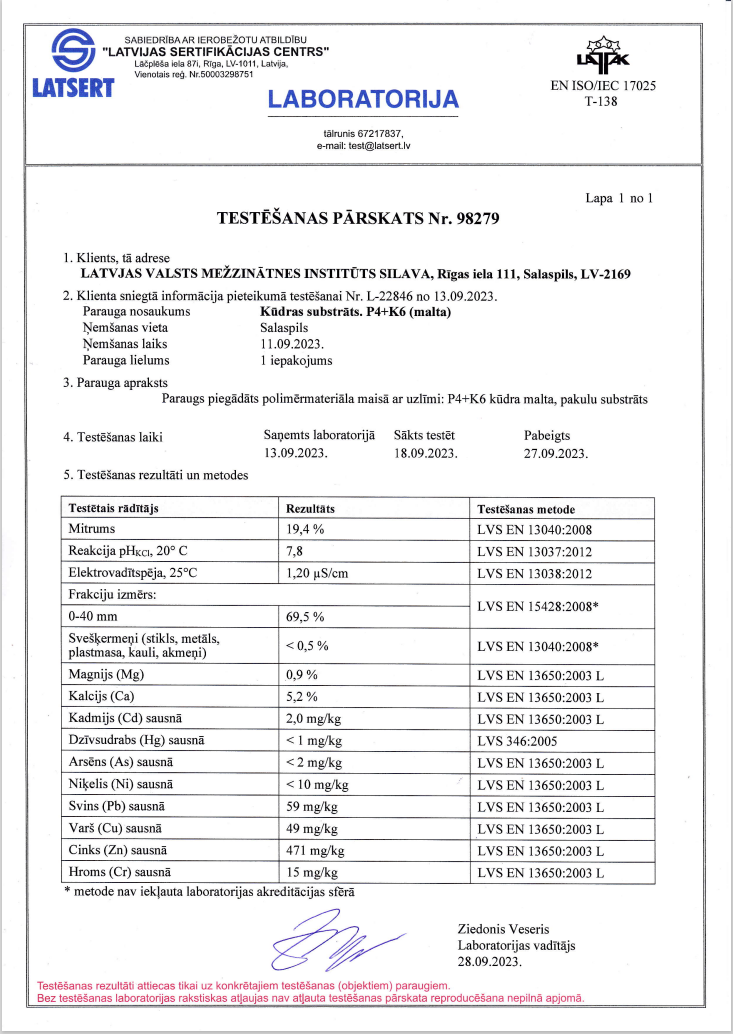
From those tested in Silava's laboratory, the following 3 substrates and 3 soil amendments were selected which were analyzed in an internationally accredited and certified independent laboratory.

**Chemical analyses of substrates from an accredited and certified independent laboratory.**

**Substrātu ķīmiskās analīzes.no akreditētas un sertificētas neatkrīgas laboratorijas.**

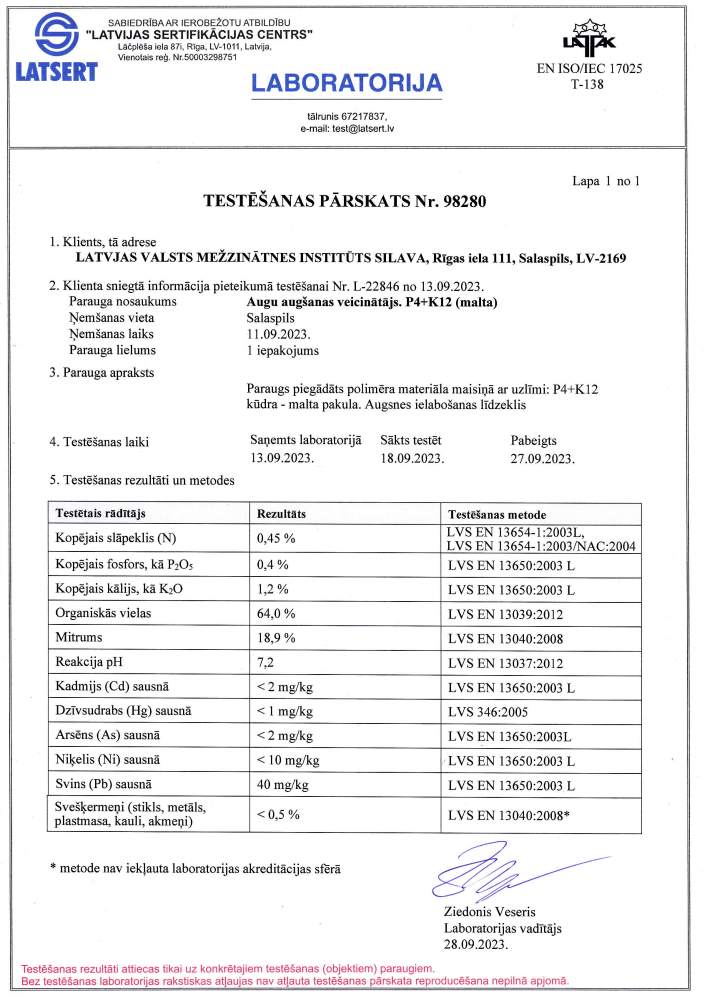


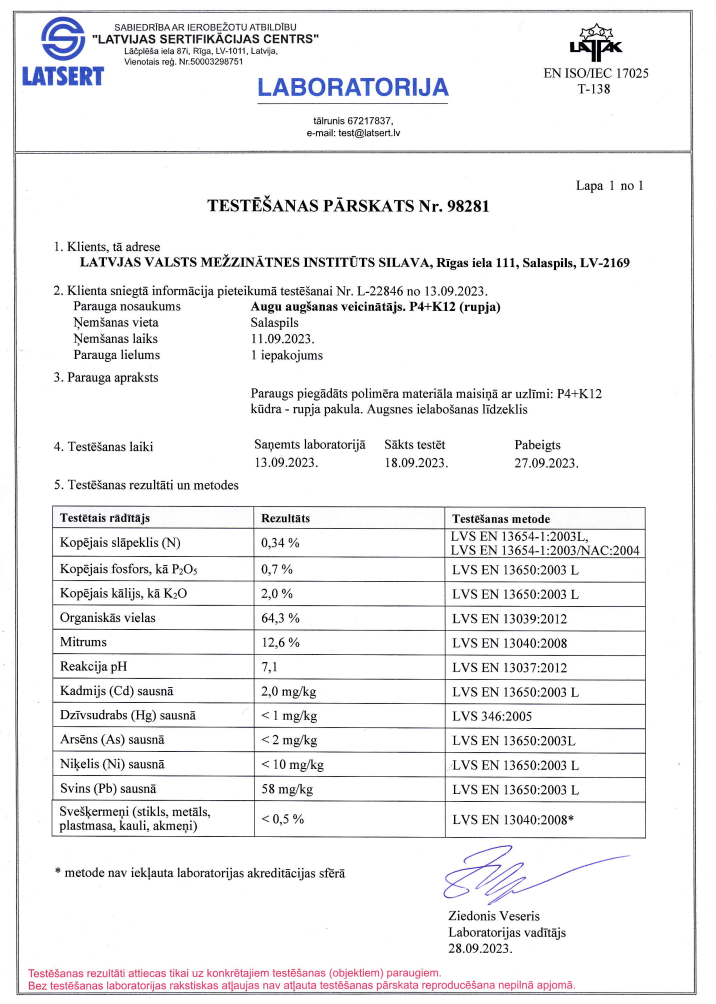


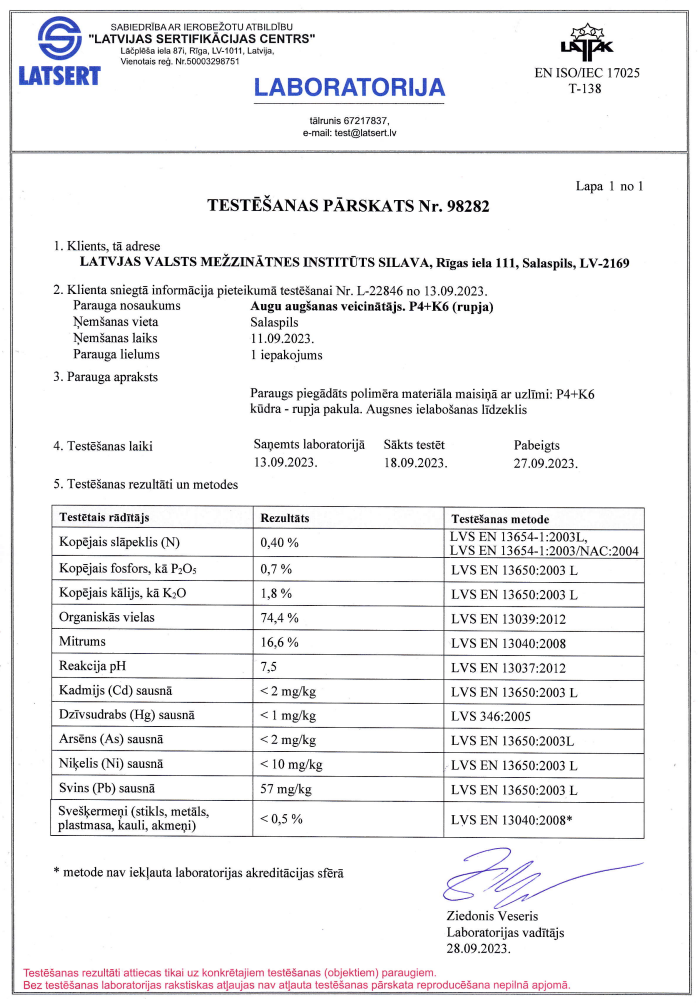


**Chemical analysis of soil amendments from an accredited and certified independent laboratory.**

**Augsnes ielabošanas līdzekļu ķīmiskās analīzes no akreditētas un sertificētas neatkrīgas laboratorijas.**





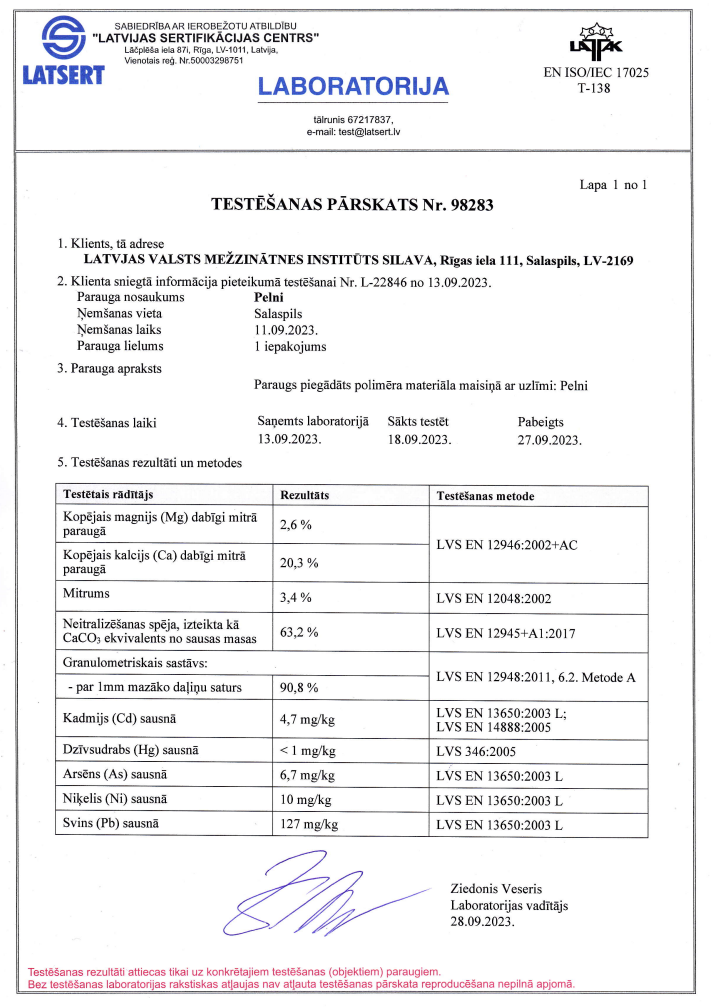


Based on these results from an accredited and certified independent laboratory and linking them with the regulations of the LR MK of September 1, 2015 no. 506 "Regulations for the identification, quality conformity assessment and trade of fertilizers and substrates". Latvijas Vēstnesis, 179, 14.09.2015. https://likumi.lv/ta/id/276480, the substrates exceed the permissible doses of zinc (Zn) and cadmium (Cd), which can be explained by the fact that the wood ash supplied for the creation of the secondary mixture had a higher content of cadmium and zinc and the chemical properties of the ash are should be continuously checked before making the substrate.

After the soil amendment analyses, it can be concluded that all 3 tested plant growth improvements can be used as plant growth improvements with low biogenic content.

**Chemical analysis of wood ash as a liming agent from an accredited and certified independent laboratory.**

**Pelnu kā kaļkošānas līdzekļa ķīmiskās analīzes no akreditētas un sertificētas neatkrīgas laboratorijas.**



Some elements owe achieve limits, but in mix they diluting and final product quality for soil amendments fits to the standards. Our concept that we should to focus on final result – element content in soil instead of concentration in material, because with large does even materials fitting to the standards could lead to over achieving some element content limits in the soil or substrates.