

COMPOUND FERTILIZERS GRANULATION USING BUCKWHEAT HUSK ASH

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Renewable energy sources are important in reducing dependence on fossil fuels in developing the EU's green course. Therefore, alternative energy sources such as straw, husks and other combustible bio-waste are being sought. Every year in Lithuania, about 130–140 thousand tons of straw suitable for biofuel production are used. The reuse of biomass ash in agriculture is important to create nutrient cycles, thus there exists great potential in the use of biomass as a fertilizers [1, 2].

In order for biomass ash to be used as a fertilizer in large quantities and become a commodity, it must meet certain requirements of both producers and consumers. Fertilizers composition must meets to the needs of plants; active substances must be in a form accessible to plants; fertilizer must be effectives and do not pose a threat to human safety and the environment [3].

Considering that the ecological buckwheat (JSC "Ekofrisa") husk ash contains 35–39 % soluble potassium (calculated as K_2O) and about 6 % phosphorus soluble in mineral acids (calculated as P_2O_5), but no nitrogen, were added materials which consists nitrogen and phosphorus (ammonium sulphate and ammonium hydrogen phosphate). After granulation of compound fertilizers (Fig. 1) using different (20–60 %) retour content and different (20–24 %) moisture content, the largest part of the marketable fraction (2–5 mm granules) was up to 57 %.

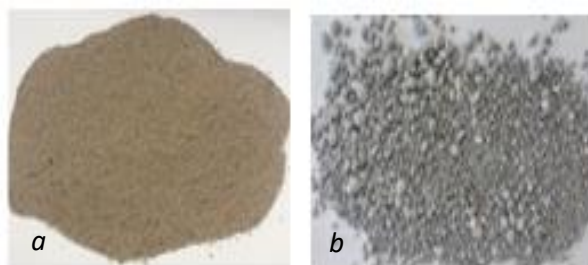


Fig. 1. Buckwheat husk ash: *a* – ash powders; *b* – fertilizers granules

The most important properties of granular fertilizers, as values of granular static strength, bulk density, moisture, and 10 % concentration solution of fertilizer were analysed.

References

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2. M. Kulokas, M. Praspaliauskas, N. Pedišius. Investigation of Buckwheat Hulls as Additives in the Production of Solid Biomass Fuel from Straw. Lithuania. Energies 2021, 14(2), 265; <https://doi.org/10.3390/en14020265>.
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