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Res. Agr. Eng.

Stražil Z., Kára J.:

**Study of knotweed
(Reynoutria) as**

resource for energy and industrial utilization

Res. Agr. Eng., 56 (2010): 85-91

This paper deals with the *Reynoutria × bohemica* and *Reynoutria japonica* under conditions of the Czech Republic. It evaluates the impact of soil, weather conditions and various terms of harvest (autumn, spring) on the yield, dry matter content, phytomass loss, ash content, and basic elements content change in plants. Heavy metals content was determined in soil where plants were grown and consequently in plants themselves. The average yield of dry matter at the fully closed stands of *Reynoutria japonica* were 9.06 t/ha in autumn, *Reynoutria × bohemica* from 13.23 to 21.41 t/ha, according to the site. The yield losses within the winter period were found on average 42% for *Reynoutria japonica* and 34% for *Reynoutria × bohemica*. The moisture decrease of *Reynoutria japonica* was found from 68% in the autumn to 24% in

the spring, and of *Reynoutria × bohemica* from 67% to 23%, respectively. Decreased content of nitrogen, phosphorus, potassium, calcium, and magnesium in the knotweed phytomass was found during the latter (spring) harvest periods in comparison with the earlier harvest periods. Decreased elements content in phytomass during the latter harvest period (spring) increases the phytomass quality as a fuel from both aspects – technical and emissions generation. The ash content in plants varied according to the site, on average from 3.12% in Ruzyně to 4.6% in Chomutov. None of the heavy metals monitored in knotweed plants reached the maximum admissible values determined for the food or feed purposes in the Czech Republic. From the results of combustion experiments, it is evident that *Reynoutria × bohemica* is a good fuel. Energy sorption shows the extreme CO concentration in flue gases in comparison with other monitored fuels. According to the ČSN EN 12809 (2001) standard it does not meet even the third class of requirements. On the contrary, knotweed and wood bar