

SĒJAS KAŅEPES (*CANNABIS SATIVA L.*) KĀ VIDEI DRAUDZĪGS ENERGORESURSS

HEMP (*CANNABIS SATIVA L.*) AS FRIENDLY ENERGY RESOURCE FOR ENVIRONMENT

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Introduction

Hemp has the widespread options of use: food, feed and alternative energy (biodiesel and solid fuel). The aim of this study was to clarify local hemp's (*Cannabis sativa L.*) possibilities of use for energy resource.

Materials and methods

Hemp (*Cannabis sativa L.*) is annual crop of hemp family (*Cannabaceae*). The hemp was sown on April 4, 2009 in the sod-podzolic loam soil and it was harvested on September 21, 2009. In the research the local hemp 'Pūriņi' was studied with three nitrogen (N) fertilizer rates. Arsenic (As), cadmium (Cd), lead (Pb) and titanium (Ti) presence was determined plasma optical emission spectrometer *Optima 2100 DV* (in Rezekne Higher Education Institution in Laboratory of Chemistry) but oil content in hemp seed samples - by corn analyzer *Infratec 1241tm*.

Results and discussion

The positive effect on the yield of seed and shive of hemp had significant ($p < 0.05$) N-fertilizer rates but the negative effect – on the oil content (Fig. 1).

Cadmium was not stated in stems of hemp (Fig 2). The lower N fertilizer rate was in hemp the less content of As. Arsenic comes in the air while burning of fossil fuels. Hemp has taken As from atmospheric air and water. The better the plants are provided with nutrients, the less they take arsenic.

Conclusions

An increased nitrogen fertilizer rate reduces the oil content of hemp seeds. Since plants take arsenic from air and water, it is important to provide plants with needed nutrients component.

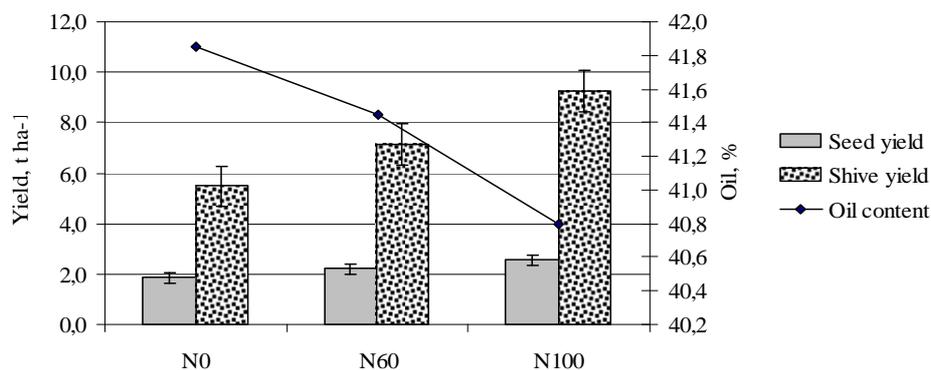


Figure 1. The seed and shive yield and oil content for the hemp ‘Pūriņi’ in 2009

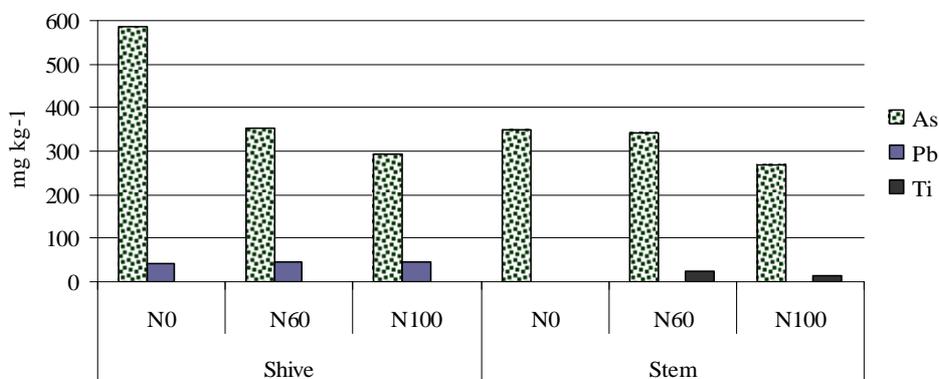


Figure 2. Metals in hemp of different N fertilizer rates (kg ha⁻¹) and plant content, mg kg⁻¹

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Abstract. Poiša Liēna, Adamovičs Aleksandr., Hemp (*Cannabis sativa* L.) as friendly energy resource for environment

Hemp is suitable renewable energy resource. The aim of this study was to clarify local hemp's (*Cannabis sativa* L.) possibilities of use for energy resource. Arsenic (As), cadmium (Cd), lead (Pb) and titanium (Ti) presence in hemp was determined using inductively coupled plasma optical emission spectrometer Optima 2100 DV. If there were increased N fertilizer rates, there were increased hemp seeds and shive yield but the oil content was reduce. Arsenic content was higher in shive than in stem with fibre. The better the plants are provided with nutrients, the less they take arsenic.

Abstrakts. Poiša Liēna, Adamovičs Aleksandrs, Sējas kaņepes (*Cannabis sativa* L.) kā videi draudzīgs energoresurss

Kaņepes ir Latvijai piemērots atjaunojamās enerģijas resurss. Pētījuma mērķis: novērtēt vietējo kaņepju (*Cannabis sativa* L.) izmantošanas iespējas atjaunojamās enerģijas iegūšanai. Arsēna (As), kadmija (Cd), svina (Pb) un titāna (Ti) daudzums kaņepēs noteikts ar induktīvi saistītās plazmas optiskās emisijas spektrometru Optima 2100 DV. Palielinot N papildmēslojuma devas, palielinājās kaņepju sēklu un spaļu ražība, bet samazinājās eļļas saturs. Spaļos bija lielāks As daudzums nekā stublājam ar lūksni. Jo labāk augi bija nodrošināti ar barības vielām, jo mazāk viņi uzņēma arsēnu.