2.15 GERHARD SIGL[1], HERBERT EIGNER[1], PETER LIEBHARD[2]
[1] AGRANA Research & Innovation Center GmbH, Josef-Reither-Str. 21-23, A – 3430 Tulln
[2] University of National Resources and Life Sciences, Vienna, Gregor Mendel Str. 33, A – 1180 Wien

# THE EFFECT OF DIFFERENT INTERCROP SPECIES ON THE NITROGEN AVAILABILITY

## ABSTRACT

In Austria intercrops are grown in 75% of the fields before sugar beet. The advantages of intercrops are diverse. Species with ability of nitrogen fixation may induce additional nitrogen availability for sugar beet. Different intercrop species respectively varieties as well as mixtures of these intercrop species were grown in 2012 to 2014 on two sites, differing in water supply, each year. Reactions in sugar beet yield and quality can be reported. Additionally, soil samples were taken to a depth to 90 cm at several times in 2012 to understand the development of the nitrogen content in different soil layers in dependence of the tested intercrops. Soil analysis was done by the electro-ultrafiltration method (EUF).

Following the pre-crop wheat and a nitrogen content of 2.35 mg $NO_3$/100g soil intercrops formed under dry conditions 1 - 2 t/ha dry matter. On the second site 4.45 mg $NO_3$/100g soil were recorded after onion. There, under sufficient water supply intercrops produced 2 - 5 t/ha dry matter. At both sites, in autumn, nitrate content in plots with yellow (*Sinapis alba*) or brown mustard (*Brassica juncea*) resp. cress (*Lepidium sativum*) exceeded that of oil radish (*Raphanus sativus* var. *pleiformis*) by approximately 20%, fallow, oil flax (*Linum usitatissimum*) and buckwheat (*Fagopyrum esculentum*) by more than 100%. Similar values are recorded for lentil (*Lens culinaris*) and vetchling (*Lathyrus sativus*). Additional nitrogen fixation was not observed. Especially oil radish and yellow mustard were able to keep nitrate in the upper soil layer till spring.