

2.13 JACEK PRZYBYŁ, NATALIA MIODUSZEWSKA, KRZYSZTOF PILARSKI,
IRENEUSZ KOWALIK

Poznań University of Life Sciences, Institute of Biosystems Engineering, Ul. Wojska
Polskiego 28, PL – 60-637 Poznań

CHANGES IN THE PHYSICAL SOIL PROPERTIES DURING THE GROWING SEASON OF SUGAR BEET INCLUDING THE DIFFERENT TILLAGE TECHNOLOGIES

ABSTRACT

Modifications of tillage affect not only the quantity and quality of harvested crops, but also the physical soil properties. Sugar beet requires soils with good physico-chemical and biological properties, because the structure of the soil, the moisture content and compaction have a significant impact on proper development and consequently the industrial value of roots yield. Modern cultivation technologies should have a positive effect on soil environment, therefore usage of simplified systems of soil cultivation is getting more popular (among them mainly the strip tillage). Replacing of conventional tillage systems by the new simplified technologies can bring benefits by reduction of the risk of soil erosion and to improve physical properties. Simultaneously the usage of simplifications in the cultivation of the soil carries the risk of excessive compaction, which can lead to deterioration of plant development conditions.

Therefore, the aim of this study was to assess changes in humidity and compaction of soil including the different tillage technologies of sugar beets. In order to execute the aim of study in 2011 and 2012 it was established one-factor experiment in two-way classification model in the set of complete random blocks. Experimental facility consisted of six sugar beet cultivation technology, including strip-till technology, diversified in terms of stubble tillage, type of mulch and pre-sowing cultivation system.

The analysis showed that none of the terms (before sowing of sugar beet, 6 leaf phase and meeting, covering rows of plants and after harvest) simplified tillage systems did not significantly affect on the increase of the amount of soil water. However it has been stated, that the simplifications of tillage cause an increase of soil compaction, which is undesirable.
