2nd International Conference on

BIOFUEL & BIOENERGY

March 27-28, 2019 | Paris, France

# The effect of digestion fertilization on the yield and SPAD values of selected plants cultivated in eastern Poland

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The field experiment was carried out in the experimental farm in eastern Poland (51°27'53"N, 22° 3'52"E) in 2016-2017. This research aimed to compare SPAD values between three different crops (triticale, sorghum, maize) with three schemes of fertilization, including mineral and organic (digestate from biogas plant) fertilizers. Nitrogen fertilization was in the following schemes: N-1 only mineral, N-2 before sowing digestate and later mineral, N-3 only digestate. Each scheme included two dates, pre-sowing and during the cultivation. Nourishment status of plants with nitrogen was evaluated on the basis of the SPAD (Soil and Plant Analysis Development) index. The non-destructive measurement of chlorophyll concentrations in leaves were analyzed by the meter SPAD-502 values. The amount of chlorophyll present in plant leaves can serve as an indicator of the overall condition of the plant itself.

**Results:** The digestate used in the fertilization variants (N-2 and N-3) did not affect the yield of the green mass of the tested crop plants. Only in the case of sorghum, the yield of the green mass was higher in the fertilization variant in which the digestate was used. The lowest yields of dry matter were recorded in the cultivation of triticale, and the highest in the cultivation of maize. The digestate used in the N-2 and N-3 fertilization variant did not differentiate the dry matter yield for triticale and maize, while sorghum dry matter yield was higher for plants fertilized with digestate. Replacement of mineral fertilization with a digestate does not cause deterioration of plant nutrition. In the final stage of development of sorghum and maize were even better nourished. Triticale plants fertilized with digestate (N-2 and N-3) were not worse nutritious than those fertilized with mineral fertilizers.

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