CORN PROTEIN CONTENT – A COMPARISON BETWEEN METHODS, ANALYSORS AND FARMERS EXPECTATIONS

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Abstract

In a process of problem solving and diet formulation the analysis offeed ingredients' proteins have to be done accurately, rapidly, cheep and if is possible at the farm level. As a general rule the accurate methods last too long and real time methods are not so exactly. The study is doing the comparison between the results of three methods 1. Classical chemistry (*Kjeldahl*method*)*, 2. Near infrared spectroscopy analysis (NIR) and 3. By FT-NIR spectrometer used for analyzing the corn's protein content. The "reference sample" was considered the result obtained from classical chemistry - Kjeldahl method and the comparison was between classical, NIR and FT-NIR methods, for corn's grains and corn's flour. Each measurement was performed twice and no significant difference was found between repetitions (p<0.00). The average protein content in corn for 39 samples was 7.82±0.16% by Kjeldahl method, by NIR equipment, 7.47±0.17% in corn's grains and 7.57±0.15% in corn's flour and by FT-NIR equipment, 8.40±0.29% in corn's grains and 7.80±0.12% in corn's flour.Comparing the results of NIR and FT-NIR measurements with Kjeldahl method results significant differences between first measurement (F=3.625 at p =0.007), second measurement (F=3.255 at p =0.013) and average measurements (F=3.486 at p =0.009). The smaller differences between reference results was in case of FT-NIR in corn's flour (0.02%) but were no significant differences by Turkey test comparison for any of NIR, FT-NIR, grains or flour. In conclusion, irrelevant to the method or equipment used for measurements it appears more feasible to run the samples at farm level.

Key words: Kjeldahl, NIR, FT-NIR, protein, corn
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