FRIEDRICH-LOEFFLER-INSTITUT
FLI
Bundesforschungsinstitut für Tiergesundheit
Federal Research Institute for Animal Health

Effects of by-products from biofuel production on feed intake and performance of growing fattening bulls

U. Meyer, A. Schwabe, G. Flachowsky and P. Lebzien

Institute of Animal Nutrition, Friedrich-Loeffler-Institute (FLI), Federal Research Institute for Animal Health, Bundesallee 50, 38116 Braunschweig, Germany
ulrich.meyer@fli.bund.de

1. Introduction

The high global demand for energy leads to an increasing production of biofuel. During the production process starch and plant oils are used. The remaining protein rich by-products such as rapeseed meal (RSM) and dried distillers grains solubles (DDGS) are available for animal nutrition, but the variety of production processes leads to a wide variation of feed quality. The aim of this study was to compare the use of RSM and DDGS with soybean meal (SBM) in diets for growing fattening bulls in order to evaluate effects on feed intake and performance parameters.

2. Materials and Methods

The rations fed to the bulls were planned to be isonitrogenous and isoenergetic and to meet the energy requirement according to the German recommendations (Gesellschaft für Ernährungs-physiologie, GfE 1995) for high body weight gain.

Animals: 59 bulls (German Holstein)
4 groups with 15/14 bulls

Fattening period: 246 – 558 kg body weight

Housing: non insulated stable
boxes with slatted floor
7 resp. 8 animals per box

Concentrate allowance:

Group	SBM	RSM	DDGS	RSM+ DDGS
		kg/d		
Mineral premix	0.5	0.5	0.5	0.5
SBM	1.1	-	-	-
RSM	-	1.5	-	0.8
DDGS	-	-	1.6	0.8

Roughage: maize silage, intake ad lib.

Water: free access to water

Data registration: daily feed intake and body weight (individually)
4 groups with 15/14 bulls

Statistics: GLM procedure, Tuckey‘s-test (SAS software package)

3. Results

The animals consumed the concentrates as offered and the crude protein content of the four diets showed no differences and was 14.2, 14.0, 14.4 and 14.3 %, for SBM, RSM, DDGS and RSM+DDGS respectively. Dry matter (DM) intake and weight gain are shown in the table:

Group	SBM	RSM	DDGS	RSM+ DDGS
n	15	14	15	15
		Feed intake (kg DM/d)		
Mineral premix	0.44	0.44	0.44	0.44
SBM	0.96	-	-	-
RSM	-	1.30	-	0.73
DDGS	-	-	1.44	0.73
Maize silage	6.14	5.85	5.78	6.07
Total	7.54	7.59	7.66	7.97
		Body weight gain (g/d)		
	1380^{ab}	1410^{ab}	1300^{b}	1450^{a}

a>b, p>0.05

The total DMI varies between 7.5 and 8.0 kg/d and was not significantly different between the groups. Daily body weight gain stayed on a high level for German Holstein bulls and differed only between DDGS and RSM+DDGS-groups.

4. Conclusions

It can be concluded that RSM and DDGS are suitable to replace SBM as protein source in diets for fattening bulls.