SORGHUM IN CARP (*CYPRINUS CARPIO* L.) DIET

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Common carp (*Cyprinus carpio* L.) is one of the most widely cultured freshwater fish in the world. Cereals are basic energy sources for common carp and other cyprinids. Commercially important cereals (particularly wheat and maize) are largely used for human consumption and industrial purposes. In recent decades, great attention has been focused on cereals such as rye, barley, oats, common millet, sorghum and other cereals as alternative sources of carbohydrates and, partially, protein and lipids for livestock and fish feeds. Sorghum (particular *Sorghum bicolor*) is one of the most important cereals used for fodder, human diet (in some world regions), alcohol and biofuel production and other industrial purposes. Due to its tolerance to heat, drought and nutrient deficiency, sorghum is favoured over other cereals in terms of cultivation on poorly structured soils. The levels of protein (12.5% on average) and nitrogen free extracts (above 60% dry matter basis) indicate a relatively high biological value of sorghum grain. Milling and/or flaking processes increase grain digestibility and usability. The nutritional value of sorghum grain is generally lower than in most cereals, including maize (the most commercially important cereal crop in the Balkan). However, its higher level of tolerance to the above mentioned unfavourable agroecological conditions and its resistance to western corn rootworm (*Diabrotica virgifera virgifera*) suggest that sorghum has emerged as a potential substitute for maize in its marginal production regions. An experiment was conducted using rye, wheat bran and sorghum in feeds for pre-consumable carp categories (500-800 g body weight). These cereals accounted for 47.5% of the feed in each of the 3 experimental groups, whereas the remaining 52.5% was constant, with soybean meal as a key ingredient (25%). Digestibility of major organic components was monitored. The highest digestibility values for protein (91.89%), lipids (79.84%) and nitrogen free extracts (55.35%) were obtained in the experimental rye-based diet, and the lowest (71.86%, 76.71% and 22.10%, respectively) in sorghum-based diet. Although cereals are primarily energy sources, protein and lipid digestibility suggests that these plants, including sorghum, can be used in cyprinid fish feeds.

Key words: cereals, sorghum, carp, digestibility, nutrition

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