

Solubility, Water-Holding Capacity, and Specific Gravity of Different Concentrates

Maurizio Ramanzin¹, Lucia Bailoni¹, and Giovanni Bittante¹¹ Dipartimento di Scienze Zootecniche, Università di Padova, 35131 Padova, Italy

The effects of solubility and water-holding capacity on functional and unit specific gravity were evaluated in samples of fish, soybean, linseed, corn gluten, corn gluten feed, corn, barley, and dehydrated alfalfa meals and in wheat bran, raw flaked soybeans, cottonseeds, and dried sugar beet pulp. Solubility was estimated by washing the samples in nylon bags in a washing machine. Functional specific gravity was estimated in a pycnometer for unwashed and washed samples after 0 and 15 h of soaking in distilled water. Water-holding capacity was measured by a centrifugation method and by a filtration method. Unit specific gravity was estimated as the weighted mean of the functional specific gravity of insoluble DM and the specific gravity of water held by the particles. Solubility and functional specific gravity of insoluble DM varied significantly among feedstuffs from 5.0 to 53.2% of DM and from 1.31 to 1.62, respectively. The increase in functional specific gravity from soaking was small. Water-holding capacity was lower with filtration than with centrifugation methods and varied from .94 to 6.44 g of H₂O/g of DM. Unit specific gravity varied significantly from 1.07 to 1.24. Soluble fractions and water-holding capacity can markedly influence the functional and unit specific gravity of concentrate particles.

Key Words: water-holding capacity • functional specific gravity • unit specific gravity • solubility • concentrates

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