

Multielemental analysis of agroindustrial by-products employed in animal feeding by instrumental neutron activation

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Agricultural and agroindustrial by-products are residues whose commercial prices are maintained by strong market demand. In Brasil, a great quantity of residues and by-products from both, agricultural and agroindustry are widely used in ruminant feeding.

It is therefore important to measure the mineral composition of those by-products because minerals are essential for growth, reproduction and health. In the last years, there has been much discussion that mineral deficiencies or imbalances are involved in great economic damages. On the other hand, the greater part of fruits, that produce the by-products, were treated with insecticides to combat insects and diseases. These chemical products, in many cases, contain toxic elements in their molecular structure that may be absorbed by plants. Moreover, the information about mineral composition of most Brazilian agroindustrial by-products are scarce.

Mineral composition monitoring of the following by-products: hulls of cotton, rice, soybean and wheat; fish meal; feather meal, meat meal, feather plus viscera meal; rinds of cotton, rice, orange; citrus pulp and tomato residue was carried out by means of instrumental neutron activation.

Ca, Cl, Co, Cu, Cr, Fe, K, Mg, Mn, Mo, Na, Sc and Zn considered as essential, and As, Cd, Hg, Sb often classified as toxic were determined. For all by-products essential elements were within the required levels and As and Hg concentrations were lower than maximum tolerable dietary level for ruminants.

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