

## **ENVIRONMENTAL INTANGIBLES: THE CASE OF VIRTUAL SOILS IN INTERNATIONAL TRADE AND FOOD SECURITY**

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Global food trade are changing drastically. New demands and pressures are overexploiting natural resources, particularly soils, water and forestland savannahs in terms of diversity. While land planning is a relevant issue in terms of discussion for a better use of a land, very few has been developed in terms of the exploitation of the "quality" of the better soils of the world. The Pampas, the corn belt, the black soils of Ucraina, the Belt of South Africa and very more wonderful few lands with high quality soils are under risk and needs to be incorporate in terms of "value".

Environmental Intangibles such as "virtual soils" is a new relevant issue to be incorporated in the future discussion of global trade and food security. Virtual soils, are denominated to such soils that in terms of nutrients are being exportated in terms of commodities producing a double effect: by one side the depletion of high quality soils in the world and in the demand side, a contribution to increasing the contamination with nutrients in the other part.

Virtual soil is the quantity of good land, clearly identify (nitrogen, phosphorous, potassium and more than 16 different nutrients), that a country export via commodities to other countries.

This implies a depletion of the nutrients savings of the good lands. Nutrients depletion, overexploitation and exportations of grains are factors engaged in the global trade of commodities. Externalities of the process must be considered in the global trade of commodities. The case of study involve an analisis of the situation of best soils of Latin America and the trade relation between these countries with other markets of the world.

Micronutrients and oligonutrients (such as Mn, Se, and others), are too relevant for future discussion in the limitations for the production system such as are now P, N or K.

The River Plate Basin is a relevant area of South America integrated by Argentina, Brasil, Bolivia, Paraguay and Uruguay on which territories the transformation of land use in terms of overexploitation of soils for cashcrops is transforming the whole area. The waterway Paraná-Paraguay is the arterie by which nutrients contents in grains, woods or been are being exported but by this runoff can be see in the mouth of the Basin as nutrientes acumulation.

In this presentation we are presenting a methodology, the overview, definitions and case studies for the consideration and implementation of virtual soils as an environmental intangible to be in consideration in future discussion of sustainability in the food system in terms of a global context.