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Virtual water embodied in international trade of soybean

Dario Caro and Marianne Thomsen
Aarhus University, Department of Environmental Science, Denmark (dac@envs.au.dk)

Trade of soybean has been increasing substantially over the last decades implying large quantities of virtual water that are driven by consumption of soybean products in other countries. This study focuses on hidden water flows embodied in the international trade of soybean. The virtual water content embedded in soybean imported and exported by 174 countries during the period 2000-2013 is estimated. We find that in 2013, 467 Gm3 of soybean-related water is embodied in international trade. Approximately, it corresponds to 12% of global agricultural virtual water flows. The global virtual water trade of soybean grew by 124% during the period 2000-2013 with an average growth per year of about 9%. In 2013, Brazil and China are the largest net exporter (245 Gm3 of water exported) and importer (303 Gm3 of water imported) countries. As such, the largest flux of water embodied in trade of soybean is the export from Brazil to China (186 Gm3). The fluxes flowing from Argentina to China and from US to China are also significant (56 and 52 Gm3, respectively). While many countries rely on the import of soybean, the flux of virtual water from low stressed to high stressed water countries (254 Gm3) is definitely higher than the opposite flux (32 Gm3). Therefore, this study shows that the international flows of soybean-related virtual water generate a positive relationship between water scarcity and water abundance at the global level. Results presented are relevant in assessing the trade-offs of the virtual water strategy in dealing with water scarcity, showing how supply-chain perspective can help to address sustainable water use.