

**Keywords:** water footprint, slaughter houses, Brazil, swine, birds, agricultural crops

### **Abstract**

The calculation of the water footprint of a specific agricultural sector is based upon the same rationale as the calculation of the carbon footprint. It involves regarding every production stage as a link in the production chain starting with the generation of inputs and ending with the presentation of the agricultural products to the consumer. This new holistic approach, which takes into account not only the production unit but also the environment where it fits, has not been fully explained to the different agricultural sectors or to the general public. This lack of information has been creating great conflicts among all stakeholders. The water footprint assessment is relatively new and it still requires optimization. However, one of its main outputs is the calculation water demand per production stage within a specific agricultural sector. In this study, a calculation of the water footprint of several bird slaughter houses in the states of the Central-South Region of Brazil was performed. The states of RJ (Rio de Janeiro) and ES (Espírito Santo) showed the lowest water footprints, due to the reduced size of the aviaries in these states. However the same states presented the worst water management efficiency mainly due to the low productivity of the maize and soy cropping systems practiced in there. The best water management efficiency was observed in the States of PR (Paraná), SC (Santa Catarina) and GO (Goiás). In addition the calculation of the water footprint of swine slaughter houses in the same region of Brazil was also performed. The state who presented the greatest water footprint in this sector was RS (Rio Grande do Sul) (2,702 km<sup>3</sup>), followed by SC (2,401 km<sup>3</sup>) and PR (1,089 km<sup>3</sup>).

The water consumption by agricultural crops represents 99.88% (national average) of the total water footprint used in swine farming. The evaluation of water demand using water footprint assessment brings to the table other concepts, which have become very important to the animal production agricultural sectors and also to the public. Having more detailed information on water demand by sector and by production stage within the sector will allow for the implementation of policies and good practice guidelines which might greatly improve the efficiency of water use. The agricultural community has been improving on the efficiency of its production systems including in the field of reproductive, nutritional and sanitary management. New concepts and values such as traceability and animal wellbeing have already been applied. Now, it is the time for a new leap forward, recognizing that environmental management requires the understanding of the nutrient, energy and water flows (NEW). The knowledge of these flows will create a more environmentally balanced, profitable and socially valued agriculture.