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WASTEWATER REUSE ON EUCALYPTUS PLANTATIONS IN COLONIA AYUÍ, ARGENTINA: EFFECTS ON SOILS AND PRODUCTIVITY

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SUMMARY

The treatment of urban sewage with stabilization ponds is a common method used in medium size and small communities of the Entre Ríos province, in Argentina. This methodology has many advantages, such as the low cost of maintenance, easy to manage and has low energy demand. However, the discharge of the effluent of this plants to a water course can produce eutrophication as a result of its high level of nutrients. Reuse of this wastewater for irrigation is an excellent alternative to maintain the quality of the streams and to generate a sustained addition of nutrient and water for the plants. The results of this study correspond to a project led by INTA and Universidad Tecnológica Nacional with the collaboration of Municipio of Colonia Ayuí, Masisa and the ONG Salto Grande Ambiental. The community of Colonia Ayuí is located in the northeast of Entre Ríos, in the perimeter of the Salto Grande hidroelectrical plant, has 3000 residents and its urban effluents were discharged to the Salto Grande lake after its secondary treatment. The main objectives of this project are to reduce the addition of N and P to the reservoir and to evaluate the effect of the wastewater on the growth of an *Eucalyptus grandis* plantation. In January 2016, the irrigation of the 12 ha plot was started with a drip irrigation system. Total height and diameter at breast height were measured every 3 months on irrigated and non-irrigated plots and soil samples were taken annually to estimate electrical conductivity (EC) and sodium adsorption ratio (SAR). Total wastewater reuse was 84.78 Ml by the end of 2017 and irrigated plots increased their growth by 35% . Some changes in EC and SAR were detected but they didn't affect the trees. Soil and water monitoring will be continued but this preliminar results indicate that the reuse of wastewater for irrigation is an excellent alternative to the direct discharge.

Keywords: ***eutrophication, reuse, Eucalyptus grandis; waste water***