CONCENTRATION OF PINEAPPLE JUICE BY COUPLING REVERSE OSMOSIS AND OSMOTIC EVAPORATION. CABRAL, L.M.C. (1); DORNIER, M. (2); GALINDO, C. (3) REYNES, M. (2); MATTA, V.M. (1) Embrapa Agroindústria de Alimentos, Av das Américas, 29.501. Guaratiba, CEP 23020-470, Rio de Janeiro, RJ, Brasil. (2) Cirad-Fhlor, 75, rue J.F. Breton, BP 5035, Montpellier, França. (3) Universidade Federal do Rio de Janeiro, Ilha do Fundão, Rio de janeiro, RJ, Brasil. Email: lcabral@ctaa.embrapa.br.

Osmotic evaporation is a rather new membrane concentration process in which two solutions of different concentrations are separated by a hydrophobic porous membrane. This process can be carried out at mild temperature and pressure, presenting a great potential to be used for fruit juice concentration. This process allows the selective water vapour extraction from a diluted aqueous solution (fruit juice) to a concentrated solution (brine), concentrating it and preventing its thermal degradation. In this work the coupling of reverse osmosis and osmotic evaporation was evaluated for the concentration of pineapple juice. A pineapple juice from Brazil, at 12°Brix and 3% pulp content, was used as raw material. The juice concentration was carried out in two steps. First, the juice was pre concentrated by reverse osmosis up to 32ºBrix. Reverse osmosis trials were carried out in a pilot scale equipment at Embrapa, using a composite film membrane with 95 % NaCl rejection. The mean permeate flux was around 25 kg/hm^2 at 60 bar transmembrane pressure. The maximum concentration factor achieved was 5.5 when the juice reached 32ºBrix. This juice was then concentrated by osmotic evaporation. The osmotic evaporation trials were carried out at Cirad in a lab scale system composed of two independent closed circuits, one for the juice and the other for the brine, using a PFTE 0.2 μm flat sheet membrane. A 5.5 M $CaCl_2$ solution was used as brine. The evaporatory flux ranged from 8.5 kg/hm^2 to 5.5 kg/hm^2 and the concentration of the juice reached up to 58°Brix. These preliminary results indicate the potential of coupling reverse osmosis and osmotic evaporation to concentrate tropical fruit juices.