

Effects of Nitrogen Fertilization of Peach Trees on a Fertile Soil in Southern Brazil

Brunetto, G.^{1*}; Melo, G. W.²; Kaminski, J.¹; Ceretta, C. A.¹; Scandellari, F.³; Ventura, M.³; Tagliavini, M.³

¹Department of Soils of the Federal University of Santa Maria, C. P. 221, Cep: 97105-900, Santa Maria, Rio Grande do Sul, Brazil.

²Embrapa Uva e Vinho, C. P. 130, Cep: 95700-000, Livramento 515, Bento Gonçalves, RS, Brazil.

³Department of Fruit and Woody Plant Sciences, University of Bologna, Viale Fanin, 46, 40127, Bologna, Italy.

The Peach in Rio Grande do Sul State, Southern Brazil, covers almost 13 thousand of hectares and the area of the Serra Gaúcha, with its 3.200 hectares, is the largest area cultivated, where mainly white flesh fruit varieties are cultivated. The Orchards are usually located in soils with medium or loamy texture and with medium or high organic matter content. Despite the high capacity of nitrogen (N) supply of these soils, N fertilization is usually applied. This fertilization can affect N content in leaves, shoot growth, yield and chemical and physical characteristics of fruits. This study aimed at understanding the effect of N fertilization in peach Orchards planted on a well endowed with organic N, carried out from 2000 to 2002. The experiment was established in a commercial Orchard of

peach (*Prunus persica*, L. Batsch) trees, cv. Chimarrita (white flesh fruits), grafted on Aldrichi rootstock, located at Pinto Bandeira city (area of the Serra Gaúcha, 640 m altitude, in Rio Grande do Sul State, Southern Brazil). Peach trees were planted in 1995 with plant distance of 6.0 (between rows) x 4.0 (along the row) m. The soil was a Haplumbrept soil with clay 270 g kg⁻¹; organic matter 54 g kg⁻¹ and pH (H₂O) 6.3. The climate is subtropical and rainfall annual averages 1736 mm. Four treatments of N fertilization (0.0, 22, 44, 66 and 88 kg N ha⁻¹) were applied. Nitrogen was split 50% at the beginning of bud burst, 30% after hand thinning of fruits and 20% after fruit ripening. A randomized block experimental design was used with four replications. In all growing seasons, leaves were collected at the fourteenth week after the flowering, oven-dried and analyzed for total N, and the length of selected shoots was determined after leaf abscission. Fruits were collected when ripen and diameter, mass, yield, total N, total soluble solids, total titratable acidity and flesh firmness were determined. Nitrogen fertilization increase N content in leaves and fruits, but did not affect shoot growth, fruit diameter and mass fruits, yield, pulp total titratable acidity firmness. Nitrogen fertilization increased total soluble solids in the 2000 growing season only. The low response of peach trees to N fertilization is likely explained considering that optimal soil water content and mild temperatures favor soil organic matter mineralization and residues decomposition, thus increasing N availability for peach trees.

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*Corresponding author: brunetto.gustavo@gmail.com