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MANAGEMENT OF NITROGEN AND POTASSIUM FERTILIZER INPUTS ON FERTIGATED PEAR ORCHARDS AND ITS INFLUENCE ON YIELD AND FRUIT QUALITY

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Abstract:

In order to optimize the management of nitrogen and potassium fertilizer inputs with fertigation in soils under pear tree orchard cultivation, two field experiments were carried out in the Portuguese Region of Oeste over seven years. The experiments were conducted in two fertigated orchards of the Portuguese cultivar Rocha grafted on EMA, with different ages (P1 was planted in 1991, and P2 in 1998). The experiments were randomized complete block designs with three replications. Seven experimental treatments were imposed, consisting of different partitions of the same levels of nitrogen and potassium fertilization (on average 43 kg ha⁻¹, N and 80 kg ha⁻¹, K₂O at P1, and 44 kg ha⁻¹, N and 71 kg ha⁻¹, K₂O at P2) over the growing season, plus a control, without fertilization. No significant differences (P=0.05) were found among the experimental treatments on the yield and quality parameters in the younger orchard. In contrast, in P1 the application of nitrogen in at three different times – 1/3 at bud stage + 1/3 after fruit set + 1/3 before fruits reached 14 mm of equatorial diameter, plus the application of potassium every week, from bud stage to one week before harvest – lead to the highest mean annual yield (around 33 kg per tree), although without significant differences (P=0.05) from the experimental treatment consisting of the application of nitrogen every week and the application of potassium three times a year. The quality parameters of the produced fruits (firmness of the pulp, total soluble solids, and titratable acidity), in both trials, were within the adequate range values for the cultivar, although they were affected by the experimental treatments.