



# Potential Yield of Canola under Different Irrigation Frequencies and Nitrogen Levels in Brazilian Central-West Region

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## INTRODUCTION

Canola is an oilseed crop cultivated in several regions of the world. In the Brazilian Cerrado canola is grown in the off season, when rainfall is not sufficient to ensure the potential of maximum crop yield. It is known that canola has a high demand for nitrogen, thus the application of this nutrient is essential for obtaining a good crop yield. Considering these aspects, a study was conducted to evaluate the effects of different irrigation frequencies and nitrogen on morphological and productive components of canola.

## METHODOLOGY

One experiment was carried out at the Faculty of Agricultural Sciences, Federal University of Grande Dourados from May to September 2012 and repeated May to September 2013.

**Experiment 2012:** Treatments comprised three irrigation frequencies, (no irrigation -SI, weekly irrigation -IS and irrigation three times a week -I3S). Subplots received different doses of nitrogen: 0, 30, 60, 90 and 120 kg ha<sup>-1</sup>.

**Experiment 2013:** Treatments comprised three irrigation frequencies. Subplots received different doses of nitrogen: 0, 60, 120, 180 and 240 kg ha<sup>-1</sup>. The plots were irrigated by drip tapes installed between plant rows.

Readings of soil water tension were made on Mondays, Wednesdays and Fridays. All treatments received 20mm of irrigation before starting the treatments. Irrigation management was carried out through readings in tensiometers installed at 20 cm depth in the experimental units.



## RESULTS AND DISCUSSION

Table 1. Productive components of canola in two crop years. UFGD, Dourados-MS, 2012/2013

Year	Irrigation			Doses of nitrogen		
	I3S	IS	NI	0	60	120
<b>Grain yield (kg ha<sup>-1</sup>)</b>						
2012	2999.33 a	2730.42 a	1262.04 b	2214.21 a	2454.42 a	2323.15 a
2013	2228.33 a	1520.37 a	30.92 b	968.61 b	1541.75 a	1269.25 ab
<b>Average</b>	2613.83 a	2125.39 b	646.48 c	1591.41 b	1998.09 a	1796.20 ab
<b>Thousand grain weight (g)</b>						
2012	3.71 aA	3.32 bA	2.94 cA	3.04 c	3.33 b	3.61 a
2013	3.77 aA	3.30 aA	0.90 bB	2.53 a	2.97 a	2.47 a
<b>Average</b>	3.74 a	3.31 a	1.92 b	2.78 a	3.15 a	3.04 a
<b>Oil content (%)</b>						
2012	40.64 aA	39.56 bA	38.31 cA	38.05 c	39.42 b	41.03 a
2013	28.44 aA	28.83 aA	0,00 bB	19.77 a	20.14 a	17.36 a
<b>Average</b>	34.54 a	34.19 a	19.15 v	28.91 a	29.78 a	29.19 a
<b>Oil yield (kg ha<sup>-1</sup>)</b>						
2012	1115.50 a	986.75 a	442.77 b	772.14 a	891.29 a	881.60 a
2013	581.95 a	440.34 a	0,00 b	258.36 b	424.82 a	339.11 ab
<b>Average</b>	848.73 a	713.55 a	221.38 b	515.25 b	658.05 a	610.35 ab

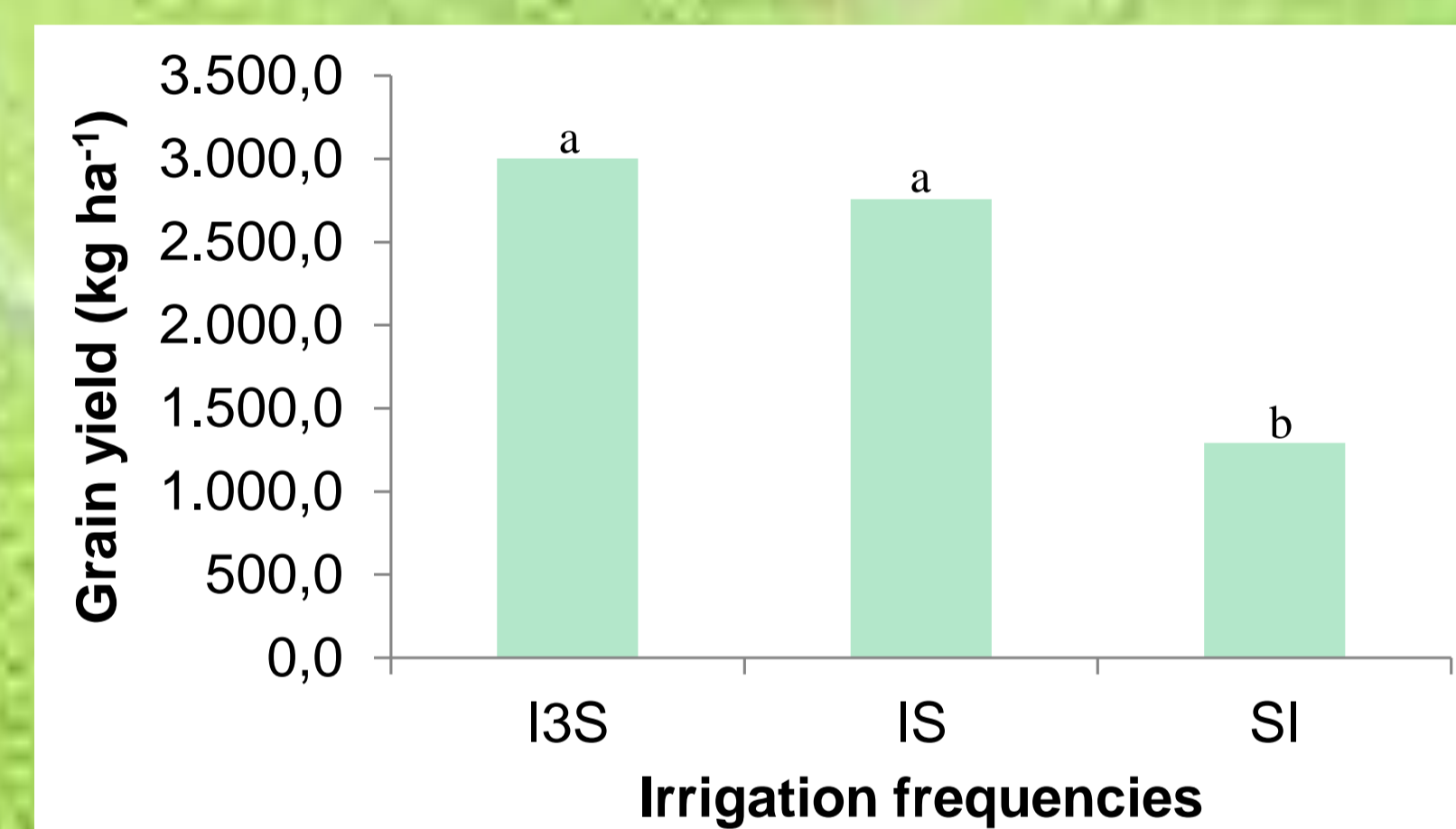


Figure 1. Grain yield of canola. UFGD, 2012

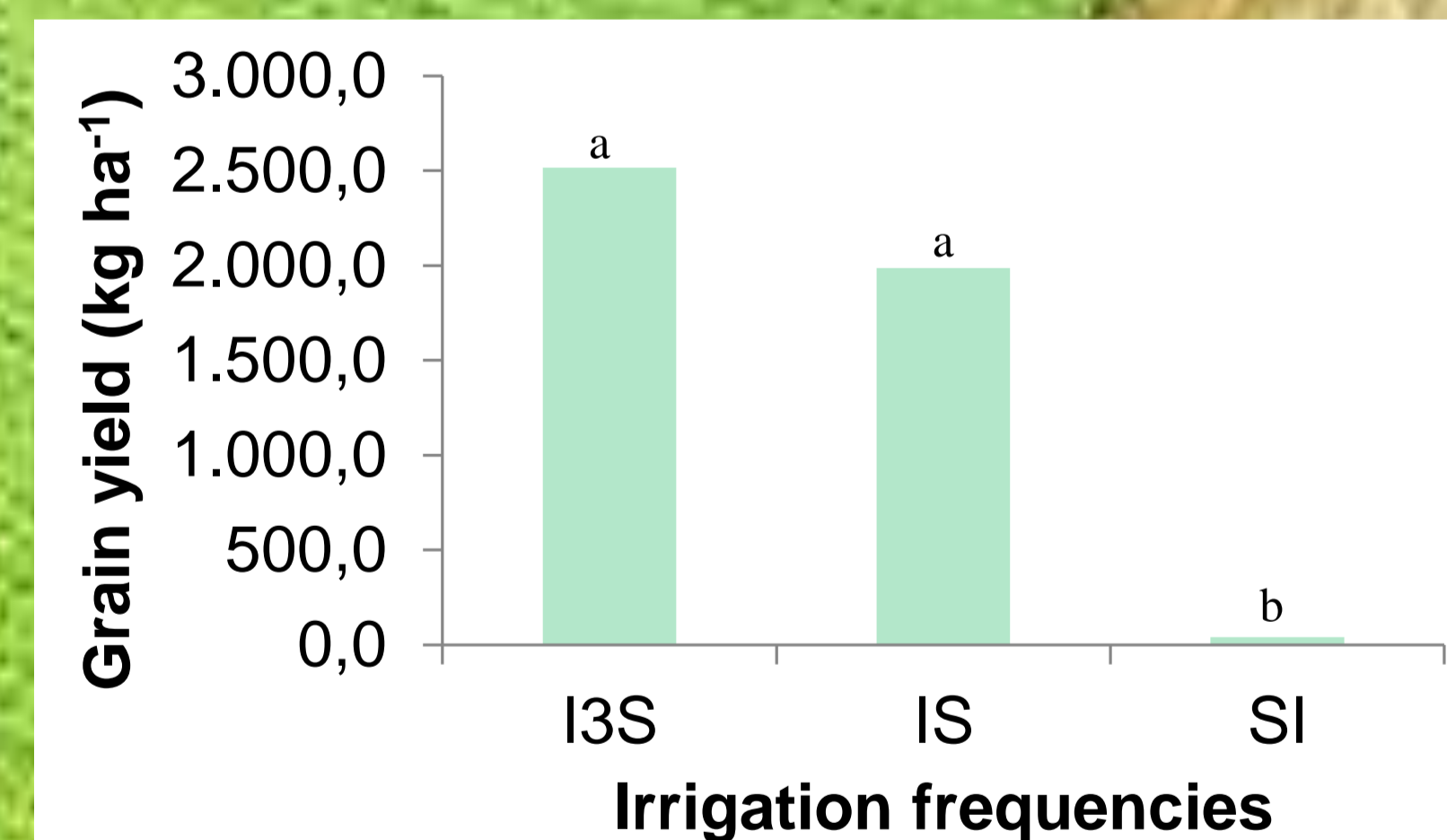


Figure 2. Grain yield of canola. UFGD, 2013

\*In each row, values followed by the same lowercase letter do not differ significantly at 5% probability by Tukey test; in each column, the capital letter compares 2012 to 2013.

## CONCLUSION

The authors conclude that additional irrigation should be used in the Central-West region to ensure a maximum yield potential of canola, as the highest grain yield in this study, 2,999.33 kg ha<sup>-1</sup>, was obtained through irrigation performed three times a week. Canola yields had a positive result with increasing levels of nitrogen, which shows the importance of using this nutrient for achieving high levels of grain yield and oil. Considering two years of evaluation, the highest grain yield was obtained with 60 kg ha<sup>-1</sup> of nitrogen.