

Quick reference guide to critical nutrient levels for canola in WA

Table 1 The range and average nutrient contents found in one tonne of canola seed and the range of nutrient content in stubble typically found in canola crops over a range of growing seasons

	Macronutrient content (kg/tonne)						Micronutrient content (g/tonne)		
	N	P	K	S	Mg	Ca	Cu	Zn	Mn
Seed	26-40	2-6	6-9	3.2-6	2-4	2-4	1.5-5	22-45	16-40
Average	33	4	7	4	2.5	2.5	2.1	30	27
Stubble	6-10	1-3	18-30	3.4-6.5	0.6-2	4-7	2-6	10-15	10-30

Macronutrients

Table 2 Predicted percentage loss of seed yield due to the severity of phosphorus deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Phosphorus 0-10cm soil test (mg/kg) (Colwell P)	<13	13-16	16-22	>22
Phosphorus in whole tops at seedling stage (%)	<0.27	0.27-0.35	0.35-0.4	>0.4
Phosphorus in whole tops at rosette stage (%)	<0.18	0.18-0.23	0.23-0.27	>0.27

Table 3 Predicted percentage loss of seed yield due to the severity of sulfur deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Sulfur 0-10cm soil test (mg/kg) (in KCl)	<5	5-6	6-8	>8
Sulfur in whole tops of young plant (%)	<0.2	0.2-0.35	0.3-0.5	>0.5

Table 4 Predicted percentage loss of seed yield due to the severity of potassium deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Potassium 0-10cm soil test (mg/kg) (Colwell K)	<29	29-36	36-46	>46
Potassium in whole tops at early seedling stage (%)	<3.8	3.9-4.5	4.5 -5.5	>5.5
Potassium in whole tops at rosette stage (%)	<3	3-3.5	3.5-4.0	>4.0

Table 5 Predicted loss of seed yield due to the severity of nitrogen deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Nitrogen in whole tops at seedling stage (%)	<2.7	2.7-3.0	3.0-3.4	>3.4
Nitrogen in whole tops at rosette stage (%)	<4	4-4.5	4.5-5.1	>5.1

Micronutrients

Table 6 Predicted percentage loss of seed yield due to the severity of copper deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Copper 0-10cm soil test (mg/kg)	<0.15	0.15-0.25	0.25-0.35	>0.35
Copper in seedling whole tops (mg/kg)	<3.0	3.0-4.0	4.0-5.0	>5
Copper in rosette whole tops (mg/kg)	<2.2	2.2-3.0	3.0-3.6	>3.6
Copper in youngest emerged leaf (mg/kg)	<2	2.0-3.0	3.0-4.0	>4.0

Table 7 Predicted percentage loss of seed yield due to the severity of zinc deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Zinc 0-10cm soil test non-alkaline soil (mg/kg) (DTPA)	<0.15	0.15-0.25	0.25-0.35	>0.35
Zinc 0-10cm soil test alkaline soil (mg/kg) (DTPA)	<0.19	0.19-0.31	0.31-0.45	>0.45
Whole top zinc at early rosette stage (mg/kg)	<15	15-25	25-30	>30
Zinc in young mature leaf (mg/kg)	<12	12-15	15-30	>30

Table 8 Predicted percentage loss of seed yield due to the severity of manganese deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Manganese in whole tops of young plant (mg/kg)	<15	15-20	20-30	>30

Table 9 Predicted percentage loss of seed yield due to the severity of molybdenum deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Molybdenum in whole tops of young plant (mg/kg)	<0.05	0.05-0.08	0.08-0.11	>0.11

Table 10 Deficiency - Predicted percentage loss of seed yield due to the severity of boron deficiency in canola

Yield loss	>25%	15-25%	5-15%	<5%
Boron 0-10cm soil test (mg/kg) (in CaCl ₂)	<0.3	-	-	0.3-0.5

Table 11 Toxicity - Predicted percentage loss of seed yield due to the severity of boron toxicity in canola

Yield loss	<5%	5-15%	15-25%	>25%
Boron 10-20cm soil test (mg/kg) (in CaCl ₂)	4-18	18-25	25-30	>30
Boron 20-30cm soil test (mg/kg) (in CaCl ₂)	4-18	18-25	25-30	>30
Boron 30-40cm soil test (mg/kg) (in CaCl ₂)	4-18	18-25	25-30	>30

Other soil attributes

Table 12 Impact of soil acidity on canola seed yield

Yield loss	>25%	15-25%	5-15%	<5%
Acid soil (pH) 0-10cm soil test (in CaCl ₂)	<4.5	4.5-5.0	5.0-5.5	5.5-7.5
Acid soil (pH) 10-20cm soil test (in CaCl ₂)	<4.5	4.5-5.0	5.0-5.5	5.5-7.5
Acid soil (pH) 20-30cm soil test (in CaCl ₂)	<4.5	4.5-5.0	5.0-5.5	5.5-7.5

Table 13 Impact of soil alkalinity on canola seed yield

Yield loss	<5%	5-15%	15-25%	>25%
Alkaline soil (pH) 0-10cm soil test (in CaCl ₂)	5.5-7.5	7.5-8.0	8.0-8.5	>8.5
Alkaline soil (pH) 10-20cm soil test (in CaCl ₂)	5.5-7.5	7.5-8.0	8.0-8.5	>8.5
Alkaline soil (pH) 20-30cm soil test (in CaCl ₂)	5.5-7.5	7.5-8.0	8.0-8.5	>8.5

Table 14 Impact of aluminium toxicity on canola seed yield

Yield loss	>25%	15-25%	5-15%	<5%
Soil aluminium 10-20cm soil test (mg/kg)	>5	4.0-5.0	2.0-4.0	<2.0
Soil aluminium 20-30cm soil test (mg/kg)	>5	4.0-5.0	2.0-4.0	<2.0

Table 15 Impact of soil sodicity on canola seed yield

Yield loss	>25%	15-25%	5-15%	<5%
Soil sodicity - exchangeable sodium (%)	>15	6-15	2-6	<2

Table 16 Impact of soil compaction on canola seed yield

Yield loss	>25%	15-25%	5-15%	<5%
Sandy soil - penetration resistance (MPa)	>2.2	1.9-2.2	1.6-1.9	<1.6
Duplex soil - penetration resistance (MPa)	>2.6	2.2-2.6	1.7-2.2	<1.7
Clay soil - penetration resistance (MPa)	>4.5	3.8-4.5	3.0-3.8	<3.0

Table 18 Impact of soil salinity on canola seed yield

Yield loss	Extreme risk of yield loss	High risk of yield loss	Moderate risk of yield loss	Low risk of yield loss
Soil salinity - EC 1:5 (mS/m)	>100	75-100	50-75	<50