

Supplementary Material

Productivity of diverse forage brassica genotypes exceeds that of oats across multiple environments within Australia’s mixed farming zone

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Supplementary Table S1. Late grazing window (1600-2100 growing degree days after sowing) metabolisable energy and crude protein content of forage brassicas (bulb, stem and leaf portions), canola and forage oats at 7 experiments across the Australian mixed farming zone. Each genotype was ranked as a % of the site mean of all genotypes and the mean across sites is provided.

	Tummaville		Condamine		Iandra	York		Mean rank (%)
	2018	2019	2018	2019	2018	2018	2019	
Metabolisable energy content (MJ/kg DM)								
Pallaton raphano.	12.0	11.8	12.0	11.9	11.2	11.9	12.1	105
Winfred rape	12.0	11.5	12.0	11.2	12.0	11.2	11.4	103
Hunter leafy turnip	12.0	11.9	12.0	11.9	11.8	10.9	10.8	103
Green globe turnip	12.0	11.7	12.0	11.7	11.5	11.2	11.1	103
Goliath rape	12.0	11.1	12.0	11.8	11.6	11.3	11.3	102
Rival turnip	12.0	11.8	12.0	11.6	11.6	11.0	10.9	102
HT-R24 rape	12.0	11.4	12.0	11.2	11.5	11.3	11.4	102
Regal kale	11.2	11.0	11.8	11.6	11.2	11.6	11.1	100
Graza radish	11.0	11.5	11.8	11.6	11.3	-	-	100
Canola	-	11.8	10.5	11.8	10.3	7.1	11.7	93
Oats	8.5	9.6	9.3	10.7	10.2	8.8	-	84
<i>Site mean</i>	<i>11.5</i>	<i>11.4</i>	<i>11.6</i>	<i>11.5</i>	<i>11.3</i>	<i>10.6</i>	<i>11.3</i>	
<i>LSD</i>	<i>0.34</i>	<i>0.34</i>	<i>0.30</i>	<i>0.45</i>	<i>0.40</i>	<i>0.58</i>	<i>0.38</i>	
<i>P-Value</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	
Crude protein content (% DM)								
Green globe turnip	27.9	22.6	21.0	22.0	20.3	9.6	18.2	116
Graza radish	20.5	25.6	22.3	21.6	17.4	-	-	109
Regal kale	15.6	19.3	23.1	22.6	18.6	13.8	15.3	108
Rival turnip	21.6	20.6	20.3	23.1	18.9	9.0	16.6	106
Hunter leafy turnip	25.7	20.2	23.0	19.3	18.1	7.2	14.3	102
Pallaton raphano.	17.9	22.9	22.0	22.2	16.8	9.7	12.3	101
Canola	-	22.7	21.1	20.1	14.7	10.2	12.8	99
Winfred rape	21.0	18.7	21.6	22.2	16.0	7.8	13.6	97
Goliath rape	19.6	19.9	20.9	21.4	14.9	7.7	13.9	95
HT-R24 rape	17.9	19.0	21.2	22.8	14.2	9.6	12.1	95
Oats	11.7	14.1	14.6	12.3	9.4	9.7	-	69
<i>Site mean</i>	<i>19.9</i>	<i>20.5</i>	<i>21.0</i>	<i>20.9</i>	<i>16.3</i>	<i>9.4</i>	<i>14.3</i>	
<i>LSD</i>	<i>2.40</i>	<i>1.85</i>	<i>2.38</i>	<i>2.15</i>	<i>2.32</i>	<i>2.94</i>	<i>1.83</i>	
<i>P-Value</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.01</i>	<i>< 0.001</i>	

Supplementary Table S2. Early grazing window (800-1300 growing degree days after sowing) metabolisable energy and crude protein content of forage brassicas (bulb, stem and leaf portions), canola and forage oats at 5 experiments across the Australian mixed farming zone. Each genotype was ranked as a % of the site mean of all genotypes and the mean across sites is provided.

	Tummaville		Iandra	York		Mean rank (%)
	2018 ¹	2019	2019	2018	2019	
Metabolisable energy content (MJ/kg DM)						
Rival turnip	12.1	11.7	12.2	11.9	11.4	102
Pallaton raphano.	12.2	11.6	12.4	11.7	11.3	102
Green globe turnip	-	11.7	12.3	11.9	11.2	102
Graza radish	12.1	11.5	12.3	-	-	102
Hunter leafy turnip	11.9	11.6	12.4	11.7	11.4	101
HT-R24 rape	12.2	11.4	12.2	11.4	11.4	101
Regal kale	12.2	11.2	12.3	11.8	11.1	101
Winfred rape	12.1	11.2	12.3	11.4	11.5	101
Goliath rape	12.0	11.1	12.1	11.8	11.3	100
Canola	11.5	11.5	12.2	10.9	11.5	99
Oats	10.4	9.6	11.4	10.6	-	90
<i>Site mean</i>	<i>11.9</i>	<i>11.3</i>	<i>12.2</i>	<i>11.5</i>	<i>11.3</i>	
<i>LSD</i>	<i>0.23</i>	<i>0.23</i>	<i>0.27</i>	<i>0.77</i>	<i>0.12</i>	
<i>P-Value</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>0.02</i>	<i>< 0.001</i>	
Crude protein content (% DM)						
Graza radish	26.8	25.1	24.7	-	-	111
Pallaton raphano.	28.0	24.4	25.6	14.7	16.0	109
Regal kale	27.7	23.2	24.2	15.6	16.2	108
Canola	27.0	21.5	21.3	16.7	14.6	103
Green globe turnip	-	22.1	23.7	13.6	16.4	103
Rival turnip	28.4	19.3	22.0	13.5	16.0	100
Hunter leafy turnip	23.2	21.6	23.3	14.6	14.7	99
Goliath rape	24.7	21.5	22.6	12.2	14.3	96
Winfred rape	21.1	20.4	22.7	14.0	14.4	95
HT-R24 rape	21.8	18.9	21.1	14.4	14.6	93
Oats	18.5	18.4	20.8	12.1	-	84
<i>Site mean</i>	<i>24.7</i>	<i>21.5</i>	<i>22.9</i>	<i>14.1</i>	<i>15.2</i>	
<i>LSD</i>	<i>3.64</i>	<i>2.21</i>	<i>2.12</i>	<i>3.09</i>	<i>1.58</i>	
<i>P-Value</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>< 0.001</i>	<i>0.12</i>	<i>0.03</i>	

¹Based on aboveground biomass only as bulbs were insufficient in size for collection.