Supplementary Material

Phenotyping oilseed rape growth-related traits and their responses to water deficit: the disturbing pot size effect

Anaëlle Dambreville[A], *Mélanie Griolet*[A], *Gaëlle Rolland*[A], *Myriam Dauzat*[A], *Alexis Bédiée*[A], *Crispulo Balsera*[A], *Bertrand Muller*[A], *Denis Vile*[A] *and Christine Granier*[A,B]

[A]INRA, Montpellier SupAgro, UMR759 Laboratoire d'Ecophysiologie des Plantes sous Stress Environnementaux (LEPSE), 2 place Pierre Viala, 34060 Montpellier Cedex 2, France.

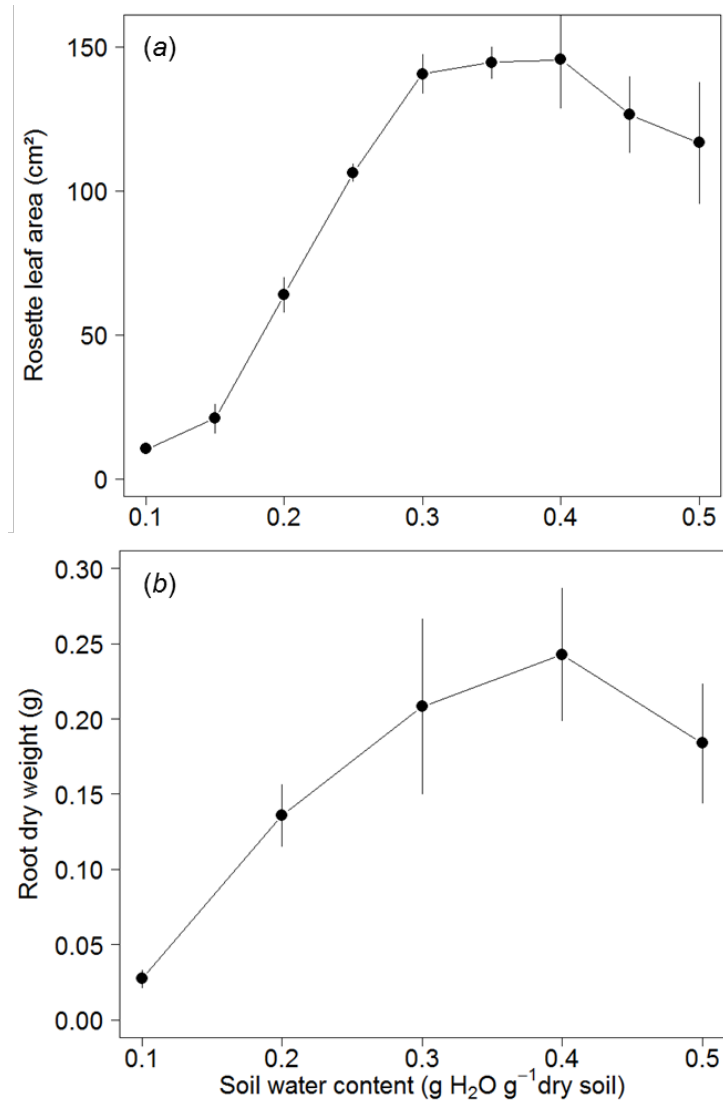[B]Corresponding author. Email: granier@supagro.inra.fr

Fig. S1. Rosette leaf area (*a*) and root dry weight (*b*) of genotype N90-740 as a function of soil water content in small pots. The two soil water contents used in our study were 0.4 and 0.2 g H_2O g^{-1} dry soil. They corresponded respectively to optimum soil water content for leaf area and root dry weight and to a reduction of both growth traits by *ca.* 50%. Bars are means $\pm$ CI ($\alpha = 0.05$).
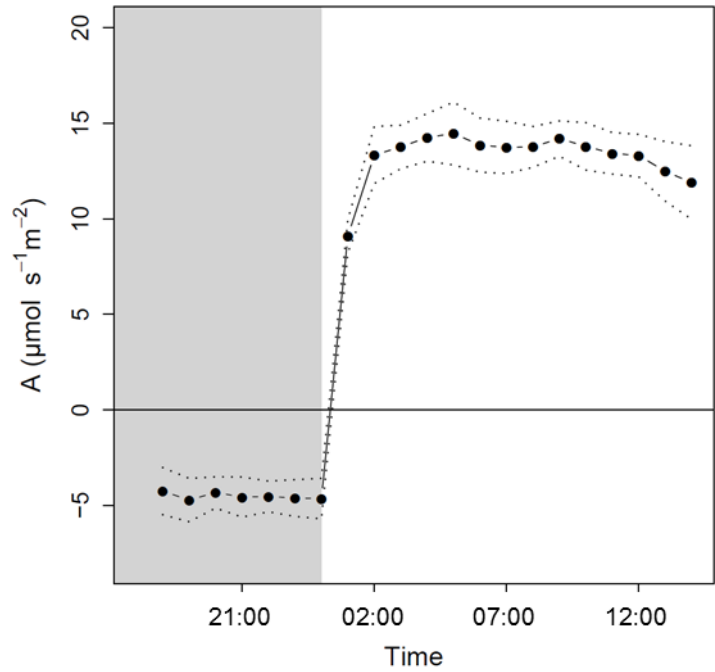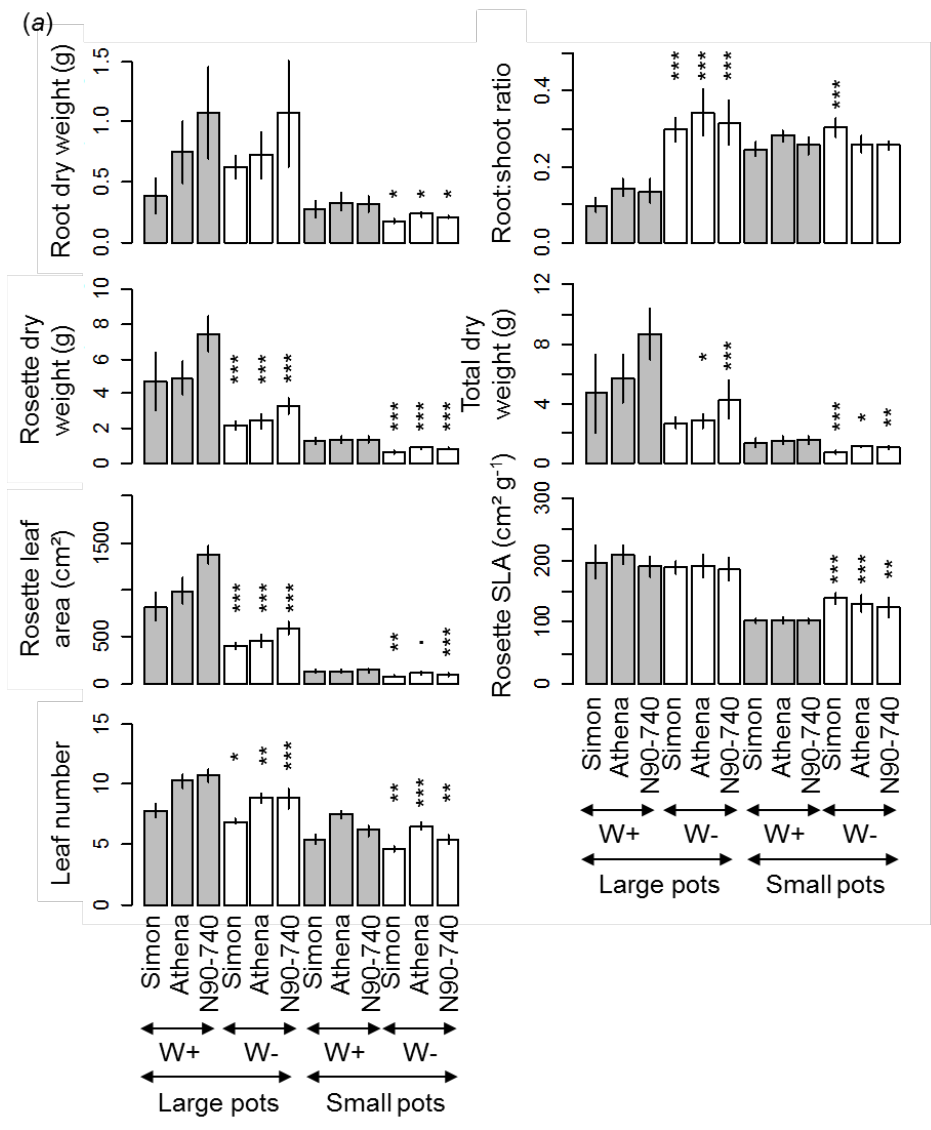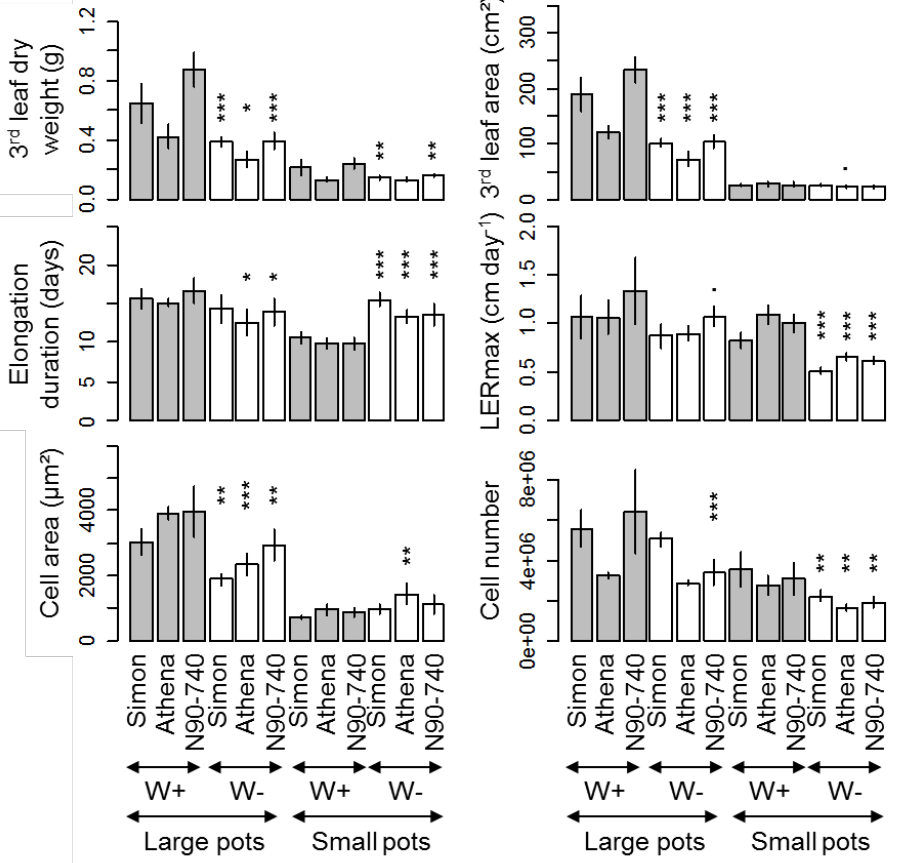
Fig. S2. Photosynthesis rate at the whole plant scale during a 24 h period. Grey and white zones correspond to night and day periods, respectively (16 h photoperiod). Each point is the mean of 4 oilseed rape plants. Dotted lines correspond to mean ± s.d.

(a)

(b)
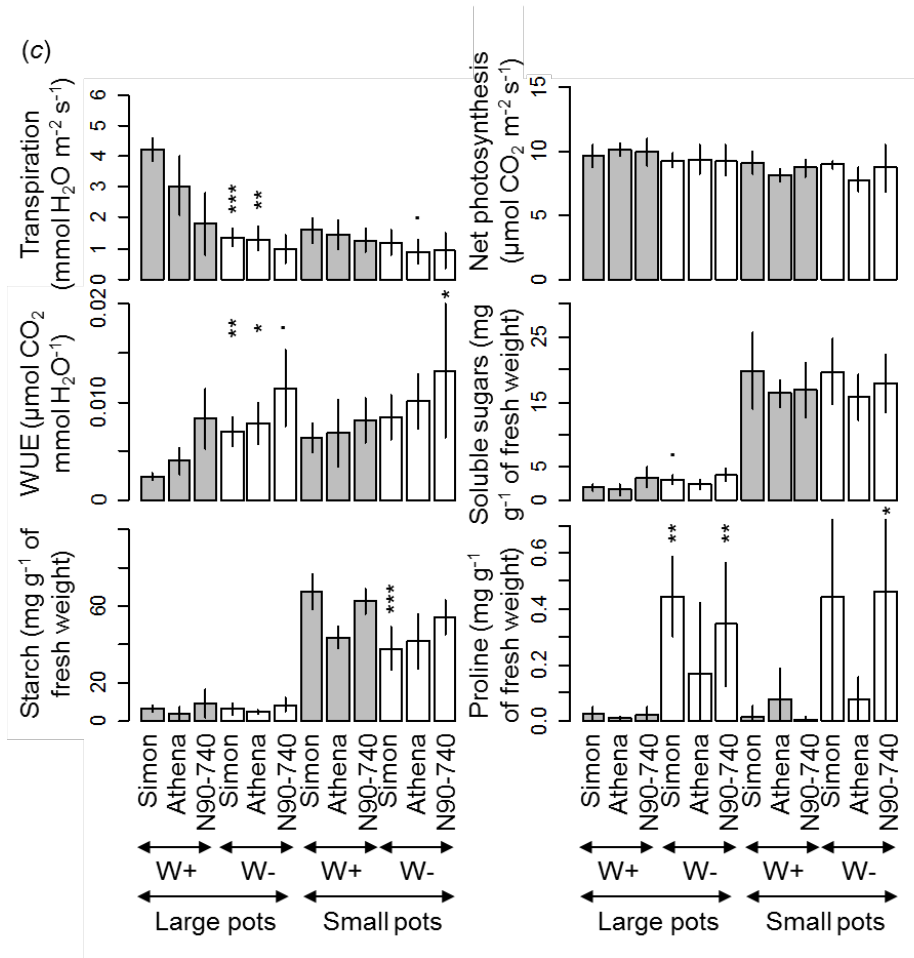
Fig. S3. Means of traits depending on pot size (large or small) and watering regimes (well-watered (W+) or water deficit (W-)) for the three oilseed rape genotypes. Traits are grouped depending on their scales: rosette (*a*), leaf and cell (*b*), and physiological (*c*). Stars (* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$) indicate significant differences between watering regimes for each genotype within each pot size. Bars are means ± CI ($\alpha = 0.05$).

Table S1.   Results of the analyses of variance for each trait as a function of pot size, water deficit and genotype and their first order interactions

N is the total sample size for each trait. The level of significance (ns $P > 0.05$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$) for each factor and the interactions is indicated.

	Pot size	Water deficit	Genotype	Pot size : Water deficit	Pot size : Genotype	Soil humidity : Genotype	N
Root dry weight	***	ns	***	ns	***	ns	102
Root:shoot	***	***	ns	***	ns	*	102
Rosette dry weight	***	***	***	***	***	ns	164
Total dry weight	***	***	***	***	***	ns	102
Rosette area	***	***	***	***	***	**	164
Rosette SLA	***	**	ns	***	ns	ns	164
Rosette leaf number	***	***	***	ns	***	ns	164
Leaf dry weight	***	***	***	***	***	***	128
Leaf area	***	***	***	***	***	**	164
Leaf elongation duration	***	***	*	***	ns	ns	103
LERmax	***	***	***	*	**	ns	103
Cell area	***	***	***	***	**	ns	71
Cell number	***	***	***	ns	*	ns	69
Transpiration	***	***	***	***	*	ns	73
Photosynthesis	***	ns	ns	ns	ns	ns	73
WUE	*	***	***	ns	ns	ns	73
Soluble sugar	***	ns	ns	ns	ns	ns	62
Starch	***	**	**	*	ns	*	62
Proline	ns	***	ns	ns	ns	ns	50

Table S2. **Sample sizes used for each growth trait depending on the genotype (Simon, Athena, N90-740), the pot size (large, small) and the watering regime (well-watered, water deficit)**

	Simon				Athena				N90-740			
	Large		Small		Large		Small		Large		Small	
	Well-watered	Water deficit	Well-watered	Water deficit	Well-watered	Water deficit	Well-watered	Water deficit	Well-watered	Water deficit	Well-watered	Water deficit
Root dry weight (g)	7	6	12	9	7	6	12	9	7	6	12	9
Root:shoot (g root dry weight g^{-1} rosette dry weight)	7	6	12	9	7	6	12	9	7	6	12	9
Rosette dry weight (g)	11	10	18	15	11	11	18	15	11	11	18	15
Total dry weight (g)	7	6	12	9	7	6	12	9	7	6	12	9
Rosette leaf area (cm²)	11	10	18	15	11	11	18	15	11	11	18	15
Rosette SLA (cm² g^{-1})	11	10	18	15	11	11	18	15	11	11	18	15
Leaf number	11	10	18	15	11	11	18	15	11	11	18	15
Third leaf dry weight (g)	11	10	12	9	11	11	12	9	11	11	12	9
Third leaf area (cm²)	11	10	18	15	11	11	18	15	11	11	18	15
Growth duration (days)	6	5	12	7	6	7	12	12	6	6	12	12
LER$_{max}$ (cm day^{-1})	6	5	12	7	6	7	12	12	6	6	12	12
Epidermal cell area (µm^{-2})	7	5	6	6	6	6	6	6	6	6	5	6
Epidermal cell number	6	5	6	6	6	6	5	6	6	6	5	6
Transpiration (mmol H$_2$O m^{-2} s^{-1})	7	5	6	6	6	5	7	7	7	5	7	5
Net photosynthesis (µmol CO$_2$ m^{-2} s^{-1})	7	5	6	6	6	5	7	7	7	5	7	5
WUE (µmol CO$_2$ µmol H$_2$O^{-1})	7	5	6	6	6	5	7	7	7	5	7	5
Soluble sugars (mg g^{-1} fresh weight)	5	3	6	6	3	3	7	6	4	5	7	7
Starch (mg g^{-1} fresh weight)	5	3	6	6	3	3	7	6	4	5	7	7
Proline (mg g^{-1} fresh weight)	5	3	3	3	3	3	4	3	4	5	7	7