

## Effect on different weed species

**The interaction between the high/low temperature and weed stress treatment under combined stress at plant interphase**

Table showing the effect of high/low temperature on germination percentage of different weed species

Genotypes	Stress treatments	Response under combined stress
		Type A parameters*
		Germination (%) **
Tumble pigweed <sup>1</sup>	Tumble pigweed + 5 °C <sup>1</sup>	0
	Tumble pigweed + 10 °C <sup>1</sup>	1
	Tumble pigweed + 15 °C <sup>1</sup>	14
	Tumble pigweed + 20 °C <sup>1</sup>	39
	Tumble pigweed + 25 °C <sup>1</sup>	51
	Tumble pigweed + 30 °C <sup>1</sup>	63
	Tumble pigweed + 35 °C <sup>1</sup>	59
Prostrate pigweed <sup>1</sup>	Prostrate pigweed + 5 °C <sup>1</sup>	0
	Prostrate pigweed + 10 °C <sup>1</sup>	1
	Prostrate pigweed + 15 °C <sup>1</sup>	5
	Prostrate pigweed + 20 °C <sup>1</sup>	9
	Prostrate pigweed + 25 °C <sup>1</sup>	6
	Prostrate pigweed + 30 °C <sup>1</sup>	8
	Prostrate pigweed + 35 °C <sup>1</sup>	8
Smooth pigweed <sup>1</sup>	Smooth pigweed + 5 °C <sup>1</sup>	0
	Smooth pigweed + 10 °C <sup>1</sup>	3
	Smooth pigweed + 15 °C <sup>1</sup>	26
	Smooth pigweed + 20 °C <sup>1</sup>	40
	Smooth pigweed + 25 °C <sup>1</sup>	41
	Smooth pigweed + 30 °C <sup>1</sup>	49
	Smooth pigweed + 35 °C <sup>1</sup>	67
Palmer amaranth <sup>1</sup>	Palmer amaranth + 5 °C <sup>1</sup>	0
	Palmer amaranth + 10 °C <sup>1</sup>	4
	Palmer amaranth + 15 °C <sup>1</sup>	36
	Palmer amaranth + 20 °C <sup>1</sup>	50
	Palmer amaranth + 25 °C <sup>1</sup>	56
	Palmer amaranth + 30 °C <sup>1</sup>	61
	Palmer amaranth + 35 °C <sup>1</sup>	71
Powell amaranth <sup>1</sup>	Powell amaranth + 5 °C <sup>1</sup>	0
	Powell amaranth + 10 °C <sup>1</sup>	14
	Powell amaranth + 15 °C <sup>1</sup>	46
	Powell amaranth + 20 °C <sup>1</sup>	50
	Powell amaranth + 25 °C <sup>1</sup>	74
	Powell amaranth + 30 °C <sup>1</sup>	84
	Powell amaranth + 35 °C <sup>1</sup>	76
Spiny amaranth <sup>1</sup>	Spiny amaranth + 5 °C <sup>1</sup>	0

	Spiny amaranth + 10 °C <sup>1</sup>	2
	Spiny amaranth + 15 °C <sup>1</sup>	3
	Spiny amaranth + 20 °C <sup>1</sup>	3
	Spiny amaranth + 25 °C <sup>1</sup>	8
	Spiny amaranth + 30 °C <sup>1</sup>	26
	Spiny amaranth + 35 °C <sup>1</sup>	67
Redroot pigweed <sup>1</sup>	Redroot pigweed + 5 °C <sup>1</sup>	0
	Redroot pigweed + 10 °C <sup>1</sup>	1
	Redroot pigweed + 15 °C <sup>1</sup>	10
	Redroot pigweed + 20 °C <sup>1</sup>	18
	Redroot pigweed + 25 °C <sup>1</sup>	23
	Redroot pigweed + 30 °C <sup>1</sup>	37
	Redroot pigweed + 35 °C <sup>1</sup>	53
Common water-hemp <sup>1</sup>	Common water-hemp + 5 °C <sup>1</sup>	0
	Common water-hemp + 10 °C <sup>1</sup>	0
	Common water-hemp + 15 °C <sup>1</sup>	4
	Common water-hemp + 20 °C <sup>1</sup>	2
	Common water-hemp + 25 °C <sup>1</sup>	5
	Common water-hemp + 30 °C <sup>1</sup>	31
	Common water-hemp + 35 °C <sup>1</sup>	33
Tall water-hemp <sup>1</sup>	Tall water-hemp + 5 °C <sup>1</sup>	0
	Tall water-hemp + 10 °C <sup>1</sup>	1
	Tall water-hemp + 15 °C <sup>1</sup>	4
	Tall water-hemp + 20 °C <sup>1</sup>	3
	Tall water-hemp + 25 °C <sup>1</sup>	9
	Tall water-hemp + 30 °C <sup>1</sup>	31
	Tall water-hemp + 35 °C <sup>1</sup>	41
Hawksbeard <sup>2</sup>	Hawksbeard + 10 °C <sup>2</sup>	85.4
	Hawksbeard + 15 °C <sup>2</sup>	89.4
	Hawksbeard + 20 °C <sup>2</sup>	92.9
	Hawksbeard + 25 °C <sup>2</sup>	91.7
	Hawksbeard + 30 °C <sup>2</sup>	90.6
	Hawksbeard + 35 °C <sup>2</sup>	3.5
	Hawksbeard + 40 °C <sup>2</sup>	0
Horseweed <sup>2</sup>	Horseweed + 10 °C <sup>2</sup>	83.4
	Horseweed + 15 °C <sup>2</sup>	89.3
	Horseweed + 20 °C <sup>2</sup>	87.7
	Horseweed + 25 °C <sup>2</sup>	90.8
	Horseweed + 30 °C <sup>2</sup>	87.99
	Horseweed + 35 °C <sup>2</sup>	0
	Horseweed + 40 °C <sup>2</sup>	0
Goatweed <sup>2</sup>	Goatweed + 10 °C <sup>2</sup>	44.6
	Goatweed + 15 °C <sup>2</sup>	96.72
	Goatweed + 20 °C <sup>2</sup>	93.2
	Goatweed + 25 °C <sup>2</sup>	93.1
	Goatweed + 30 °C <sup>2</sup>	94.2
	Goatweed + 35 °C <sup>2</sup>	25.1
	Goatweed + 40 °C <sup>2</sup>	0

For raw data – [Click here \(.xlsx file\)](#)

Reference- Steckel *et al.*, 2004<sup>1</sup>; Yuan and Wen, 2018<sup>2</sup>

**Note 1)** For control temperature value refer to the raw data table.

2) Values presented as it is from the source article without subjecting to the calculation.

‘\*’- For more information on parameters classification, please refer to ‘methodology’ tab

**The inference from the studies:** Steckel *et al.*, 2004 and Yuan and Wen, 2018 studies mainly focused on understanding the effect of varying temperature treatment on germination of different weed species. Steckel *et al.*, 2004 study showed an increase in germination percentage with an increase in temperature from 5 to 35 °C in all weed species. Among them, Powell amaranth weed species showed the highest germination percentage with an increase in temperature compared to other species. Yuan and Wen, 2018 study also showed similar kind of results, i.e. with an increase in temperature from 10 to 25-30 °C increase germination percentage. At high temperature, i.e. 40 °C none of the weed species germinated. Among them, goatweed showed 25% germination at 35 °C whereas other showed less or no germination. **These studies indicate that an increase in temperature will favor germination of few weed species such as goatweed and Powell amaranth.**