

## APPENDIX A. SUPPLEMENTARY MATERIAL

### Study Site Patch Conditions

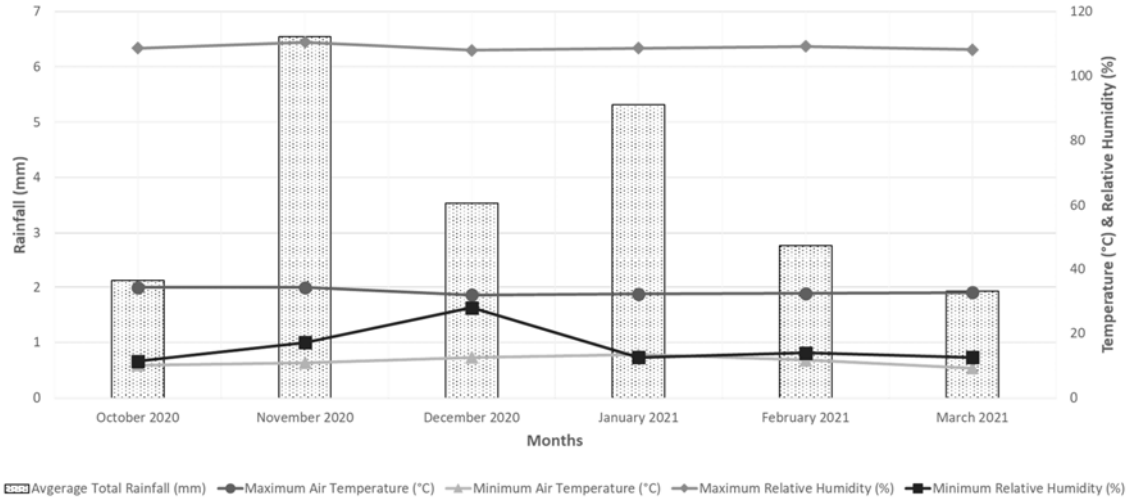
**Table A.1 Study areas with contextual parameters that influence patch conditions – native study site group according to age first, followed by nonnative study site group (adapted from Breed et al. 2022)**

<b>Study area name</b>	<b>Size (m<sup>2</sup>)</b>	<b>Perimeter (m)</b>	<b>Intervention date</b>	<b>Intervention description</b>	<b>Land cover</b>
<b>Moot Grassland - GL (Reference)</b>	±100 m <sup>2</sup> sample area (part of a 5 ha grassland area)	Not applicable for sample area (buffer area 1100 m perimeter)	Land purchased: University of Pretoria in 1938	'Moot Plains grassland'. Little past disturbance – possibly grazing. More than 100 different species were previously recorded. Recent rapid survey: 53 species.	Hillcrest Campus: 290 ha, with 255 ha (92%) green/pervious. Highway 500 m to the north and west, wetland 1 km to the west.
<b>Future Africa Native Garden - FA (Intervention)</b>	198 m <sup>2</sup>	60 m	October 2018	Garden section: more than 70 different native species	Hillcrest Campus: 290 ha, with 255 ha (92%) green/pervious. Natural rocky outcrop 500 m to the south.
<b>Javett Native Garden - JA (Intervention)</b>	73 m <sup>2</sup>	55 m	February 2019	Garden section: more than 40 different native species	Hatfield Campus: 570 ha, with 188 ha (32%) green/pervious. Main road 3 m to the north, dominance of impervious surfaces.

## APPENDIX B. SUPPLEMENTARY MATERIAL

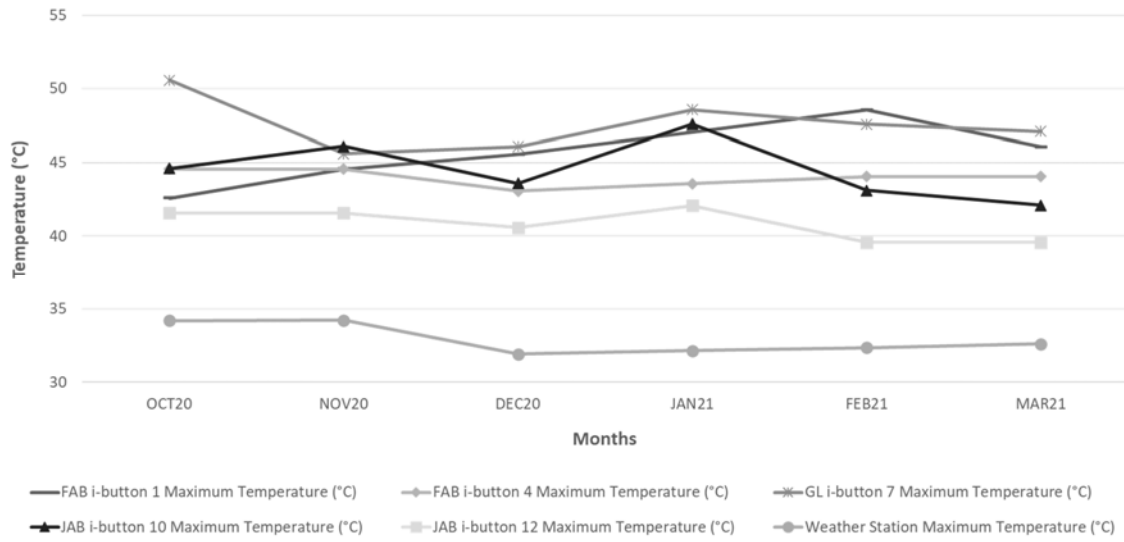
### Baseline Weather Data

Weather data were obtained from the Hatfield weather station for the six-month measurement period (October 2020 to March 2021) to demonstrate the weather conditions during the plant stress measurements. Minimum and maximum temperature, relative humidity and the average total rainfall were obtained.

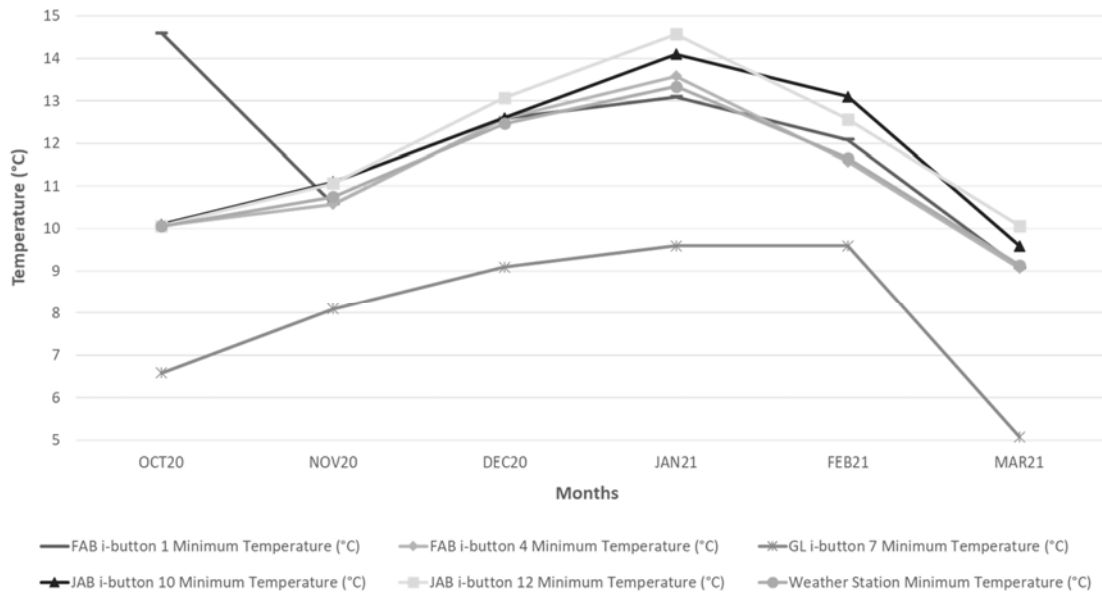


**Figure B.1 Average monthly total rainfall (mm), minimum and maximum temperature (°C) and relative humidity (%) for the plant tolerance study period, October 2020 – March 2021**

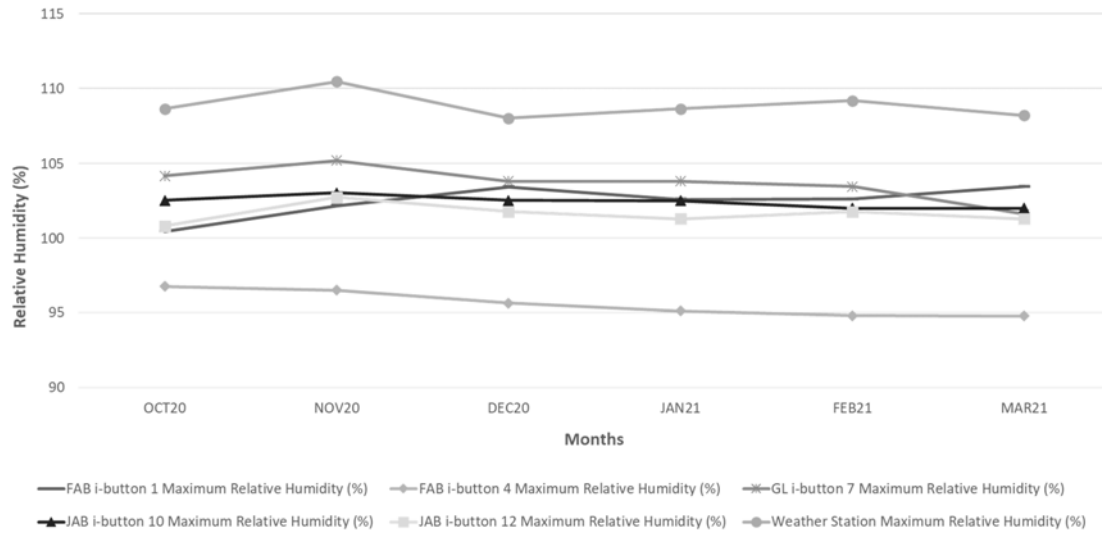
Weather data were also obtained from the i-buttons placed in each study site for OCT2020 to MARCH 2021 to demonstrate the microclimatic conditions in the study sites during the plant stress measurements. Maximum and minimum temperature and relative humidity (Figure 4) were obtained from the i-buttons in the study sites and the Hatfield weather station.



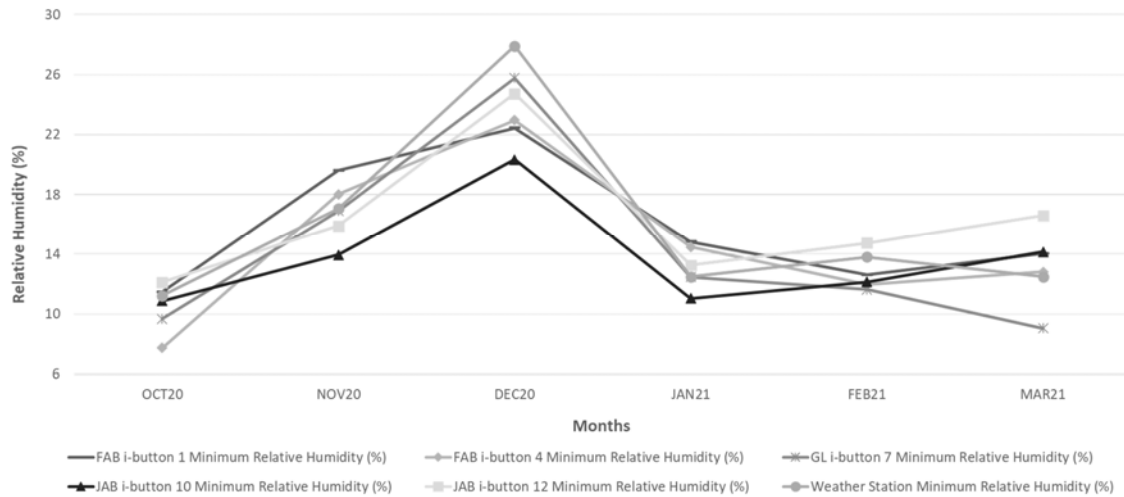
**Figure B.2 Average maximum temperature obtained from i-buttons in each study site as well as the weather station for OCT2020 to MAR2021**



**Figure B.3 Average minimum temperature obtained from i-buttons in each study site as well as the weather station for OCT2020 to MAR2021**



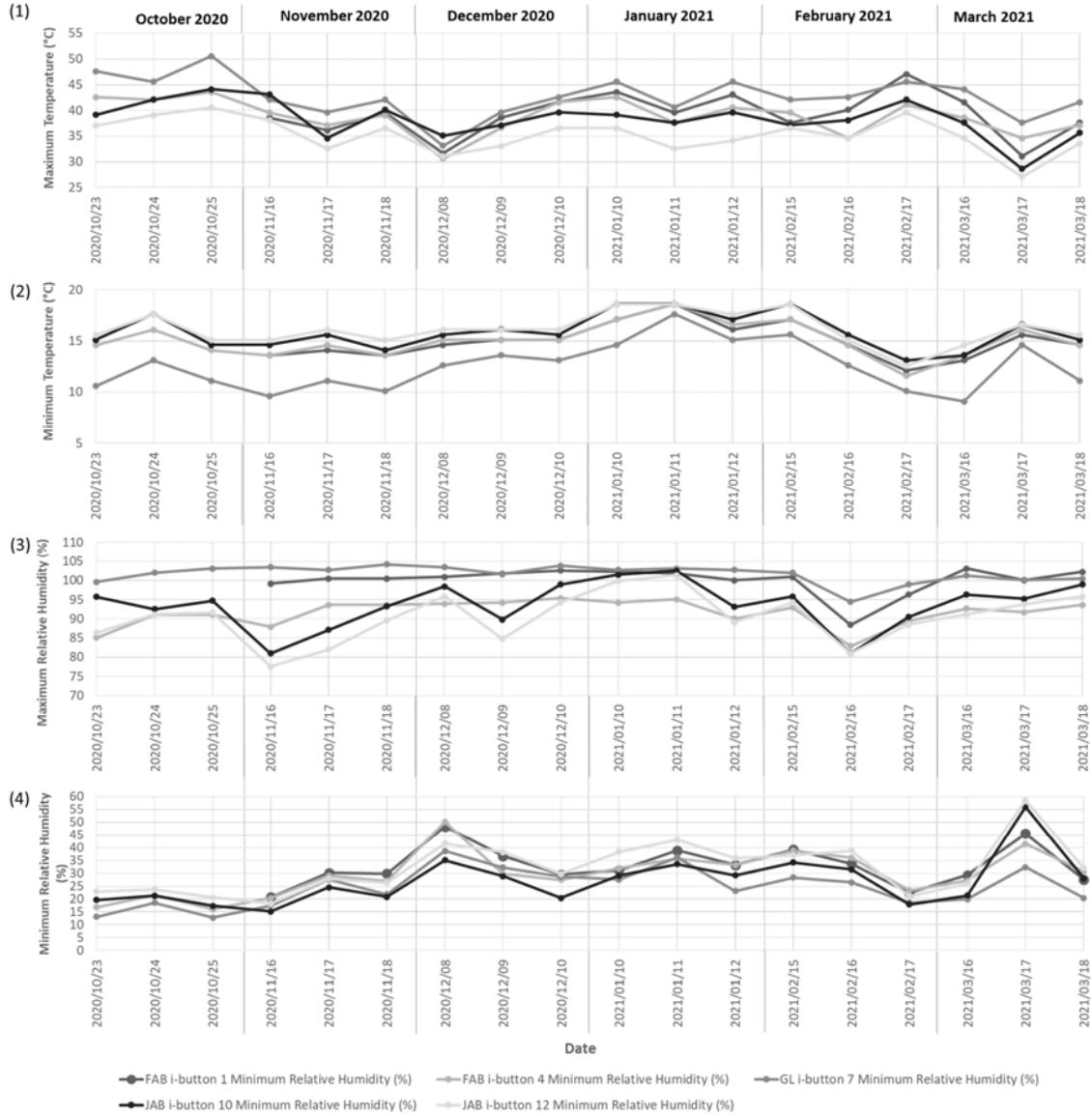
**Figure B.4 Average maximum relative humidity obtained from i-buttons in each study site as well as the weather station for OCT2020 to MAR2021**



**Figure B.5 Average minimum relative humidity obtained from i-buttons in each study site as well as the weather station for OCT2020 to MAR2021**

## APPENDIX C. SUPPLEMENTARY MATERIAL

### Weather conditions before plant fitness measurement



**Figure C.1 Maximum temperature (a), minimum temperature (b), maximum relative humidity (c) and minimum relative humidity (d) as measured by i-buttons in FA, JA and GL three days before the day of plant stress measurement during the plant tolerance period, October**

## APPENDIX D. SUPPLEMENTARY MATERIAL

Nine grassland plant species were measured for their tolerance to temperature and moisture extremes.

**Table D.1 Nine plant species monitored for stress tolerance**

Plant	Scientific name	Common names	Family	Functional type	Picture
1	<i>Crossandra greenstockii</i> (CG)	Bushveld Crossandra (E), Rooibloom (A)	Acanthaceae	Herb	
2	<i>Dicliptera eonii</i> (DE)	None	Acanthaceae	Creeper	
3	<i>Elionurus muticus</i> (EM)	Wire grass (E), Kaperdraadgras (A)	Poaceae	Graminoid	
4	<i>Hypoxis hemerocallidea</i> (HH)	Star flower, Yellow star (E), Sterblom, Gifbol (A)	Hypoxidaceae	Forb	
5	<i>Haplocarpha lyrata</i> (HL)	None	Asteraceae	Forb	
6	<i>Lantana rugosa</i> (LR)	Bird's beer, Bird's brandy (E), Voëlbrandewyn, Wildesalie (A)	Verbenaceae	Shrub	
7	<i>Scirpoides burkei</i> (SB)	None	Cyperaceae	Graminoid	
8	<i>Scabiosa columbaria</i> (SC)	Wild scabious (E), Bitterbos (A)	Dipsacaceae	Forb	
9	<i>Themeda triandra</i> (TT)	Red grass (E), Rooigras (A)	Poaceae	Graminoid	