Reproductive development scale for arrowleaf, balansa, gland and Persian clovers

A photo diary & reproductive scale

Dr Hollena Nori, Dr David P. Monks & Prof. Derrick J. Moot

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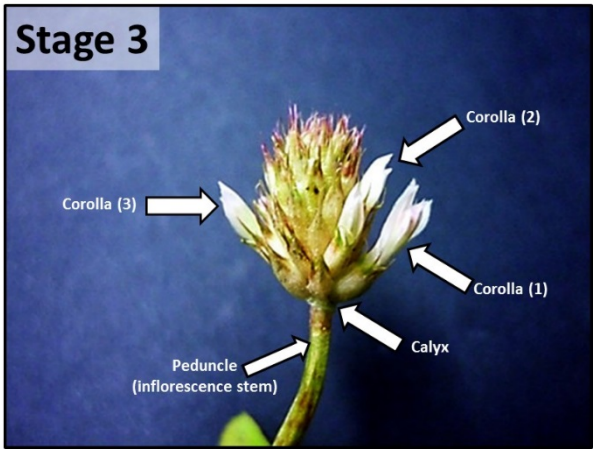
‘Cefalu’ arrowleaf clover

(*Trifolium vesiculosum* L.)

A visual scale (numeric) of the reproductive development of an arrowleaf clover inflorescence

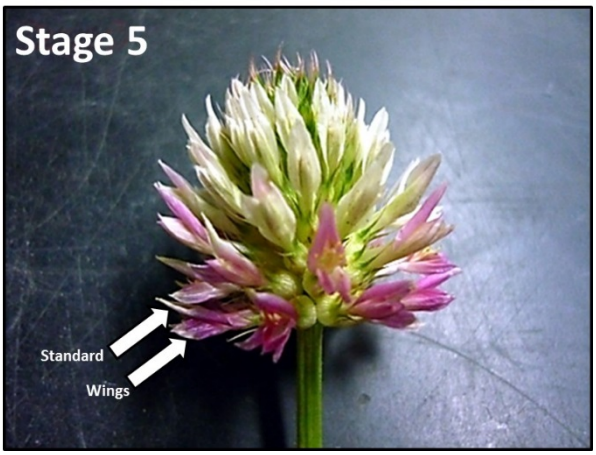
Numeric description of reproductive stage	Illustration
1 The inflorescence bud is visible in the axil of a leaf.	
2 The peduncle is visible, the calyx is green (G or GY) and no corolla are visible.	

3 At least one corolla is visible.



4 >80% of florets within the inflorescence have a visible corolla.

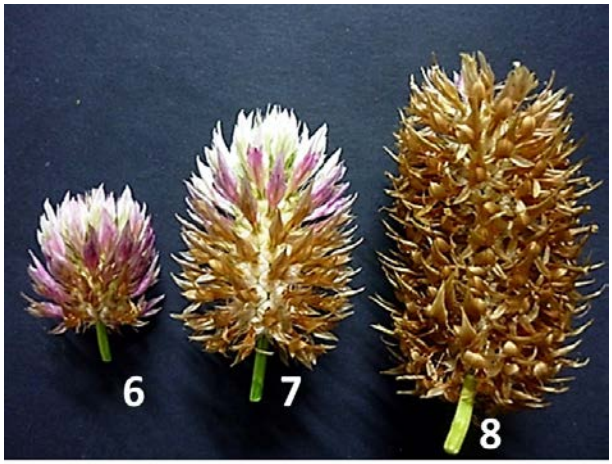
5 Full flower – 100% of corolla have the standard unfolded from the wings.



6 <50% of the inflorescence turned brown as an indication of pollination[1].

7 >50% of the inflorescence is brown. Pods are formed within the inflorescence starting from the basal inflorescence.

8 >50% of pods are formed in the inflorescence.



[1]Petals that are brown/wilted with age are not counted.

9 >90% of the inflorescence is brown. >50% of pods are formed.

Pod filling

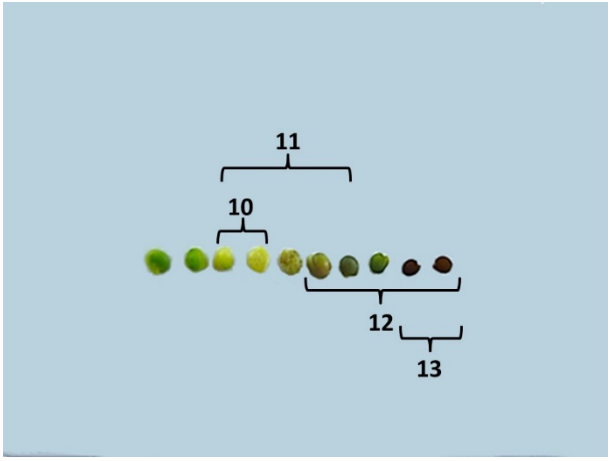
10 Seeds in the bottom pod turned yellow.

11 Seeds in the bottom pod turned red/brown. 50% of seeds turned yellow.

12 50% of seeds turned red/brown.

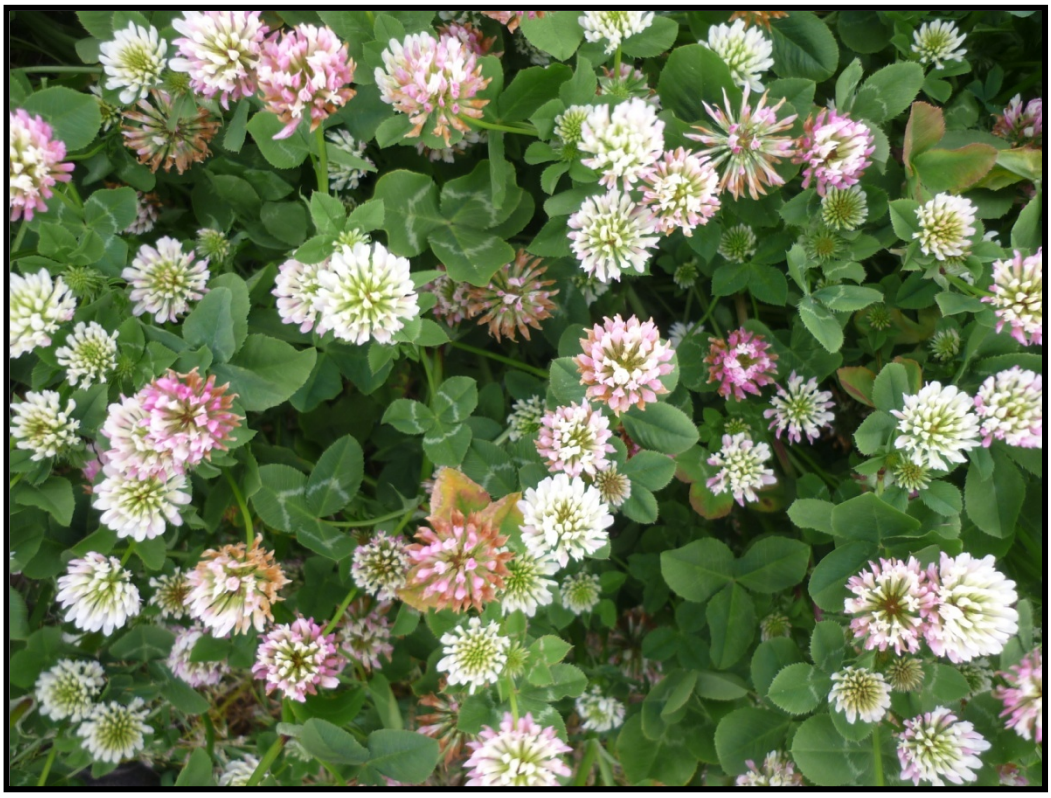
13 100% of seeds turned red/brown (5 YR 5/10, 2.5 YR 3/8, 10 R 3/2).

Note: seeds mature from the bottom to top of the pod & this image shows the progression of maturity for demonstrative purposes (i.e. not all seeds shown were out of the same pod).



Seed development

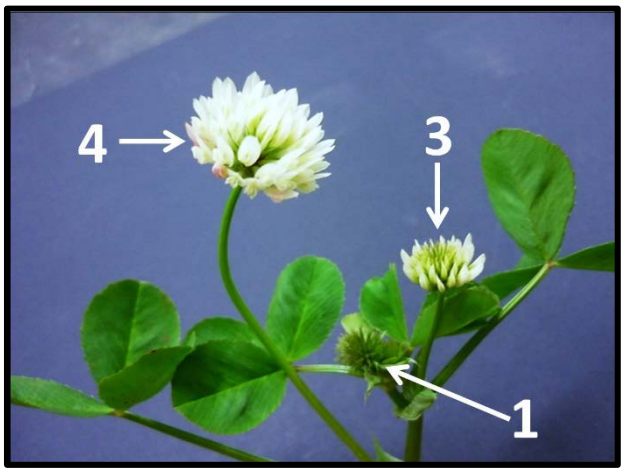
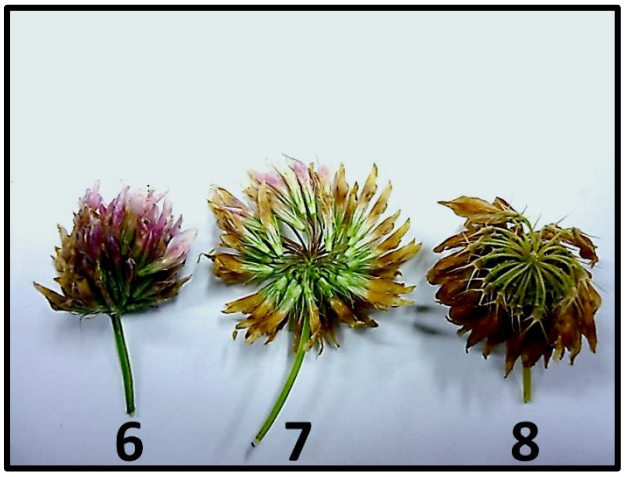
Note: Values within parentheses correspond to Munsell (1977) colour charts for plant tissues. Colours are specified sequentially by Hue, Value and Chroma. For example 5YR 5/10 is an intermediate **Hue** between Yellow (Y) and Red (R) defined as 5YR. The **Value** (5/) relates to the "lightness" along a vertical scale from 0 (pure black) to 10 (pure white). The **Chroma** (10) relates to saturation along a horizontal plane. See also https://en.wikipedia.org/wiki/Munsell_color_system



‘Bolta’ balansa clover

(*Trifolium michelianum* Savi)

A visual scale (numeric) of the reproductive development of a balansa clover inflorescence

Numeric description of reproductive stage	Illustration
1 The inflorescence bud is visible in the axil of a leaf. **2** The peduncle is visible, the calyx is green (G or GY) and no corolla are visible (not shown). **3** At least one corolla is visible. **4** >80% of florets within the inflorescence have a visible corolla.	
5 Full flower – 100% of corolla have the standard unfolded from the wings.	
6 All florets within the inflorescence show browning as an indication of pollination[1]. **7** Abscission layer formed and florets have drooped downwards. **8** Pods are visible within inflorescence.	 [1]Petals that are brown/wilted with age are not counted.

9 >50% of outer pedicels[1] show red (R) colouring.

10 50% of pods are red.

11 100% of pods are red.

12 50% of pods are yellow (2.5Y (8/8 to 10) or 5Y (8/8 to 10).

13 100% of pods are yellow.

[1] A pedicel is the stem which attaches an individual flower to an inflorescence

14 First sign of seeds darkening (7.5YR (6/8) to 5 YR (2/3)).

15 100% of seeds are dark (7.5 YR (6/8) to 5 YR (2/3)).

16 Seed shatter upon burst pods.

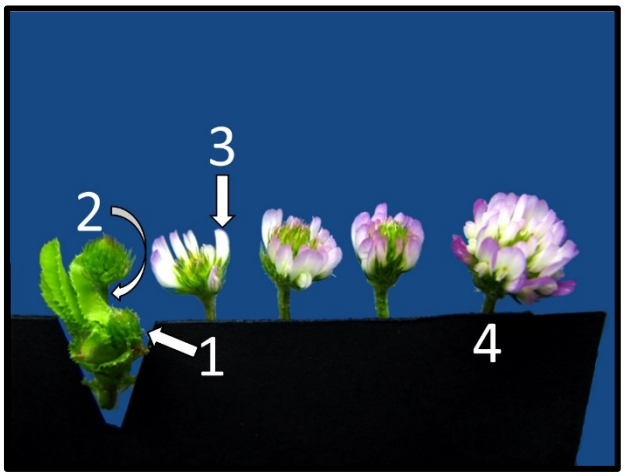
Pod development.

Note: Values within parentheses correspond to Munsell (1977) colour charts for plant tissues.

‘Prima’ gland clover

(*Trifolium glanduliferum* Boiss.)

A visual scale (numeric) of the reproductive development of a gland clover inflorescence

Numeric description of reproductive stage	Illustration
1 The inflorescence bud is visible in the axil of a leaf. **2** The peduncle is visible, the calyx is green (G or GY) and no corolla are visible. **3** At least one corolla is visible. **4** >80% of florets within the inflorescence have a visible corolla.	
5 Full flower – 100% of corolla have the standard unfolded from the wings.	
6 Florets on the base inflorescence turned purple as an indication of pollination[1].	

[1]Petals that are purple/wilted with age are not counted

7 Florets on the top inflorescence turned purple. Abscission layer formed starting from the base inflorescence

8 Pods are visible within the inflorescence.

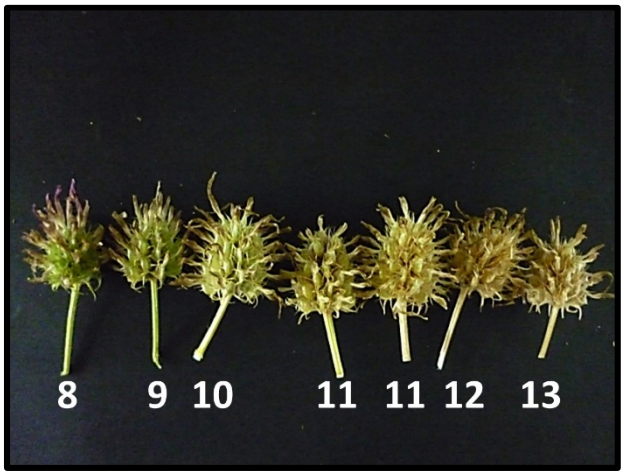
9 Pods enlarge, green (G or GY) in colour.

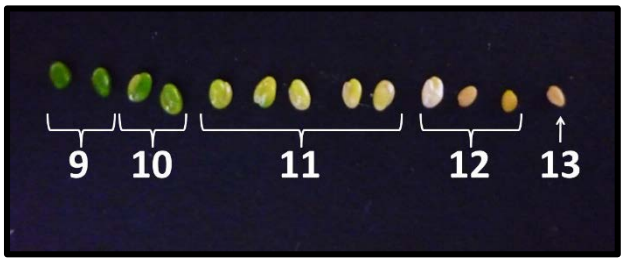
10 Formation of one or more complete seeds. Seeds are green in colour (5 GY (5/10 to 6/8)).

11 Pods are green yellow (2.5 GY (8/4 to 8/6)). First sign of seed yellowing (5 Y 8/4 to 2.5 GY 8/10).

12 Seeds are hard and 100% of seeds are yellow (2.5 Y 8/6 to 5 Y 8/8).

13 Seeds shatter upon rubbing.





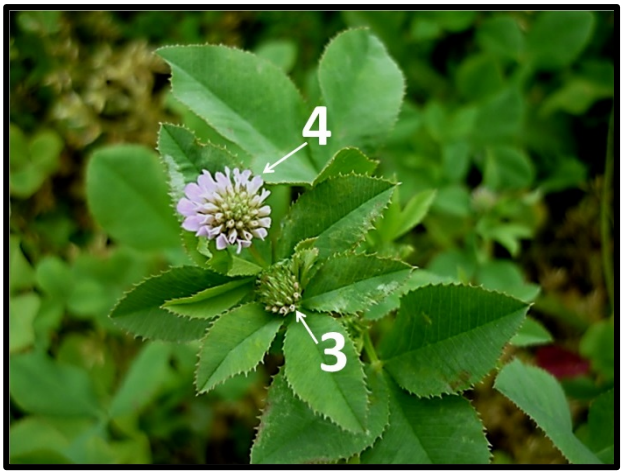
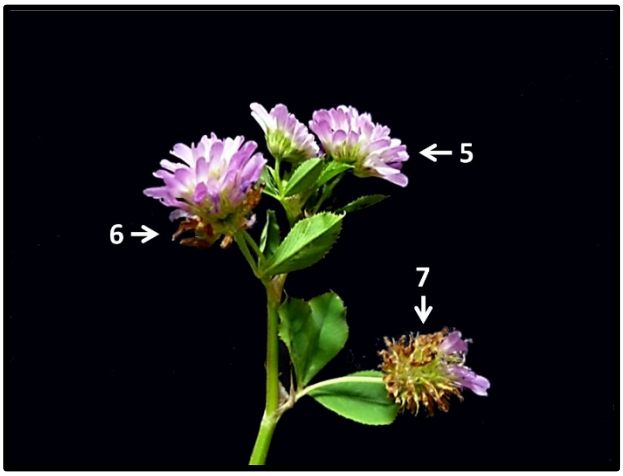
Seed development

Note: Values within parentheses correspond to Munsell (1977) colour charts for plant tissues.

‘Mihi’ Persian clover

(*Trifolium resupinatum* L.)

Visual scale (numeric) of the reproductive development of a Persian clover inflorescence

Numeric description of reproductive stage	Illustration
1 The inflorescence bud is visible in the axil of a leaf. **2** The peduncle is visible, the calyx is green (G or GY) and no corolla are visible.	
3 At least one corolla is visible. **4** >80% of florets within the inflorescence have a visible corolla.	
5 Full flower – 100% of corolla have the standard unfolded from the wings. **6** Florets turned brown as an indicator of pollination starting from the basal inflorescence[1].	 [1]Petals that are brown/wilted with age are not counted

7 All florets within the inflorescence turned brown.

8 Inflorescence swell, pods start to form within the inflorescence.

9 Pods enlarge, green in colour.

10 Pods turned yellow. Seeds are green in colour.

11 Pods turned brown. First sign of seeds change colour.

12 Pods burst.

Note: Values within parentheses correspond to Munsell (1977) colour charts for plant tissues.

Reference

Munsell A.H. (1977) Munsell colour charts for plant tissues. 2nd edition. Macbeth Division of Kollmorgen Corporation, Baltimore, USA.

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