

Datasets accompanying the paper entitled Elevated temperature drives a shift from selfing to outcrossing in the insect pollinated legume, faba bean (*Vicia faba*). Journal of Experimental Botany. (in press, accepted 26/10/2016)

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Filename dataset1.csv

This dataset relates to the ‘flight cage’ experiment, as described in the paper this took place in 2014. In 2015, progeny from these experiments were sown, and *their* seed inspected, in order to determine the levels of outcrossing that had occurred in 2014. The progeny were sown in 40 plots, mapping onto each unique combination of a controlled environment cabinet and flight cage. ‘Light’ and ‘dark’ refer to counts of experimental progeny that produced beans with either a light hilum (the recessive trait, indicating ‘self’-pollination) or a dark hilum (the dominant trait, indicating cross-pollination). For a comprehensive overview of the experimental rationale and methodology, and important caveats, please see the publication.

<i>Column no</i>	<i>Variable name</i>	<i>Description and units</i>	<i>Notes</i>
1	heat	The temperature treatment, ‘stress’ was 30/24°C, ‘control’ was 20/14°C (day/night temperatures, 16hr photoperiod)	
2	cab	Controlled environment cabinet identifier	
3	cage	Flight cage identifier	
4	poll	The pollination treatment, ‘bees’ = plants in cage with insect pollinators, ‘none’ = plants in cage without insect pollinators	
5	light	Count of experimental progeny that produced beans with light hilum	
6	dark	Count of experimental progeny that produced beans with dark hilum	
7	total	Combined count of light and dark columns	
8	prop	The proportion of experimental progeny that produced beans with dark hilum (‘dark’/‘total’)	

Filename dataset2.csv

This dataset relates to the ‘field’ experiment, as described in the paper this took place in 2014. In 2015, progeny from these experiments were sown, and *their* seed inspected, in order to determine the levels of outcrossing that had occurred in 2014. The progeny of each experimental plant were individually hand sown so that counts could be made for each individual plant (‘pot’). ‘Light’ and ‘dark’ refer to counts of experimental progeny that produced beans with either a light hilum (the recessive trait, indicating ‘self’-pollination) or a dark hilum (the dominant trait, indicating cross-pollination). For a comprehensive overview of the experimental rationale and methodology, and important caveats, please see the publication.

<i>Column no</i>	<i>Variable name</i>	<i>Description and units</i>	<i>Notes</i>
1	heat	The temperature treatment, ‘stress’ was 30/24°C, ‘control’ was 20/14°C (day/night temperatures, 16hr photoperiod)	
2	cab	Controlled environment cabinet identifier	
3	block	Block identifier	<i>See figure 1 in the paper for a diagram illustrating the field plot layout</i>
4	mainplot	Mainplot identifier	<i>See figure 1 in the paper for a diagram illustrating the field plot layout</i>
5	management	A management treatment conducted at the scale of mainplots. A strip of either ‘grass’ or ‘flowers’ was sown adjacent to the bean growing area.	
6	site	Field site identifier	
7	pot	Individual experimental plant identifier	
8	poll	The pollination treatment, “bees” = plants open to insect pollinators, “none” = plants enclosed in mesh bag to exclude insect pollinators	<i>See paper for a detailed description of the bagging treatments</i>
9	light	Count of experimental progeny that produced beans with light hilum	
10	dark	Count of experimental progeny that produced beans with dark hilum	
11	total	Combined count of light and dark columns	
12	prop	The proportion of experimental progeny that produced beans with dark hilum (‘dark’/‘total’)	

Filename dataset3.csv

This dataset relates to the ‘flight cage’ experiment, as described in the paper this took place in 2014. The presented data relate to each individual plant used in the experiment. For a comprehensive overview of the experimental rationale and methodology, please see the publication.

<i>Column no</i>	<i>Variable name</i>	<i>Description and units</i>	<i>Notes</i>
1	pot	Individual experimental plant identifier	
2	heat	The temperature treatment, ‘stress’ was 30/24°C, ‘control’ was 20/14°C (day/night temperatures, 16hr photoperiod).	
3	cab	Controlled environment cabinet identifier	
4	cage	Flight cage identifier	
5	poll	The pollination treatment, ‘bees’ = plants in cage with insect pollinators, ‘beesH’ = plants in cage with insect pollinators that additionally received the hand-tripping treatment, ‘none’ = plants in cage without insect pollinators, ‘noneH’ = plants in cage without insect pollinators that additionally received the hand-tripping treatment	
6	bean_num	Count data of the total number of beans produced on each plant	
7	bean_mass	Total mass in grams of all beans produced on each plant	
8	pod_mass	Total mass in grams of all empty pod casings produced on each plant	<i>Pods containing beans were weighed, then beans themselves weighed, to derive mass of pod casings</i>
9	stem_mass	Total mass in grams of stems of each plant	<i>Stems were collected following harvest. Cut at approx. 1cm above ground. All side-branches were removed and not included. Stems were oven dried as per the pods and weighed</i>
10	nonharvest	Total mass in grams of stem and empty pod casing from each plant	

Filename dataset4.csv

This dataset relates to the ‘field’ experiment, as described in the paper this took place in 2014.

The presented data relate to each individual plant used in the experiment. Please note that, as described in the publication, for all experimental plants the yield parameters (columns 9 to 13) were collected only from stems that were present prior to the temperature treatment – this is because while out in the field some of the bagged plants produced stems that grew outside of the bag, and may therefore have received insect pollination. For a comprehensive overview of the experimental rationale and methodology, please see the publication.

<i>Column no</i>	<i>Variable name</i>	<i>Description and units</i>	<i>Notes</i>
1	heat	The temperature treatment, ‘stress’ was 30/24°C, ‘control’ was 20/14°C (day/night temperatures, 16hr photoperiod)	
2	cab	Controlled environment cabinet identifier	
3	block	Block identifier	<i>See figure 1 in the paper for a diagram illustrating the field plot layout</i>
4	mainplot	Mainplot identifier	<i>See figure 1 in the paper for a diagram illustrating the field plot layout</i>
5	management	A management treatment conducted at the scale of mainplots. A strip of either ‘grass’ or ‘flowers’ was sown adjacent to the bean growing area.	
6	site	Field site identifier	
7	pot	Individual experimental plant identifier	
8	poll	The pollination treatment, ‘bees’ = plants open to insect pollinators, ‘none’ = plants enclosed in mesh bag to exclude insect pollinators	<i>See paper for a detailed description of the bagging treatments</i>
9	bean_num	Count data of the total number of beans produced on each plant	<i>Collected only from stems that were present prior to the temperature treatment</i>
10	bean_mass	Total mass in grams of all beans produced on each plant	<i>Collected only from stems that were present prior to the temperature treatment</i>
11	pod_mass	Total mass in grams of all empty pod casings produced on each plant	<i>Collected only from stems that were present prior to the temperature treatment</i> <i>Pods containing beans were weighed, then beans themselves weighed, to derive mass of pod casings</i>

12	stem_mass	Total mass in grams of stems of each plant	<i>Collected only from stems that were present prior to the temperature treatment</i>
			<i>Stems were collected following harvest. Cut at approx. 1cm above ground. All side-branches were removed and not included. Stems were oven dried as per the pods and weighed</i>
13	nonharvest	Total mass in grams of stem and empty pod casing from each plant	<i>Collected only from stems that were present prior to the temperature treatment</i>

Filename dataset5.csv

This dataset relates to insect pollinator sampling that took place on four days during crop flowering (when the experimental plants were out in the field), as part of the ‘field’ experiment in 2014. Each row relates to a separate 15 minute transect. For a comprehensive overview of the experimental rationale and methodology, please see the publication.

<i>Column no</i>	<i>Variable name</i>	<i>Description and units</i>	<i>Notes</i>
1	site	Field site identifier	
2	block	Block identifier	<i>See figure 1 in the paper for a diagram illustrating the field plot layout</i>
3	mainplot	Mainplot identifier	<i>See figure 1 in the paper for a diagram illustrating the field plot layout</i>
4	management	A management treatment conducted at the scale of mainplots. A strip of either ‘grass’ or ‘flowers’ was sown adjacent to the bean growing area	
5	day	Identifier for the day on which the transect was conducted	
6	speciesnumber	Count data of the number of insect pollinator ‘species’ observed during the transect	<i>Insect pollinators were identified to morphological group in the field, see publication for categories</i>
7	larceny	Count data of insect pollinators performing nectar-robbing visits observed during the transect	<i>Short-tongued bumblebees (particularly <i>Bombus terrestris</i>) are known to pierce holes in the back of faba bean flowers in order to access nectar reserves. This count includes any secondary nectar robbing at these holes by honeybees</i>
8	flying	Count data of number of insect pollinators seen flying through the plot (<i>e.g.</i> individuals seen but not visiting bean flowers)	
9	approach	Count data of number of insect pollinators that approached faba bean flowers but did not either perform frontal or nectar robbing visits	
10	visit	Count data of number of insect pollinators performing frontal visits to faba bean flowers	
11	beenumber	Count data of total number of insect pollinators observed during the transect	

Filename dataset6.csv

This dataset relates to an experiment conducted on a separate group of plants, to establish the effects of individual mesh bags on faba bean seed production. Plants were either left open or bagged within pollinator exclusion cages measuring 2.5 x 2.5 x 2 m for the duration of the field pollination treatment. Plant pots in both bagging treatments had 25 mm holes in their base, through which a cane was driven into the ground. Two 200 mm plant support rings were fitted onto each cane, over which exclusion bags were fitted, or plants were left uncovered for “open” pollination. For a comprehensive overview of the experimental rationale and methodology, please see the publication.

<i>Column no</i>	<i>Variable name</i>	<i>Description and units</i>	<i>Notes</i>
1	heat	The temperature treatment, ‘stress’ was 30/24°C, ‘control’ was 20/14°C (day/night temperatures, 16hr photoperiod)	
2	pot	Individual plant identifier	
3	cab	Controlled environment cabinet identifier	
4	treatment	Bagging treatment, ‘unbag’ = plant not bagged, ‘bag’ plant enclosed in mesh bag	
5	bean_num	Count data of the total number of beans produced on each plant	
6	bean_mass	Total mass in grams of all beans produced on each plant	
7	pod_mass	Total mass in grams of all empty pod casings produced on each plant	
8	stem_mass	Total mass in grams of stems of each plant	
9	nonharvest	Total mass in grams of empty pod casings and stems produced on each plant	

Filename dataset7.csv

This dataset relates to an experiment conducted on a separate group of plants, to establish the effects of individual mesh bags on faba bean seed production. For this experiment, randomised blocks of 8 open and 8 bagged plants were distributed at each field site for the duration of the field pollination treatment. A subset of open flowers were hand-pollinated with Buzz pollen on two separate occasions for each flower. Plant pots in both bagging treatments had 25 mm holes in their base, through which a cane was driven into the ground. Two 200 mm plant support rings were fitted onto each cane, over which exclusion bags were fitted, or plants were left uncovered for open pollination. Only results of maximally hand-pollinated nodes were included in mean estimation, 3 plants were excluded as they had no flowers suitable for hand-pollination. For a comprehensive overview of the experimental rationale and methodology, please see the publication.

<i>Column no</i>	<i>Variable name</i>	<i>Description and units</i>	<i>Notes</i>
1	heat	The temperature treatment, 'stress' was 30/24°C, 'control' was 20/14°C (day/night temperatures, 16hr photoperiod)	
2	pot	Individual plant identifier	
3	cab	Controlled environment cabinet identifier	
4	site	Field site identifier	
5	treatment	Bagging treatment, 'unbag' = plant not bagged, 'bag' plant enclosed in mesh bag	
6	flower_id	Identifier for a floral node on which flowers were hand pollinated. 'rest' is the harvest from the rest of the plant	<i>Numbers do not relate to actual nodal positions and are only for identification of individual nodes</i>
7	bean_num	Count data of the total number of beans produced at that floral node	<i>(or the rest of the plant if flower_id is 'rest')</i>
8	bean_mass	Total mass in grams of all beans produced at that floral node	
9	notes	Any important information relating to that row	<i>'none pollinated' means that no floral nodes on these plants were hand pollinated</i>