

# Edina Trust Bulb Project Extension

## Report for Teachers and Project Leaders

The National Museum of Wales (NMW) produced a paper on the results of the bulbs planted in pots for all schools. This has been distributed to the schools involved and can be accessed via the NMW website - <http://www.museumwales.ac.uk/en/blog/2013-06-13/Spring-Bulb-for-Schools-Results-2005-2013>

This paper is about the 49 schools which took part in the second year of the Edina Trust Bulb Project. Of these 49 schools, eight provided flowering data on their daffodils planted in the ground, and of these eight, six provided data of their daffodils bulbs planted in the ground and also their bulbs planted in pots. We are most interested in the comparison of average flowering dates for these six schools.

Of those eight schools which provided flowering data, three were from Oxfordshire, two from Lancashire and three from Fife. All eight schools were non-coastal. (We will call this group “our eight special schools” in this paper). However these schools did provide data on a total of 95 bulbs!

The six schools which provided data on their daffodils planted in the ground and their bulbs planted in pots will be referred to as “our six very special schools” in this paper.

The main reason for the small sample of data with which to analyse was the effect the poor weather conditions of the spring months had in delaying the flowering of the daffodils until the school Easter break, resulting in schools being unable to measure heights of the flowering daffodils.

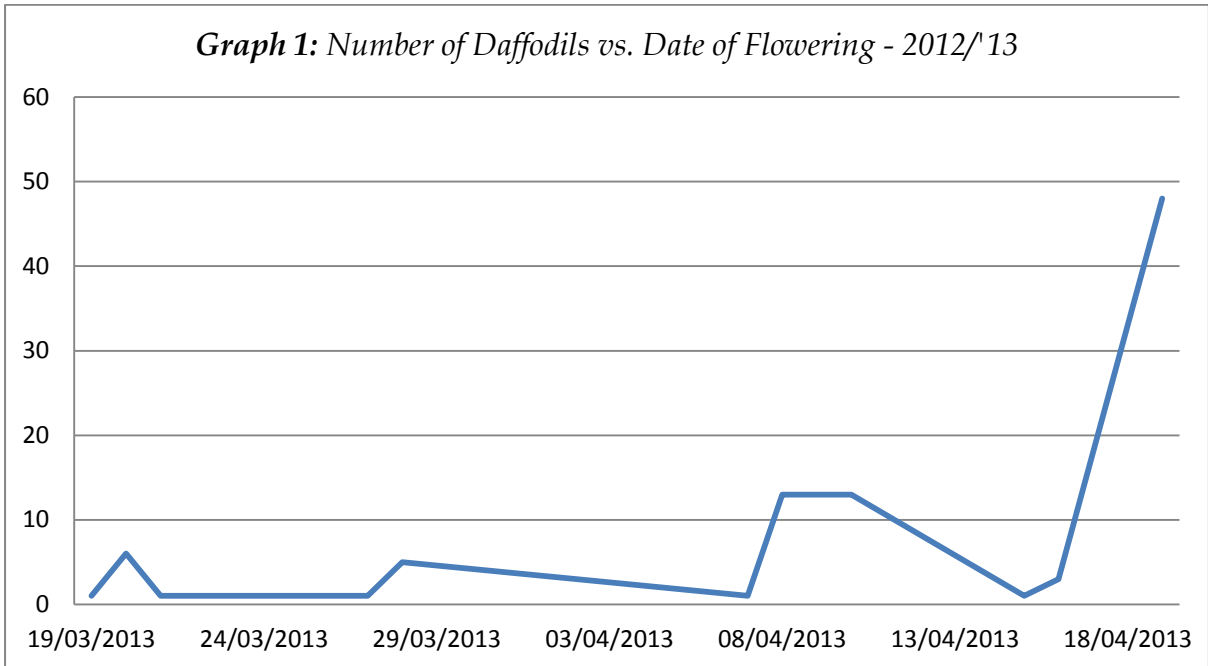
Except where we have compared the differences in flowering dates of those daffodils planted in the ground with those in pots (Chart 1), all other figures in this report concerns only those daffodils planted in the ground.

So this, like last year, is a very small data set! However we will use results from this year to assess the hypotheses made during the pilot year of the project.

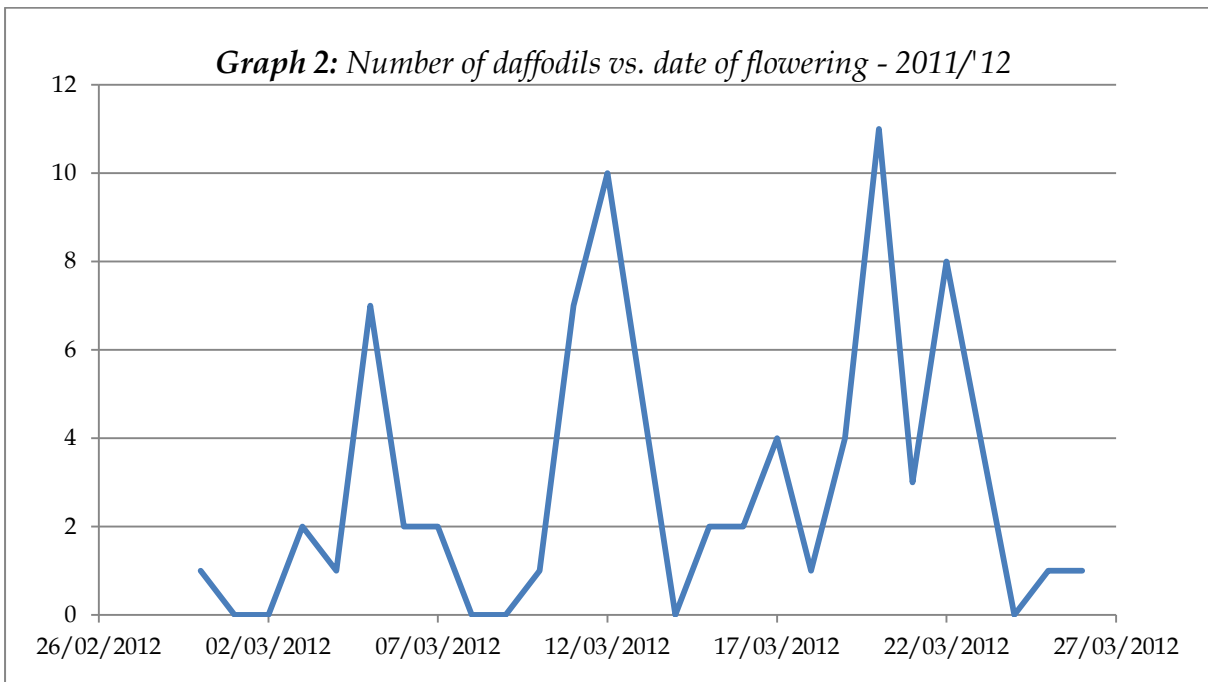
The impact of temperature and rainfall on:

- i. flowering dates, and
- ii. The heights of the plants at the time of flowering

**i. Difference between flowering dates**



Source information: Graph showing the frequency of daffodils (planted in the ground) flowering on a given date. Includes data from the eight special schools, 94 daffodils in total



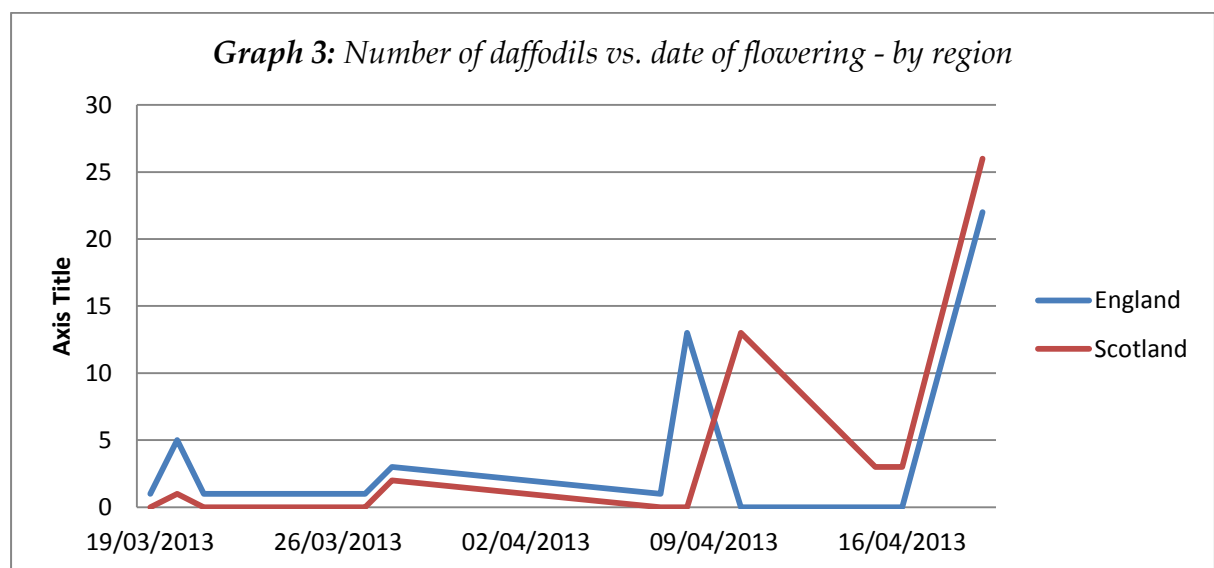
Source information: Graph showing the frequency of daffodils (planted in the ground) flowering on a given date. Includes data from the five special schools, 72 daffodils in total.

A direct comparison between the number of daffodils vs. date of flowering of the 2011-2012 school year and that of the 2012-'13 school year shows many differences. These include the larger numbers of daffodils flowering at the same time during 2012-'13 than that of the year before, also the earlier date in which the daffodils flowered during the

initial Pilot Year of the Edina Bulb Project approximately 18 days earlier than those daffodils included in the 2012-13 project. This can be attributed to the colder weather during February and March 2013 with frost and snow delaying the growth of all daffodils until later in the Spring.

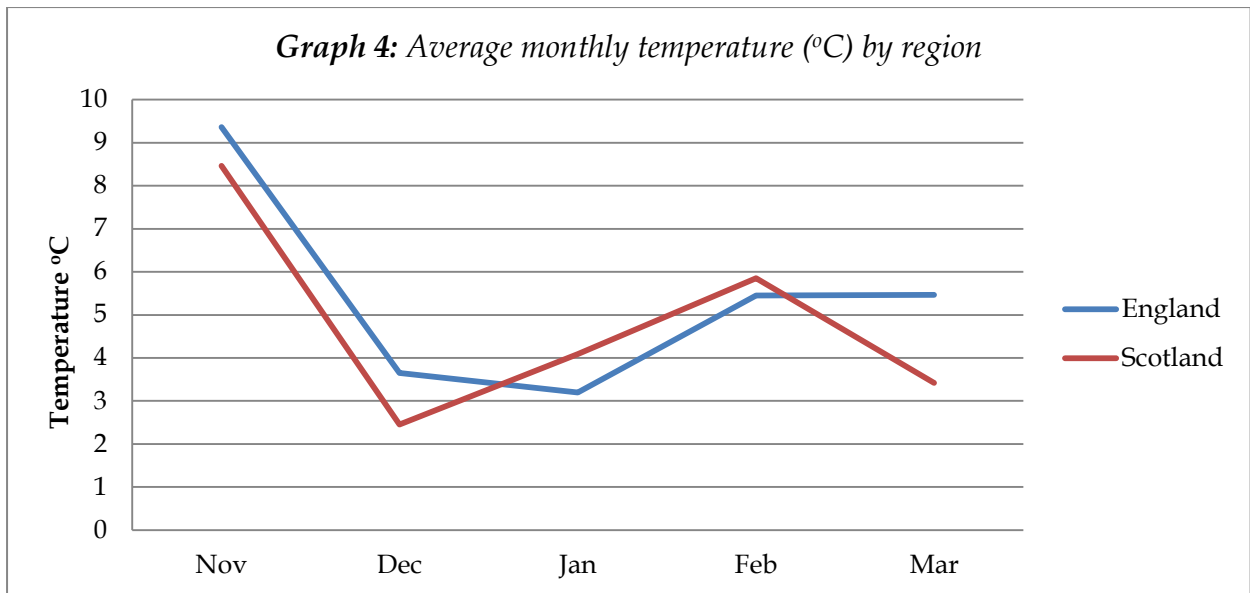
**HYPOTHESIS 1:** Daffodils in coastal schools will flower before those in non-coastal schools. This is because coastal areas do not experience such cold nights during the winter because the sea acts like a blanket warming up the coast. Coastal schools were defined as those less than two miles from the coast.

This hypothesis could not be proven, nor disproven with the data collected from the Edina Trust Moodle site as all schools were non-coastal.



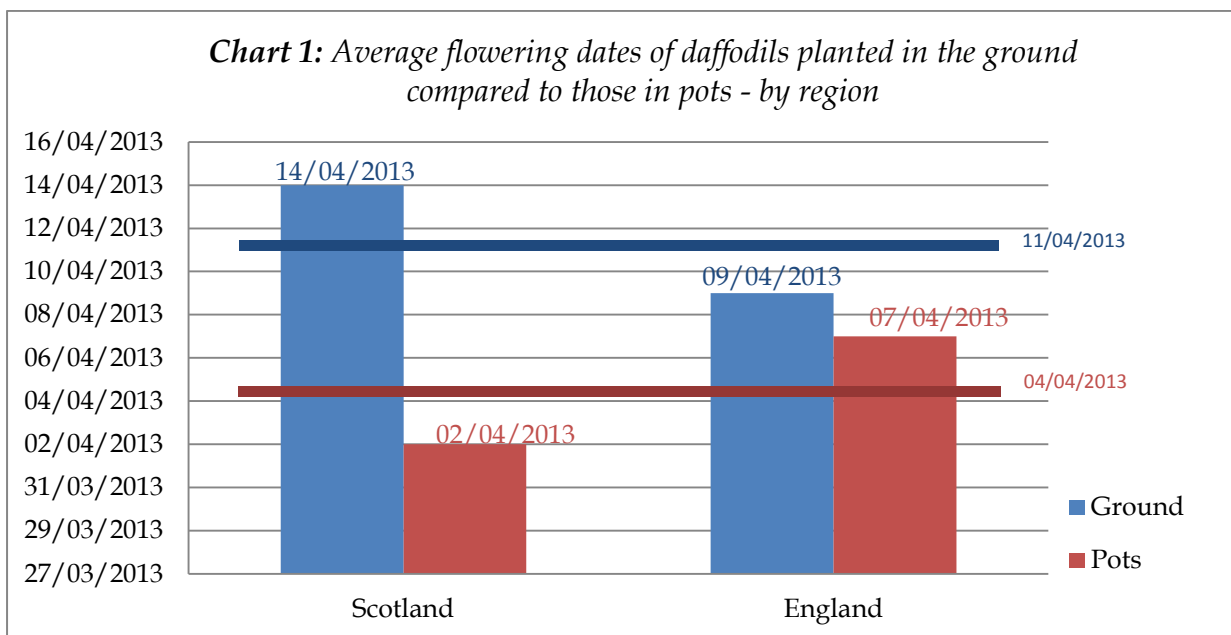
Source Information: Graph showing the frequency of daffodils (planted in the ground) flowering on a given date, organised by region.

**HYPOTHESIS 2:** Schools in regions that record higher temperatures during the months of December and January will have earlier flowering daffodils, both in pots and in the ground. The effect of the temperature fluctuation will be more pronounced with the daffodils in pots compared to those in the ground.



Source information: Graph showing the average monthly temperature, organised by region, using data from our eight special schools.

**HYPOTHESIS 3:** On average, daffodils in pots will flower before those planted in the ground.



Source information: Chart showing the average flowering date of daffodils planted in the ground and in pots, organised by region. Chart has been created using the data from the six very special schools. Horizontal lines are the overall average dates for daffodils in the ground and in pots – revealing an overall 7 day difference.

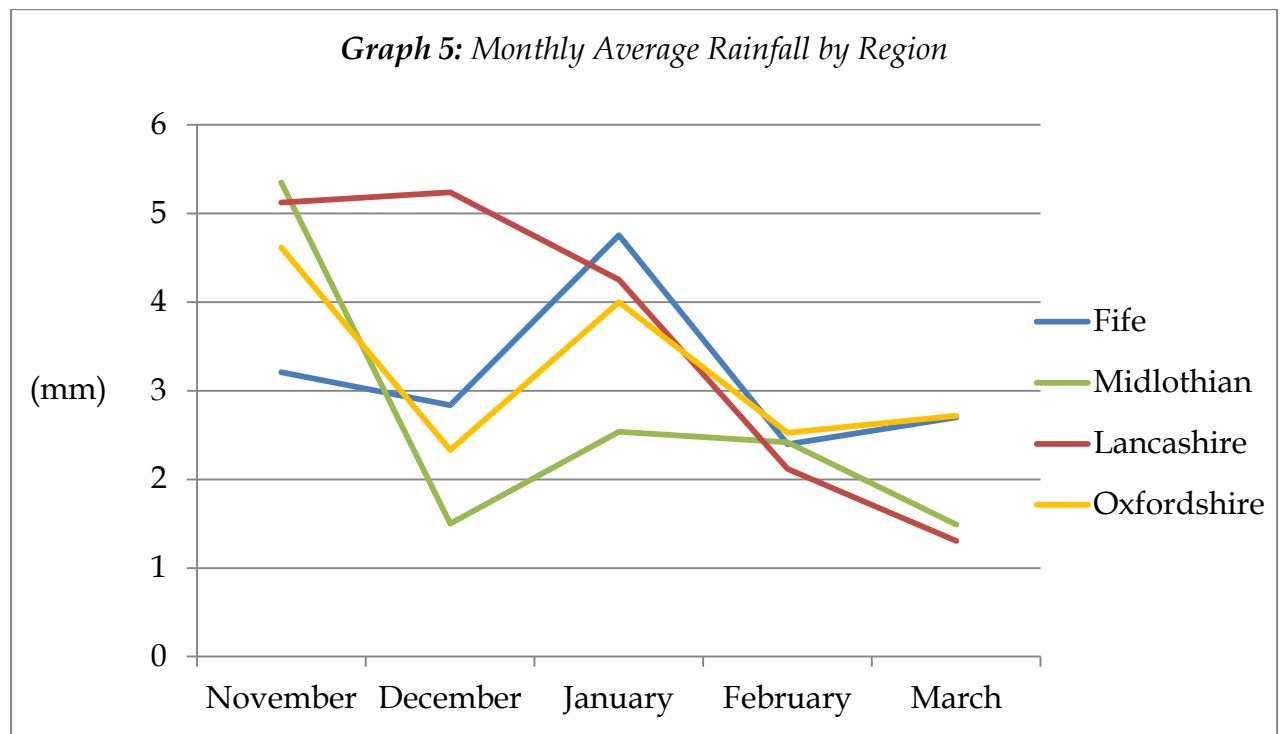
This hypothesis is proven by both the daffodils in English schools and those in Scottish schools using the limited data available; it will be interesting to see if results continue to support this hypothesis once a large data set has been obtained.

As shown by the average dates (horizontal lines) on *Chart 1*, the daffodils planted in pots flowered on average seven days before those planted in the ground.

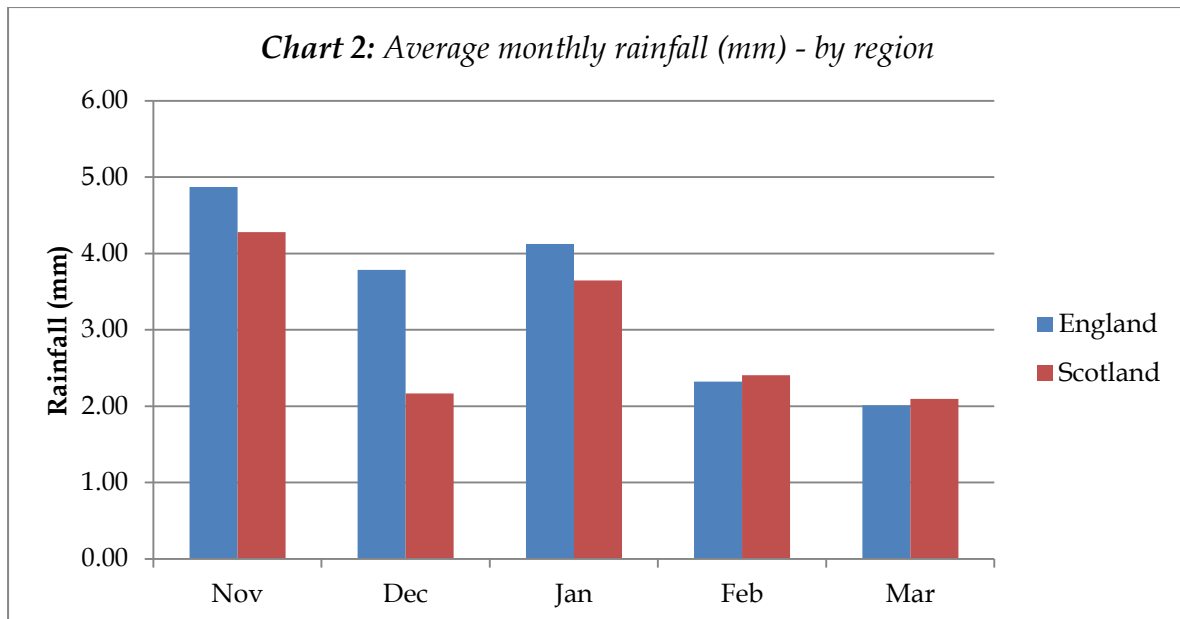
The Scottish schools' daffodils flowered first in the pots whilst English schools' daffodils were the first to flower in the ground. This seems to show that the daffodils in the pots are more sensitive to the change in weather, allowing them to feel the effects of the sun sooner than those planted in the ground. This will be an interesting hypothesis to follow in the next year's project.

Something which needs to be taken into consideration when viewing these results is the difference in planting dates for Scottish and English schools; English schools planted their bulbs on the 19<sup>th</sup> October whereas Scottish schools started planting on the 26<sup>th</sup> October. If this had an overall effect on the flowering dates of the daffodils by a week also the daffodils planted in the ground and pots in Scotland would have flowered before those in England. This variation in planting dates is due to the different term times for Scotland and England and cannot be avoided.

**HYPOTHESIS 4:** Schools in regions with higher levels of rainfall will record taller daffodil flowering heights.



Source information: Graph showing the average monthly rainfall, organised by region. Includes data from our eight special schools.

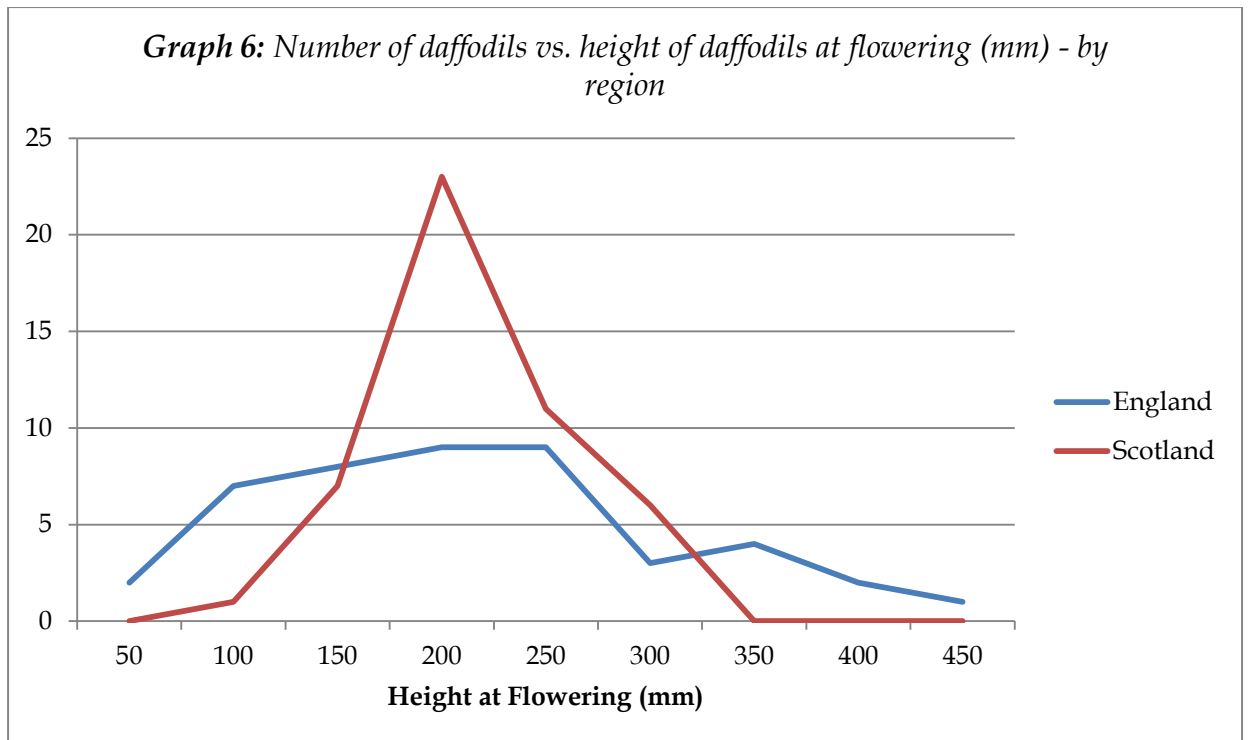


Source information: Chart showing the average monthly rainfall, organised by country. Includes data from our eight special schools.

In total English schools received more rainfall over the project, especially between the months of November to January, these schools did record a taller average height of daffodil at the time of flowering. A new proposed hypothesis based on this data will be tested over the next school year:

**HYPOTHESIS 4.1:** Schools in the region with the highest level of rainfall in the month of January will record taller daffodil flowering heights.

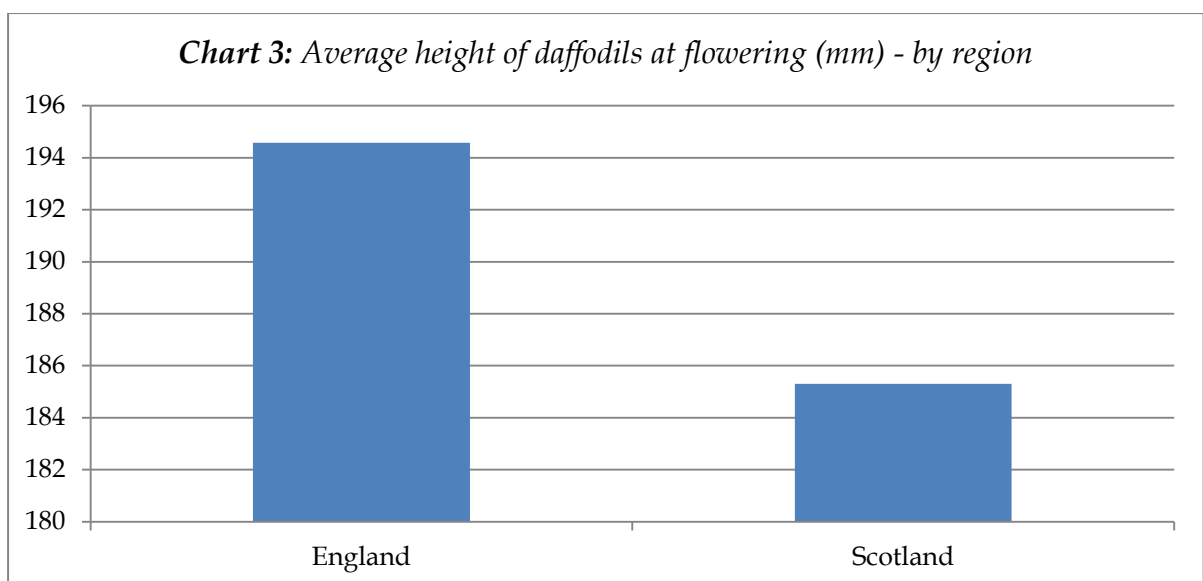
**ii. Height of plants at the time of flowering**



Source information: Graph showing the frequency of daffodils (planted in the ground) at a given flowering height, organised by region. Includes data from the eight special schools. 95 daffodils in total.

From the graph above it shows that the majority of daffodils in Scotland flowered at approximately the same height (between 150 – 250 mm) whereas the height of daffodils in England when flowering was more variable. This could be due to less varied weather conditions in Scotland resulting in the daffodils reaching a similar height.

**HYPOTHESIS 5:** Schools in regions with higher temperatures during February will record taller daffodil flowering heights.



Source information: Chart showing the average heights of daffodils (planted in the ground), organised by region. Includes data from eight special schools. 95 daffodils in total.

Using the data shown on *Graph 4* the temperature was higher in Scotland during February but only by 0.4°C, with Scottish schools recording shorter daffodils at flowering height. A bigger data set and differences in temperature in future years might allow this hypothesis to be properly tested.

### **Summary**

Well done to our eight special schools, your data has been valuable in looking at the hypotheses put forward from the Pilot Year and we hope more schools will participate next year to help with the investigation.

Now that we have looked at the effects the weather has on flowering bulbs, it makes us a lot more aware of its effects on our surroundings. We hope that all 49 schools who took part this year will be encouraged to participate again next year.

Grace Moore  
12<sup>th</sup> June 2013