Yellow green *(ygl)* mutation in Pisum

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The yellow green mutant was first described by Kellenbarger in 1953 (1). The mutation arose as a single plant (KE_{51}) in a crop of Alaska. Seedlings bearing the mutation were reported as being of uniform yellowish green when they emerge with growth becoming a normal green over time. In 1953 Lamprecht notes the work of Kellenberger and reassigns the mutation as *vil* (2). Blixt, in his 1971 thesis on mutations in Pisum (3), designated the mutation as *chlorina-virescens* and lists it under *vil* but goes on to comment that the question of reinstating the *yg* symbol should be discussed. While Blixt was aware of the mutant the line does not appear in the Weibullsholm collection and the mutation is logged as extinct in the gene database at the time of writing (4).

As part of the regular regeneration of germplasm against wire in the field, the abnormally pale foliage colour of one particular accession was noticable. The tops of the plants were all yellowish green becoming a mid green lower down the plant. Documentation associated with this line showed it was received at the John Innes in 1964 from Robert Lamm. A letter from Lamm that accompanied the material states that this line originated from Kellenbarger and included alongside the symbols *ygl* and *virl.*

The chlorophyll content of leaf tissue was measured using a portable Minolta SPAD 502 chlorophyll meter which determines the relative chlorophyll in leaf tissue by measuring absorbance at two wavelengths, namely in the regions of 400-500nm and 600-700nm which are characteristics of chlorophyll absorption peaks. Readings from the leaflets and stipules from the top of the plant gave readings of 18.5 SPAD units which doubled to 34.0 SPAD units seven nodes further down the plant. While the reading obtained from foliar tissue lower down the plant is in the mid range of values measured in other pea germplasm, the value of the younger foliage is at the low end (5).

Fig 1. Plant of JI 35 (Lamm 134) showing the yellow green younger tops and the darker green of older tissue.

It should be noted that the line differed from the founder line Alaska in one further respect in having reduced wax on the stipules. This was not noted by Lamm in the accompanying notes associated with the line. The genetic relationship between the yellow green foliage and reduced stipule wax awaits further study.

As the line has not been studied or published on for such a long period of time, I propose to reinstate the original gene symbol *yg* as valid and *vil* as a synonym in the PGene database (4). The status of the mutation moves from extinct to valid and seed is now available from the John Innes Pisum Collection.

References

1. Kellenbarger, S. 1953. J. Genetics 51: 41-46.
2. Lamprecht, H. 1953. Agri. Hort. Sci 21: 40-54.
3. Blixt, S.1972. Agri Hortique Genetica 30: 1-293.
4. PGene: http://www.jic.ac.uk/GERMPLAS/pisum/Zgc4g.htm.
5. Ambrose, M.J. 2010. Pisum Genetics 42: 7-10.