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UNIFORMITY CRITERIA IN MEASURED CHARACTERISTICS OF DIFFERENT TYPES OF VARIETIES

Document prepared by the experts from Germany

UNIFORMITY CRITERIA IN MEASURED CHARACTERISTICS OF DIFFERENT TYPES OF VARIETIES

- Supplement to Doc. TWA/27/9 Rev. -

Grouping of none hybrid varieties as inbred lines or open pollinating varieties is critical in rapeseed due to possible cross-pollination in this species. In our experience there is no difference in the level of uniformity of varieties declared as inbred lines or as open pollinating varieties by the breeder (see TWA/27/9 Rev.). Therefore, rapeseed is considered as partly cross-pollinating crop in the German DUS tests without any differentiation between non hybrid varieties. In France non hybrid varieties are considered more or less as inbred lines. For uniformity assessment the French approach includes observations of progenies of unthreshed plants as well. From there the question follows whether the different assumtions about the genetic constitution of rapeseed varieties and the different experimental designs lead to deviating uniformity levels in varieties which have successfully passed the DUS test in France or in Germany.

In 1996 to 1998 the German winter oilseed rape reference collection included 72 varieties registered in Germany and 30 varieties registered in France, among them 17 varieties registered in both countries (without hybrids and varieties used only as components). The within variety variation of measured characteristics was analysed for these 85 varieties. The adjusted standard deviation over years calculated using the COYU procedure is exemplarily shown for the characteristics plant length, leaf length and time of flowering in figures 1 to 3 (measurement of 60 plants per variety and year in 1996-1998, one location).

All 85 varieties met the uniformity standards for the analysed characteristics in this testing period (UC_{3R} ... uniformity criterion for rejection after 3 years). Although, the number of French varieties was lower in the tested collection, the range of standard deviation was nearly the same for the German and the French group of varieties for leaf length and time of flowering. For plant height there were some more German varieties with a higher standard deviation than the French varieties but also in this charactristic there is no clear clustering of varieties having passed the German or the French testing system.

Figures 4 to 6 illustrate the variation of single plants within varieties. The frequency distributions indicate continuous variation for the analysed characteristics. It is not possible to identify off-types and to remove them prior to taking measurements. Varieties with the same characteristic mean and standard deviation show more likely differences in their distributions from year to year than from variety to variety, as is demonstrated for some pairs of French and German varieties.

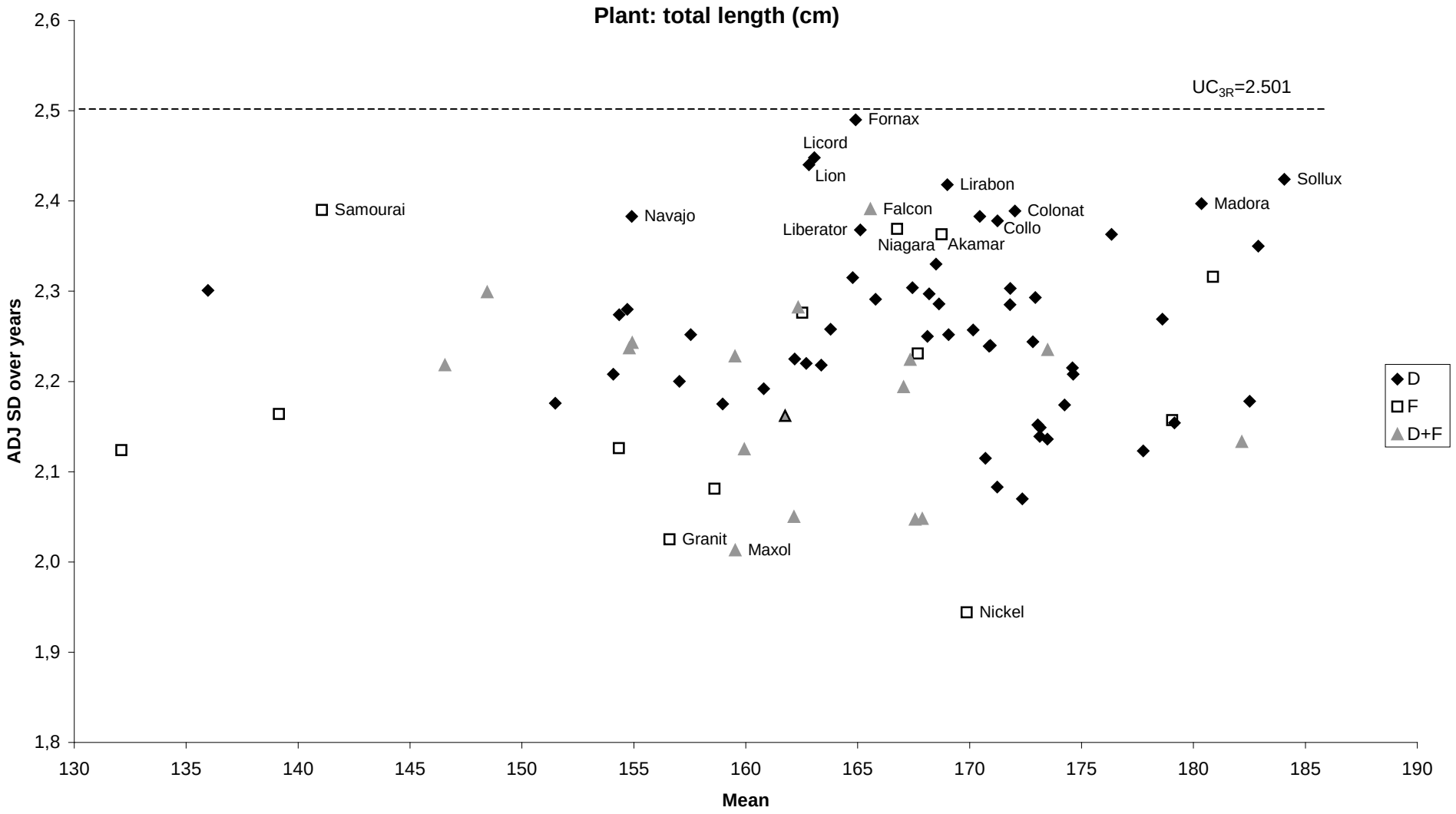

Figure 1: Relationship between mean and standard deviation of plant height in winter oilseed rape varieties registerd in Germany and/or France (DUS test 1996-1998, Scharnhorst)

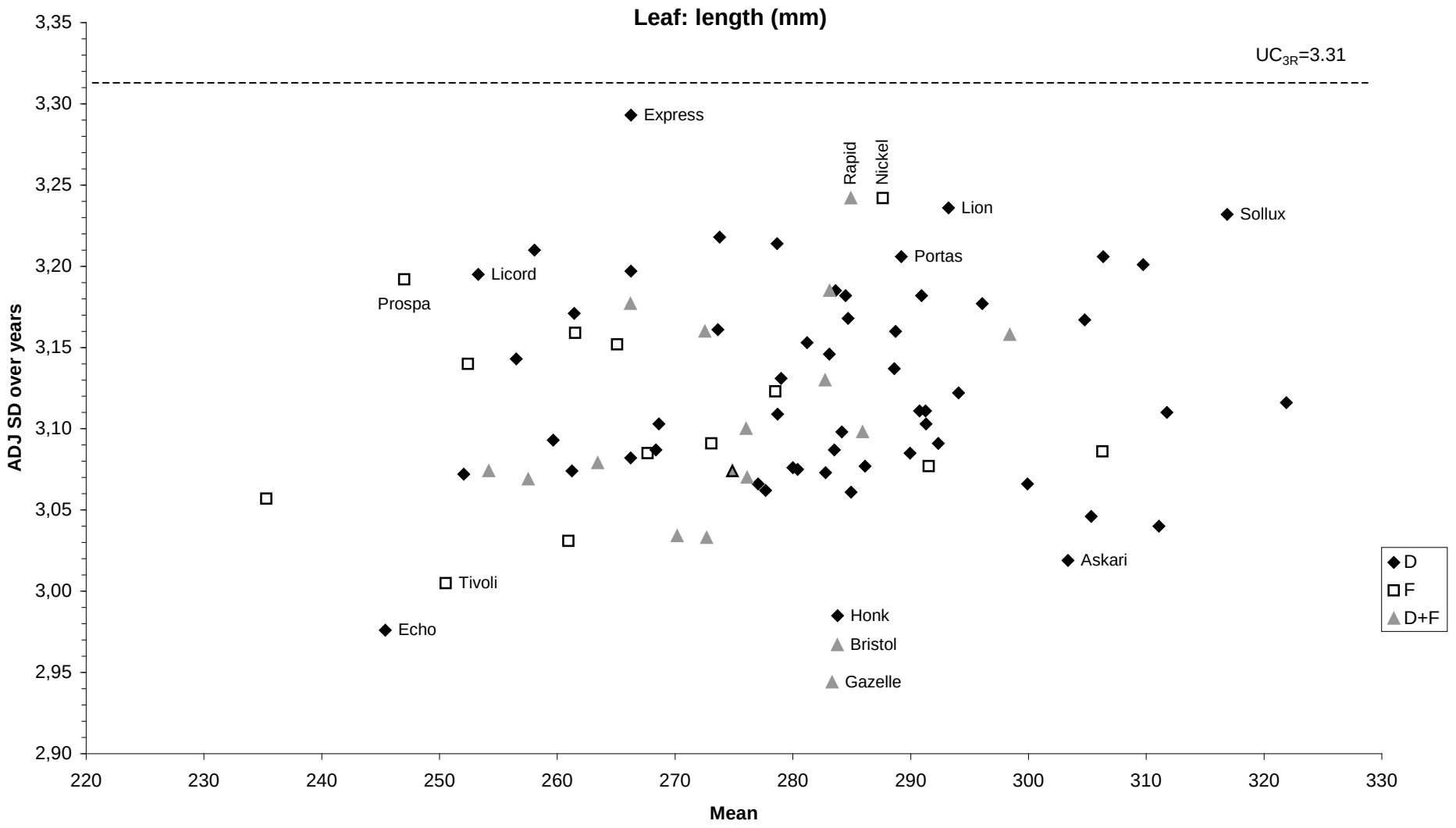

Figure 2: Relationship between mean and standard deviation of leaf length in winter oilseed rape varieties registerd in Germany and/or France (DUS test 1996-1998, Scharnhorst)

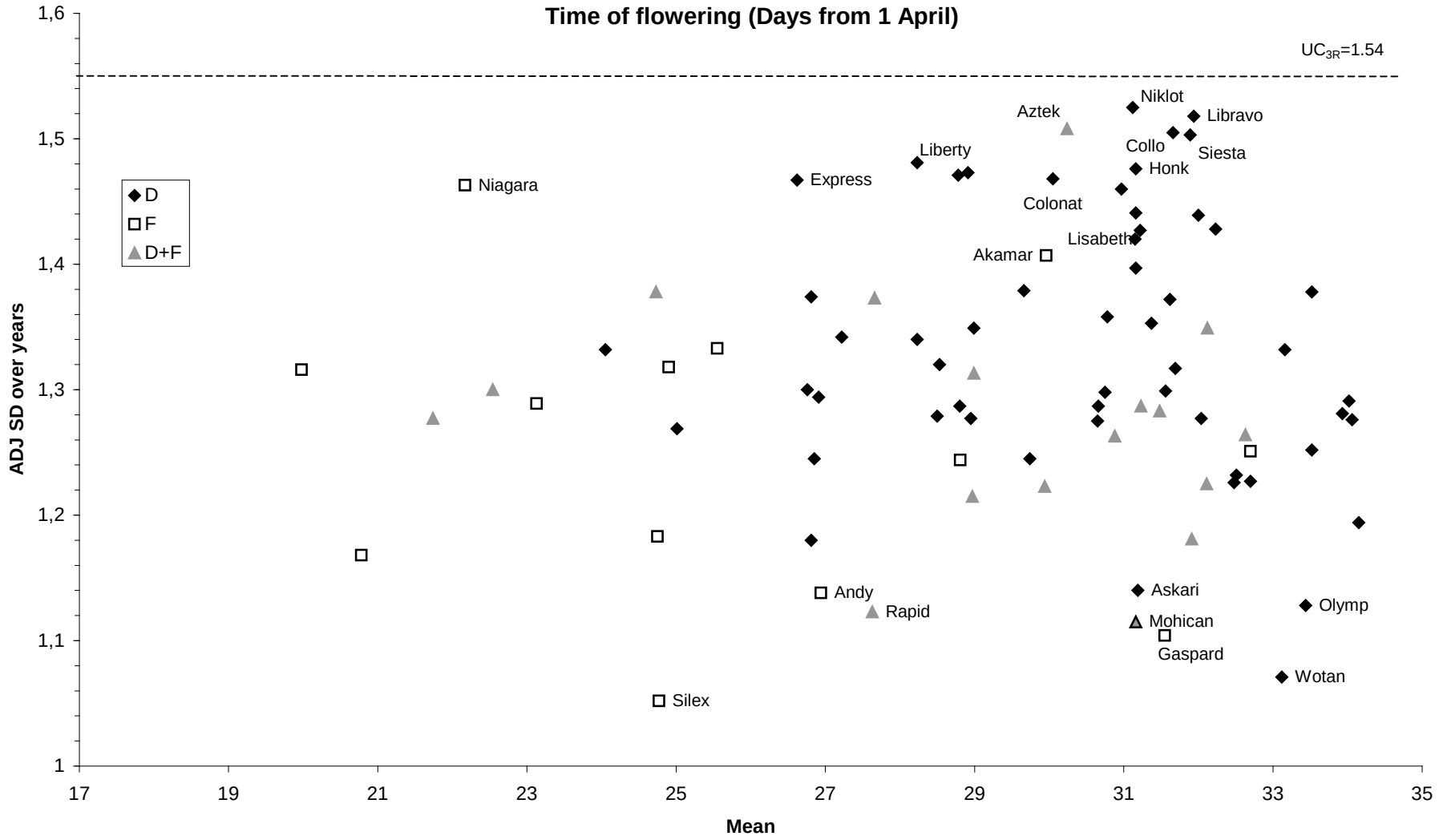

Figure 3: Relationship between mean and standard deviation of time of flowering in winter oilseed rape varieties registerd in Germany and/or France (DUS test 1996-1998, Scharnhorst)

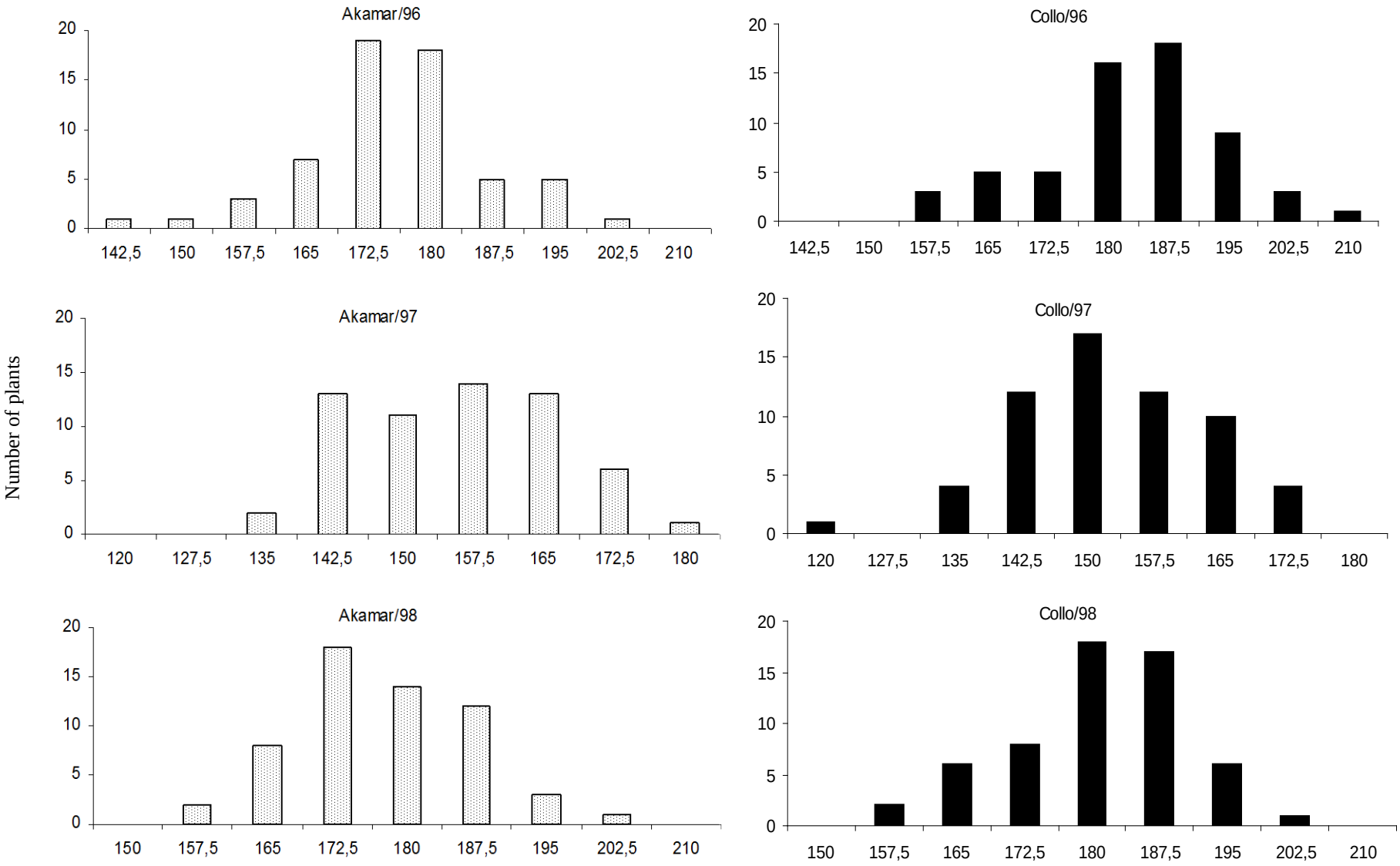

Figure 4: Frequency distribution of plant height (cm) within "Akamar" and "Collo" (DUS test 1996-1998, Scharnhorst, 60 plants/variety x year)

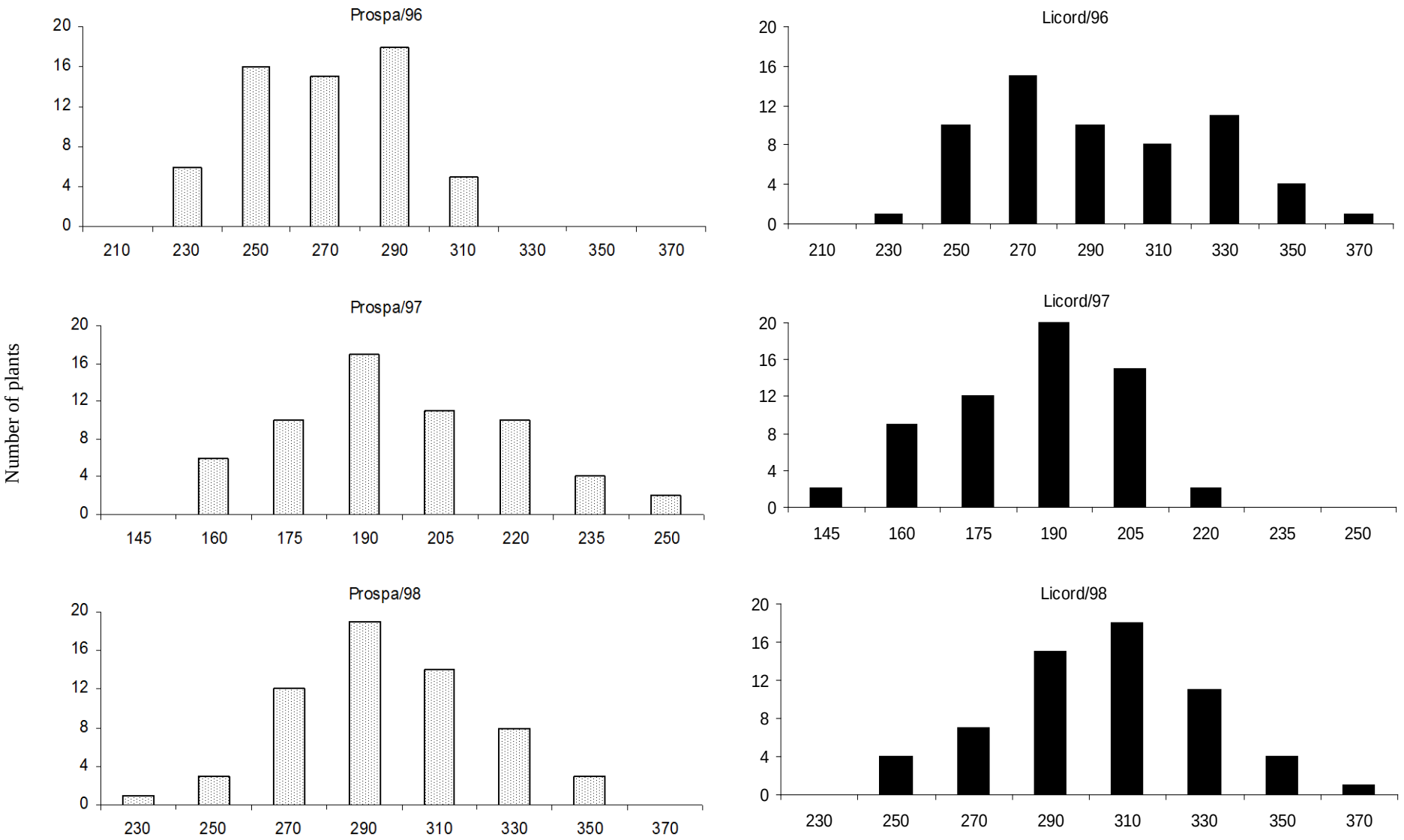

Figure 5: Frequency distribution of leaf length (mm) within "Prospa" and "Licord" (DUS test 1996-1998, Scharnhorst, 60 plants/variety x year

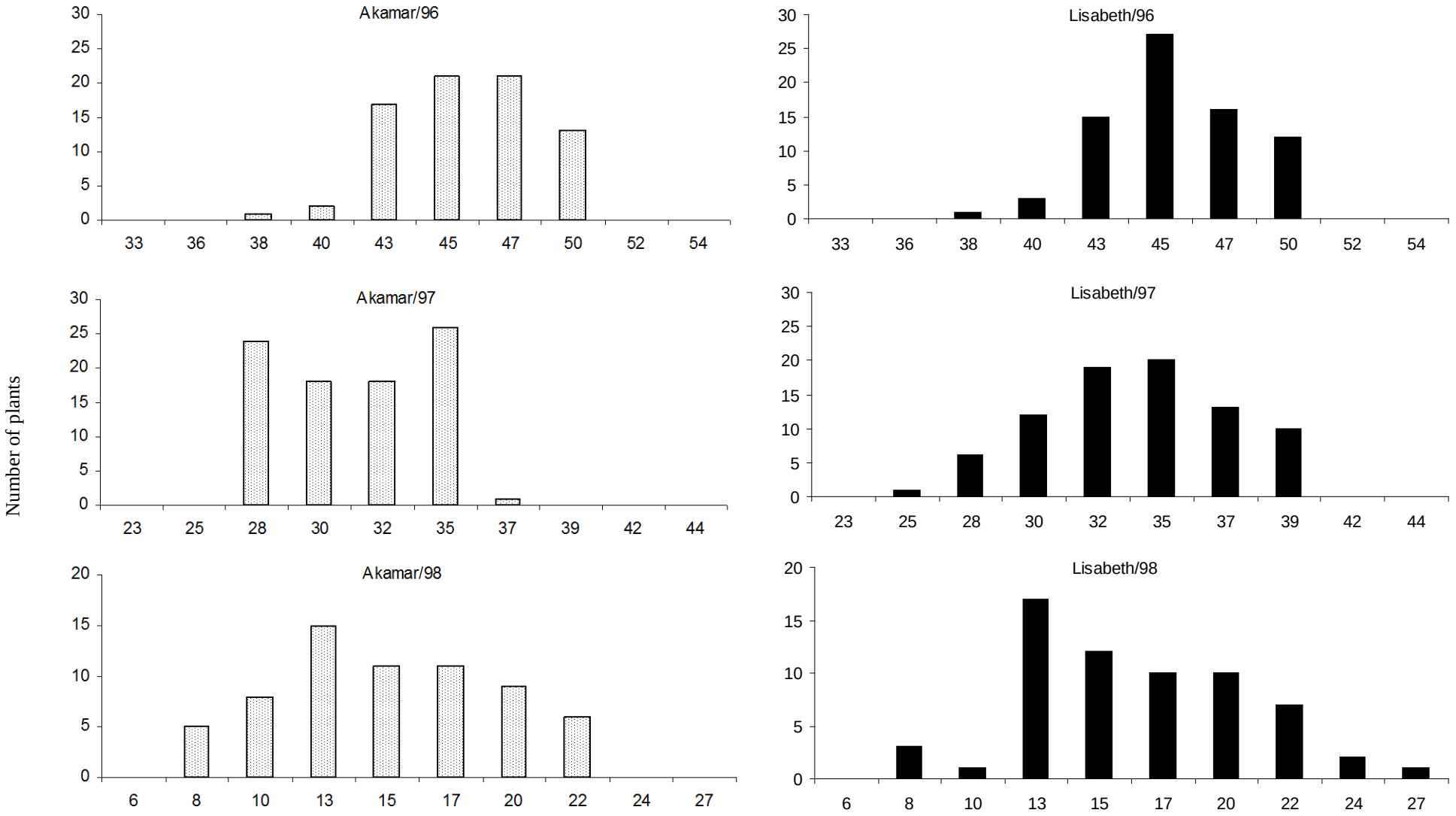

Figure 6: Frequency distribution of time of flowering (Days from 1 April) within "Akamar" and "Lisabeth" (DUS test 1996-1998, Scharnhorst, 60 plants/variety x year

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