

## **GUIDELINES FOR SAMPLING A GROWTH AREA FOR DERIVING MACHINE SETTINGS AND VISUAL GRADING ASSIGNMENTS**

*These guidelines are written because rules that cover every eventuality in sampling cannot be given in the standard. Although sampling is partly subjective it has a major influence on the safety of settings and consequently the safety of timber structures. Those people doing settings are therefore required to use their knowledge and experience, and that of others, when designing the sampling strategy. It is important that whatever decisions are made are justified in the report.*

1. The overall requirement is that the timber tested is representative of the timber to be graded in production with these machine settings or visual grading assignments. The aim is for the sample to resemble this timber population in terms of: the mean and variance of grade determining properties; and the variation in correlations between the grade determining properties and those characteristics assessed during grading (visual grading criteria for visual grading and IP for machine grading). This means that sampling strategy must not be designed in order to maximise yield (beyond increasing the number of specimens to reduce statistical uncertainty).
2. The first thing to consider is the size of the growth area (source from which timber is intended to be strength graded) and the variation within it of factors that affect timber quality. If there is knowledge from previous research on the variability of the timber in the growth area this can be used to select the sources strategically.
3. The availability of knowledge about the variability within the growth area should influence the number of locations sampled. If weak areas are known, they should be taken into account accordingly. Where there is a lack of knowledge, more locations should be used and/or contain more specimens.

The species combination should reflect industrial practice. If species are graded together without being differentiated, then the sampling should be based on that species combination. This should be described in the report. For the sampling, it is not necessary to be able to identify the species of specific specimens – only to know that the species is within the species combination and that the ratio of species in the sampling is broadly similar to that in practice. However, for grading to work the species must be sufficiently similar, and this must be considered and justified in the report.

4. For machine grading, sampling for a growth area that includes more than one country should contain at least one sub-sample from each country, unless information exists which verifies that timber from one country can be safely graded using settings from another country without being included in the sampling. This might not be consistent for different indicating properties so such a conclusion must be justified in the report.
5. Ideally, the timber to be tested should be specimens taken from normal sawmill production (sawn or planed) provided the source is known well enough to meet the sampling criteria.
6. Pieces that have defects that would be rejected by visual override inspection should not be included, since these would not be included in the graded timber.
7. Sampling based on selecting logs is acceptable provided normal sawing patterns are used (non-standard sawing patterns may make the sample unrepresentative), and a sufficient number and diversity of logs are selected such that the sampling is not made to be unrepresentative.
8. It is important that the length of the specimens is sufficient to enable a choice to be made for the critical section. However, care should be taken to avoid biasing the sample through selection of unusually long lengths compared to industrial practice.
9. The range of cross-section dimension should be representative of the timber to be graded in production with these settings or assignments (unless justified otherwise). For machine grading - remember that the range of sizes (thickness and width) permitted to be graded is  $\pm 10\%$  of the tested sizes