Silver fir

Abies alba Mill. | *F: Sapin blanc* | *I: Abete bianco, abezzo* | *R: Aviez* | *E: Silver fir*

General

Accounting for 11.8 % of all stems, silver fir is the third most common tree species in Switzerland. It occurs mainly in the western Jura, the central Swiss Plateau and the Pre-Alps, reaching particularly high densities between 800 and 1000 m a.s.l.[1]. In some regions it is naturally largely absent, for example in the Engadine, the upper Goms valley, the Matter valley and the Davos region[1].

Flowering

Silver fir flowers are unisexual and appear shortly before the new shoots, between the end of April and mid-June. The female inflorescences are found mainly in the upper crown and develop into green, upright cones (Fig. 1). The smaller male inflorescences are distributed throughout the crown on the underside of the previous year's shoots.

Fruits

The upright cones ripen in September and are found mainly on branches in the top of the crown (Fig. 3). In October the ripe cones disintegrate on the tree: the seed scales fall off and the small, winged seeds are dispersed by the wind. What remains is the cone axis (Fig. 2), which can stay on the branch for several years.

Masting behaviour

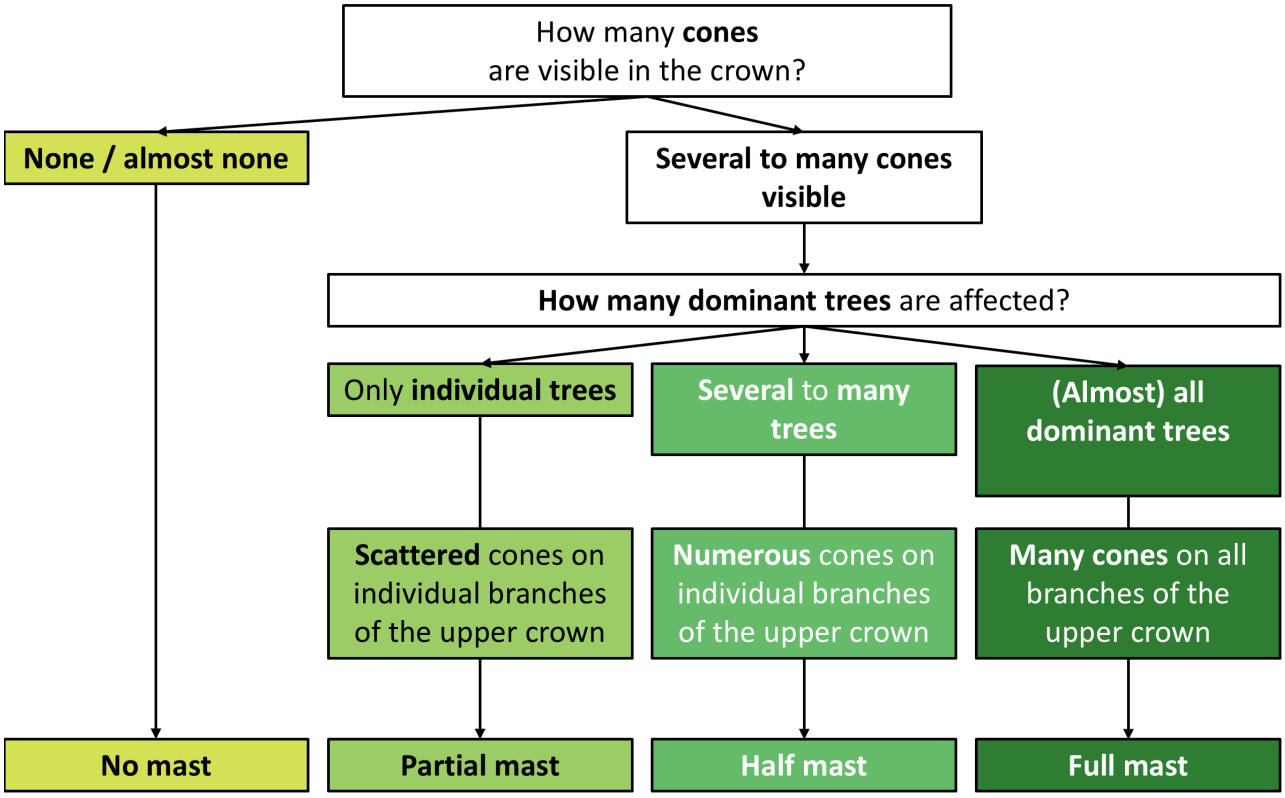
Silver fir produces large quantities of seed about every 1 to 3 years[2]. The extent to which masting is controlled by climatic factors has so far been insufficiently studied. There are indications of a pronounced physiological rhythm in flower formation and that dry summers can favour pollen production[3]. Whether the flowers develop into numerous ripe seeds is probably also influenced by frost events and precipitation during flowering.

Mast assessment

Timing: July to mid-September.

The current cone crop can be reliably assessed from cone formation until shortly before seed ripening. After ripening, the cones disintegrate on the tree. The remaining cone axes can stay in the crown for several years and are therefore unsuitable for assessing the current mast.

Assessing the fruit load: Seed masting is a stand-level phenomenon. Wherever possible, several dominant, reproductively mature trees in a stand are assessed. The mast class describes the stand as a whole, not individual trees with particularly heavy or light fruiting. If the fruit load is uneven, choose the class that best characterises the stand as a whole. The intensity of silver fir mast can be estimated using the following key:



References

[1] Brändli UB (1996) Die häufigsten Waldbäume der Schweiz. Ber. Eidg. Forsch.anst. Wald Schnee Landsch. 342

[2] Burri A, Burkart A, Moritzi M, Moser B, Wasem U, Wohlgemuth T (2016) Samenproduktion bei Waldbäumen: eine neue Webseite. Zürcher Wald 1/16: 23-27

[3] Pidek IA, Poska A, Kaszewski BM (2015) Taxon-specific pollen deposition dynamics in a temperate forest zone, SE Poland: the impact of physiological rhythmicity and weather controls. Aerobiologia 31: 219-238