European ash

Fraxinus excelsior L.* | *F: Frêne commun* | *I: Frassino comune* | *R: Fraissen* | *E: European ash

General

Ash is widespread and, in the northern Alpine foreland, forms forests together with sycamore maple or alder – formerly also elm – on waterlogged or temporarily wet soils, for example in floodplains and on moist slopes. It prefers nutrient-rich, moist sites in the colline and submontane zones but also thrives on dry slopes in the Jura[1]. Its future is threatened by ash dieback, which has spread across Europe since the 1990s. The fungus (*Hymenoscyphus pseudoalbidus*) infects leaves and shoots and can kill them[2]. No effective treatment is known to date; however, some ash trees show increased resistance[2].

Flowering

Ash flowers in May, before the leaves emerge. The flowers are borne in lateral panicles and, unusually within the olive family (Oleaceae), are wind-pollinated (Fig. 1). Ash flowers are basically hermaphrodite, i.e. they contain both a stigma and stamens. However, as one of the sexes is often reduced or absent, individual trees can be functionally predominantly male or female.

Fruits

The winged ash seeds (samaras, Fig. 2) ripen in October and November. Over the winter they are dispersed by the wind and can travel considerable distances.

Masting behaviour

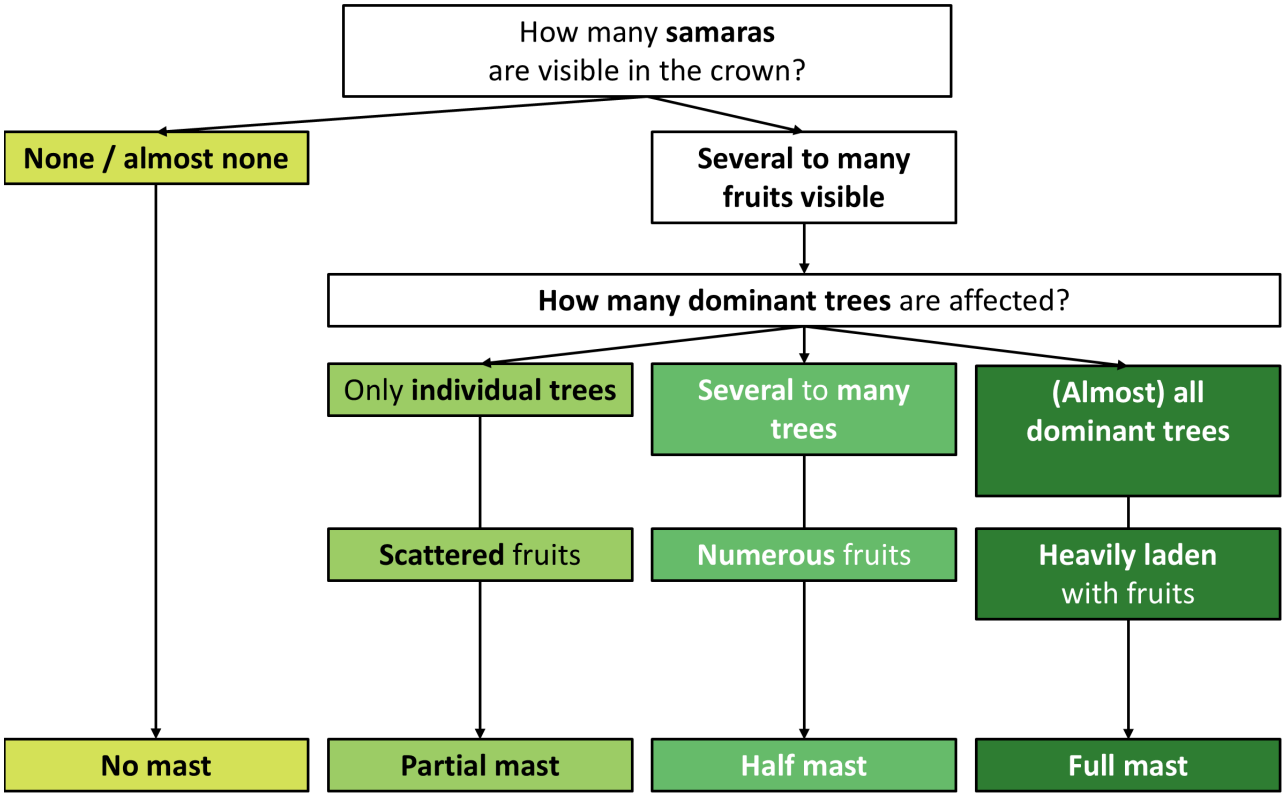
Ash produces large quantities of seed about every 2 to 3 years; however, a considerable proportion of the seeds may be unfertilised[3]. Pronounced mast years therefore occur less frequently, roughly every 5 to 6 years[3]. One reason may be that pollen and seed production take place at different times and are therefore influenced by different weather conditions. In predominantly male individuals, flower and pollen production is particularly high after favourable weather in the preceding autumn[4]. Seed production of female ash trees, on the other hand, can be impaired by frost and drought in the seed year[4].

Mast assessment

Timing: August to November.

The earlier the mast is assessed, the easier it is to recognise the still-green seeds. After the seeds have ripened, it can be difficult to distinguish dried flower remnants from fully developed seeds (Fig. 4).

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 ash 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] www.waldwissen.net

[3] Tapper P G (1996) Long-term patterns of mast fruiting in *Fraxinus excelsior*. Ecology 77: 2567-2572

[4] Bochenek G M, Eriksen B (2010) Annual growth of male and female individuals of the common ash (*Fraxinus excelsior* L.). Plant Ecology & Diversity 3: 47-57