

## Alasia Franco Vivai drives forward the development of poplar

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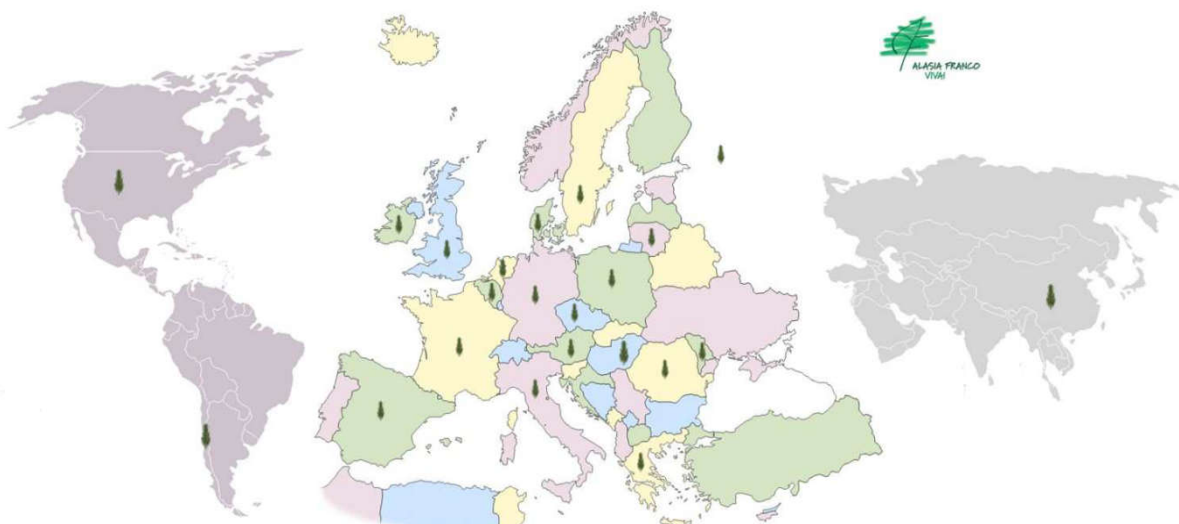


AFV head offices in Savigliano, Italy

Alasia Franco Vivai (AFV) is a leading European producer of plant material for two of the WATBIO focus crops: poplar and arundo with active business development in both. AFV works across the world with partners such as Greenwood Resources (USA); International Paper (USA); and ENCE (Spain). AFV has a long tradition of involvement in public research with WATBIO central to its current work. This builds on close collaboration with public research organisations: the CNR, University of Tuscia, University of Pisa and University of Pavia. It also builds on involvement in past European research: POPYOMICS, BENWOOD and NOVELTREE.

The selection of new high yielding clones using insight into how they perform under different conditions (genotype × site interactions) is of paramount importance in developing sustainable systems. The response of clones to drought is of great interest. In WATBIO, AFV has established and managed the main experimental field trial of *Populus nigra* and *A. donax* at Savigliano and uses this facility to study biomass production under drought conditions. AFV also contributes to shaping the project from a commercial perspective. Through innovative breeding, AFV is a major route to market for WATBIO research on poplar. Based on an ambitious breeding programme started in 1983, AFV is now the leading private company in Europe conducting this activity, and is now able to offer a wide range of clones adapted to different cultivation systems and site conditions. This plant breeding generates and identifies new lines for biomass production. These are developed using selection with the cultivation systems and the location of production in mind. AFV produces 90 million poplar cuttings and 5 million poplar poles for new plantations each year. The nursery extends over 300 ha.

AFV has poplar and arundo material planted in 19 European countries, North America, Chile and China.





AFV's collection is based on clones from North America, Europe and Asia

### Poplar genetic improvement plan

The AFV poplar genetic improvement programme has 6 distinct stages:

- 1) collection from natural populations in Europe and North America;
- 2) comparison and selection of the best clones for crossing;
- 3) controlled hybridization;
- 4) selection of the best hybrids;
- 5) multi-site field testing;
- 6) clone registration and protection of breeder rights.

AFV is using new newly-bred clones for wide-scale planting with evident genetic progress being made every year. AFV has already registered 19 clones in different European countries. The shorter cycle forestry (up to five years) is used for wood chips, pellets and boards (OSB, MDF and HDF) while the longer cycle (about 10 years) is used for plywood. Traditional methods are used for selecting parents and progeny based on growth, bud set and bud burst, and resistance to diseases. WATBIO enables Alasia to better predict the merit of parents in crosses in terms of the drought tolerance of progeny. A major practical benefit is from the experience gained with sensors for stomatal conductance, water potential and leaf turgor. With respect to using genetics research, the relatively small genome and the new biological knowledge, such as that from WATBIO, on genome regions that contribute to the expression of a specific quantitative character will enhance genetic selection and improvement activities with the help of new techniques based on molecular markers (Marker-assisted Selection – MAS, Genomic Selection – GS) for a quicker and safer genetic progress. We will use this to select parents for crossing from predictions of tolerance to drought.

WATBIO partners with young poplar growing in northern Poland



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Francesco Fabbrini monitoring tree growth at the WATBIO site in Savigliano

Using ZIM sensors to measure water potential in the field

