

Fig. 1. Field trial during early growth and catkin collection. a, Photographed in July 1997, two growing seasons after planting. Note the person (\sim 1.8 m) just visible within the trees (center bottom). b, the trees in November 1998, after the third growing season after planting. c, collecting catkins with a lift while using a pole pruner during March 2009. d, collecting catkins by hand with a Swedish ladder and a pole pruner in February 2007.





The heights and diameters of all the trees were measured in fall 1997, two growing seasons after planting. Each bar identifies an individual gene insertion event or control. The brackets represent 95 % confidence intervals. The asterisks indicate whether the volume index of the specific event was significantly different than the control based on a Dunnett's test (three asterisks: P<0.001, two asterisks: P<0.01, and one asterisk: P<0.05; all rounded up). The events with darker bars were also studied for their pollen sterility; cc, cubic centimeters.



Fig. 3. Reporter and non-transgenic trees grew at similar rate. The volume index of each transgenic construct was not significantly different from the controls (all P > 0.60, see Tables S7-S8). Brackets represent 95 % confidence intervals. Darker bars show data from 2001 and lighter bars show data from 2003; cc, cubic centimeters.



Fig. 4. Absence of visible pollen release from transgenic catkins. a and **c**, show control catkins with released pollen. **b** and **d**, show transgenic catkins without visible released pollen. **b**, catkins correspond to event 17. **d**, catkins correspond to event 14. **a** and **b**, catkins were collected in 2007. **c** and **d**, catkins were collected in 2009. Images of catkins from 2006 and 2008 were previously published in Brunner et al. (2007) and Vining et al. (2012).



Fig. 5. Transgenic catkins lacked visible pollen. a and **b**, catkin and stamens are from a control tree. **c** and **d**, catkin and stamens are from transgenic event 12. **e** and **f**, event 9. **g** and **h**, event 14. **i** and **j**, transgenic event 7. The black bar in the catkin image **i** corresponds to 1 cm and the black bar in the stamen image **j** corresponds to 1 mm. Photos were taken during March 2009. Histology photos from 2006 can be found in Brunner et al. 2007 and Dalton et al. 2013.



Fig. 6. Collapsed tapetum and absence of pollen in transgenic anther sacs. a and **c**, show control anther sac with pollen. **b** and **d**, anther sac with collapsed tapetum belonging to transgenic event 12. For both control and transgenic, the black scale bar in **b** corresponds to 2.5 mm and the black scale bar in **d** to 1 mm. All images were from collections made during February 2009. E, epidermis; En, endothecium; T, tapetum; PG, pollen grain; PS, pollen sac.