

# TEMPORAL TRENDS IN BRANCH MORPHOLOGY IN YOUNG *POPULUS* CLONES

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Temporal trends in branch morphology (living, first-order proleptic and sylleptic shoots) in the second through fourth years of growth were assessed for young *Populus* clones grown for biomass at 1 x 1 m spacing on a floodplain site in central Missouri. Angle of branch origin tended to increase with age in a *Populus deltoides* x *P. nigra* hybrid clone (I45/51) and in two of three *P. deltoides* clones derived from Midwest region collections (clones 2059 and 1112, but not 26C6R51). Total branch length, number of branches (table 1) and number of branches per meter of tree height declined over the period in the hybrid *Populus* clone while it increased somewhat or remained stable in *P. deltoides* clones. However, the hybrid clone still had a significantly larger number of branches than did *P. deltoides* clones after four years. Early in the experiment, the hybrid clone had a substantially greater number of branches placed in the lower half of the stem than did *P. deltoides* clones, but with time this tendency was lost. After the fourth year of growth all clones had few or no branches below the stem midpoint. Length-weighted vector averages of branch azimuth (fig. 1) indicated that there was a significant trend toward greater branch growth on the south side of trees, but little apparent clonal variation in this attribute. Interestingly, this tendency in orientation of branches was maintained in every year. Overall, initial differences in branch morphology between hybrid clones and *P. deltoides* clones shown in year two were much reduced or absent by the fourth year of growth. Similar trends were seen in biomass growth in these clones.

Table 1.—Number of branches per tree in a *Populus* plantation in the second through fourth years of growth. Means within a column not followed by the same letter are significantly different ( $p < 0.05$ ).

# of branches	2 y-old	3 y-old	4 y-old
I45/51 ( <i>Populus deltoides</i> x <i>P. nigra</i> )	30.0a	24.0a	26.5a
26C6R51 ( <i>Populus deltoides</i> )	17.4b	16.2b	19.2b
2059 ( <i>Populus deltoides</i> )	11.8b	19.3ab	18.3b
1112 ( <i>Populus deltoides</i> )	10.0b	17.0b	18.2b

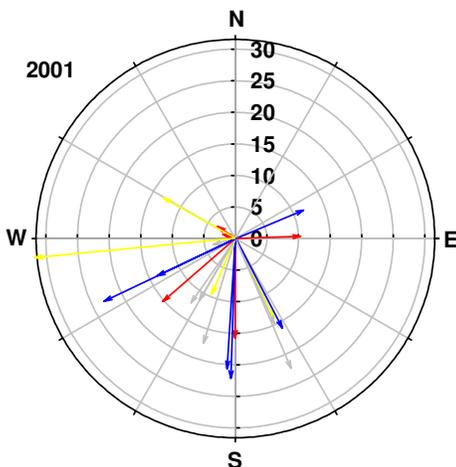


Figure 1.—Length-weighted vector averages of branch azimuth for *Populus* clones in the third (2001) growing season of growth. Different clones are indicated by color (blue=I45/51, n=6; red=26C6R51, n=5; gray=2059, n=6; yellow=1112, n=5).

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