

DISCUSSION RELATING TO SESSIONS III and IV

Funk: With reference to the red maple study, Dr. Townsend, how did you store your seeds during the summer?

Townsend: We stored dry seed at 34° F. We were able to maintain viability longer in northern than in southern seeds.

Funk: I have a question for Dr. Jokela. It seems that the Scotch pine varieties you mentioned as having higher field moisture content were the same as those having good green color. Have you made any correlation? Do you think this might be a means of testing for good color selection?

Jokela: Moisture content and color do follow the same trends. In making color selections, however, it would seem easier to look at the trees themselves rather than taking moisture content. One thing that color does correlate with is frost hardiness.

Jokela: I would like to make a comment that relates to Bagley's paper, but what I am about to say is really addressed to all of you here. I would not be very happy with the indictment of *Populus deltoides* that might be drawn from the performance of "Siouxland"; because I don't think (and there are other people who don't think) that "Siouxland" is *deltoides*. Back in the early 1960's I recommended that our Horticulture Department use "Siouxland" for windbreak plantings. I was never convinced that what developed was a variant of *deltoides*. I kept watching "Siouxland" develop, and it didn't look like any other eastern cottonwood that I had seen. I might add that I have looked at a broad spectrum of this species in provenance tests. Then, in 1968, I asked experience leaders in cottonwood provenance testing—Dr. Koster from Holland and Dr. Steenackers from Belgium—to take a look at these "Siouxland" plantings. Both of these men were convinced that "Siouxland" is a hybrid between *nigra* and *deltoides*. They based their conclusion on leaf form, bark traits, kind of sheath on small twigs, and bud formation. Also, the presence of canker on "Siouxland," as Bagley mentioned, is not typical of *deltoides*, in our estimation.

Bagley: I am sorry if I gave the impression that I tried to indict *deltoides*. I didn't intend that at all. I was merely pointing out some attributes of this selection, be it *deltoides* or not. I don't know. I'll let you and South Dakota resolve that question. The fact is that "Siouxland" had been widely released, and I felt that it was a good one to try. Insofar as *deltoides* in general is concerned, we have included Jokela's material in our provenance testing. In these test materials there is a range of *deltoides*—as far as bark thickness is concerned and as far as canker resistance is concerned—that goes the full range from NE-237 to "Siouxland." There are some in there that I would hate to classify as being different from "Siouxland." Maybe you can tell the difference, but I can't. So, I would say that there is a very wide range of traits within *deltoides*.

Randall: With reference to this question of clonal identity, "Siouxland" looks a little odd for *deltoides*. I

noticed that Dr. Bagley said that the bark was only 0.13 inch thick. We found thin bark in some cottonwood clones 25 to 30 years old.

Nienstaedt: I have a question for Townsend. One of your slides illustrated a highly variable difference in growth. Was it a family difference or a provenance difference where one lot of seedlings was very short and had terminated growth while others were still active in various patterns of growth? What is the variation in dormancy vs. growth in this picture?

Townsend: That was a half-sib family from Ely, Minnesota. It was grown in a growth chamber under a 16-hour photoperiod. After 4 weeks about two thirds of the seedlings in the family had entered dormancy, and the other third continued to grow.

Nienstaedt: Was this observed in any of the other families?

Townsend: Not in any of the other families used in the growth-chamber study. The other families showed little variation within. We noticed this in the nursery bed also. Several families from the Ely, Minnesota, locale were quite variable in height growth. Some members of these families lapsed into dormancy and others continued growth.

Nienstaedt: The reason I asked is because we have observed something similar in white spruce. We have found quite a number of different patterns. Some will go into dormancy and remain dormant, and others will continue growth indefinitely. Others will terminate growth, set a loose bud, and then start growing again. We tried to analyze this variable performance. I don't recall at this moment whether it was a full- or half-sib test. We tried to relate it to family variation, but it seemed to be entirely at random.

Randall: Which would indicate that there is considerable segregation of controlling genes?

Nienstaedt: That could be, or it is a characteristic that can be modified by very minor differences in moisture regimes in plots, or what have you?

Bagley: Just for the record, Cunningham mentioned that his green ash selections are being obtained primarily from plantations in the northern Great Plains. I am wondering if he is giving thought, or should give thought, to including native material in his collection? Others of you may have some idea about this. Do we have a sufficiently broad genetic base in these plantations? What do we really know about the parentage of the trees that were planted by the Forest Service?

Cunningham: Yes, we did consider selecting in natural populations. With the limited manpower available to us, however, it was decided that the best chance of progress could be obtained by concentrating on those shelterbelts where selection probably had been much more efficient in terms of our needs. I agree that we should look into the natural populations of the region. This could very possibly broaden the components of useful genetic variation.

Nienstaedt: I would like to ask Jonathan Wright a