

2. The relationship among leaf number, leaf width, and cell number in ABPHYL.

We reported earlier (MGCNL 41: 197 and MGCNL 42: 169-172) some features of an "opposite leaf" phenotype. Since considerable variability in its expression has been observed, we have renamed the phenomenon "ABPHYL", for ABerrant PHYLlotaxy. Besides confirming our previous observations, our recent observations have concentrated on the number and width of leaves produced by variants. Segregations through the F_5 have continued to confirm previous observations.

We now know that ABPHYL can be expressed at any time from embryo to tassel initiation. In addition, plants have been observed with up to four times more leaves than would be normally expected. Most frequently, however, and especially so in those plants where leaf arrangement is decussate, leaf number is twice the normal number. Leaves from ABPHYL plants most frequently are one-half the width of normal leaves but since length is not significantly different, total leaf area would be expected to be similar. Preliminary measurements support this expectation. Leaves are narrower in ABPHYL due to fewer and not narrower cells.

Thus we now interpret the ABPHYL genotype as expressing itself, at least in part, at the shoot apex through modification of the rate of production, siting and size of leaf primordia. Since some crosses tend to accumulate different features of this genotype, we feel that certain desirable features of this system can eventually be stabilized into a single non-variable expression.

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3. Effects of 8-hydroxyquinoline on mitosis in maize root tips.

Our protocol for collecting metaphase spreads for eventual use in studies requiring chromosome identification includes incubation of roots in 0.002M 8-hydroxyquinoline (8-OHQ) for 3 hours. Excellent chromosomes and a relatively large number of metaphase spreads is collected by the action of this chemical. However, we were concerned about possible additional effects of 8-OHQ on the cells. From the experiment described below, we have been able to ascertain the effect of 8-OHQ on mitosis.