Gravity Related Standing Waves in Plants CLAUDIA WAGNER,
Wagner Research Laboratory, ORVIN WAGNER — Leaf and branch spacing are
termed internodal spacings (1/2 wavelengths here) in the literature. There is apparently a unique set of available $1/2\lambda$' s with the choice determined by growing conditions. The ratio of the usually larger vertical velocity to the horizontal wave velocity
is apparently determined by the genotype and shapes the plant. The ratio for a particular plant can often be found by measuring several hundred vertical and horizontal
spacings and taking reciprocals. Then find the horizontal reciprocal average A_h and
do the same for the vertical to get A_v Then equating frequencies $v_v A_v = v_h A_h$ (also
equals similar terms for other 5° integralmultiples) gives $v_v/v_h = A_h/A_v$. Standard
deviations for A_v and A_h are in the range of 15-50%. The ratios, however, are nearly
exactly (usually within 1%) ratios of small integers like 3/1 for Ponderosa pine.In
species, where higher frequencies dominate, one can often measure cell lengths as
half wavelengths and similarly arrive at the velocity ratio. Velocities are found by
disturbing the standing waves and plotting the resultant electrical signal from spaced
probes as a function of time. See chatlink.com/∼oedphd

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