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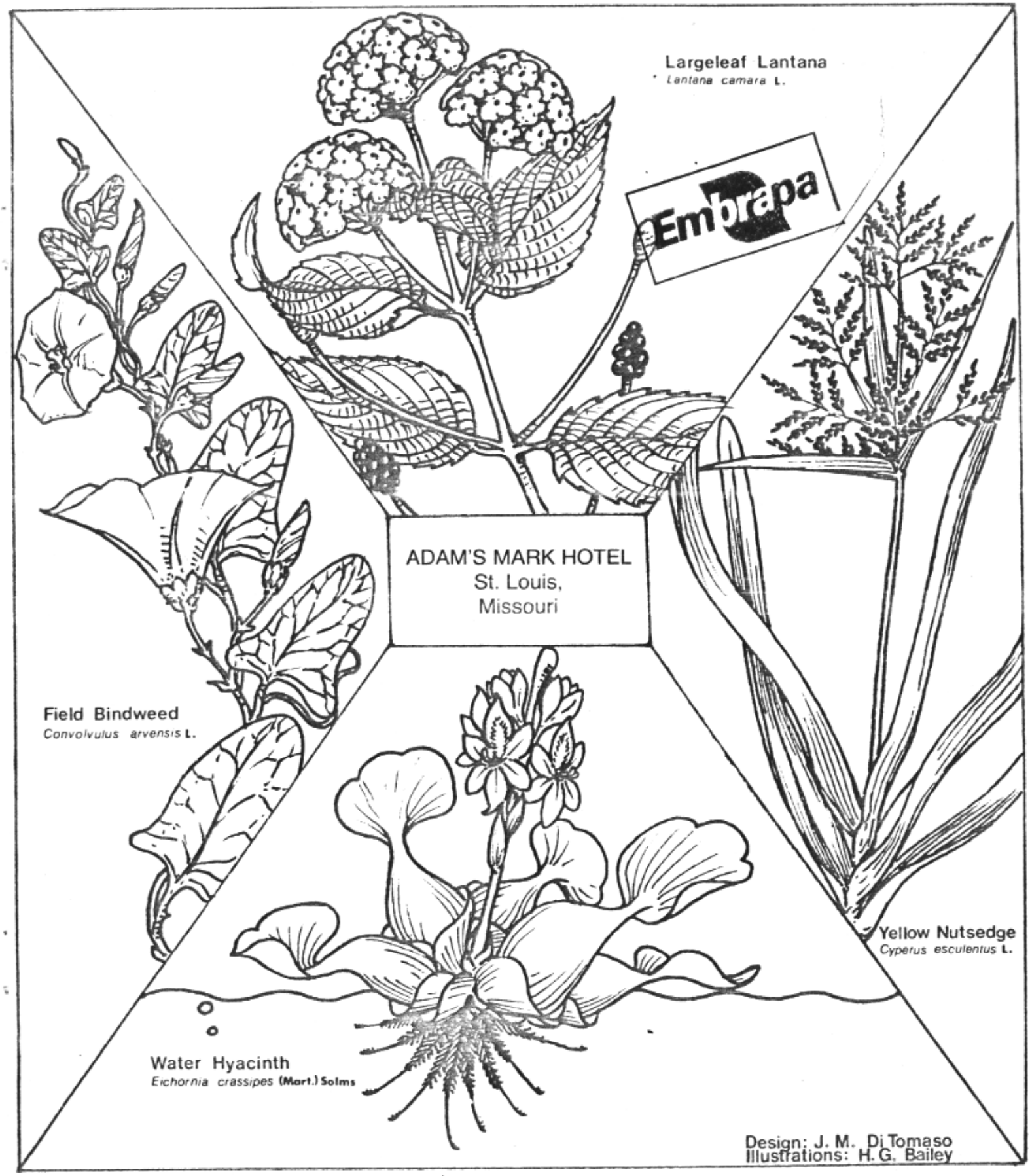

Design: J. M. Di Tomaso
Illustrations: H. G. Bailey

226 Herbicide Effects on Weed Control and Shoot Growth of Young Apple and Peach Trees. C. L. Foy*, S. B. Harrison, and H. L. Witt, Virginia Polytechnic Institute and State University, Blacksburg.

Five replicated experiments were conducted at two locations in Virginia to evaluate the following residual herbicides: alachlor, diphenamid, diuron, metolachlor, napropamide, norflurazon, oryzalin, oxyfluorfen, pendimethalin, and simazine. Paraquat was included in all sprays to kill existing weeds. One experiment involved newly transplanted apple trees; the others (three in apples and one in peaches) involved one-year-old trees. Treatments were applied in the spring (mid-April to early-May). Data on weed control included weed control ratings and estimates of ground covered by weed species. Scion circumferences of trees were measured 5 cm above the graft union at the beginning of the growing season and in November. The number and length of new shoots were recorded in November. Control of annual weed species was excellent with several treatments. A broader spectrum of weeds was controlled in several instances when the residual herbicides were used in combinations. Perennial species, particularly broadleaf species and johnsongrass [Sorghum halepense (L.) Pers.], were released when annual weeds were suppressed by the herbicides. A rye cover crop in non-treated plots suppressed the growth of annual weeds in one experiment. New shoot growth of newly transplanted apple trees was increased with 3 of 20 herbicide treatments and scion circumference was increased with 11 of 20 herbicide treatments compared to the non-treated control. Growth of one-year-old apple trees was not affected. Scion circumference of one-year-old peach trees was increased with 25 of 33 herbicide treatments; however, overall tree height was not affected.

227 **Growth, Biomass Allocation and CO_2 Exchange in Low and High Light of Two Perennial Weeds From Tropical Pastures.** Moacyr B. Dias-Filho*, EMBRAPA/CPATU, Belém, Brazil and Todd E. Dawson, Cornell University, Ithaca, New York.

In tropical pastures, the nature of response to distinct light environments by an individual weed species may be the primary determinant for its infestation potential. Under controlled conditions we investigated the physiology, morphology and growth of two perennial weeds common in tropical pastures; morningglory (Ipomoea asarifolia (Desr.) Roem. & Schultz) and cayenne vervain (Stachytarpheta cayennensis (L.C. Rich) Vahl) in response to high (800-1000 μmol m^{-2} s^{-1}) and low (200-350 μmol m^{-2} s^{-1}) irradiances. High-light grown morningglory leaves had significantly higher dark respiration and light saturated rates of photosynthesis than low-light grown leaves. No significant differences for these traits, between light regimes, were observed in cayenne vervain. Relative growth rate (RGR) was initially higher for high-light grown morningglory and after 20 days started decreasing, becoming similar to low-light grown plants at the last harvest (40 d). In cayenne vervain, RGR was also significantly higher for high-light grown plants, however, this trend was not significant at the last harvest date. For both species, root/shoot ratios were higher for high-light plants, while leaf weight and leaf area per total plant biomass were slightly lower and leaf area per leaf biomass was much higher for low-light grown plants. High-light grown cayenne vervain allocated significantly more biomass to reproductive tissue (i.e., flower bearing spikes) than low-light grown plants, suggesting a probably lower ability of this species to maintain itself under shaded conditions. High-light grown leaves of both species had less nitrogen per unit leaf weight and more per unit leaf area than low-light grown leaves. We suggest that the performance of these weeds in response to the light environment may contribute to or detract from their ability to succeed in tropical pasture environments or to endure control measures.

228 Economics of Spring Broadleaf Weed Control in Hard Red Winter Wheat. Robert C. Scott* and Thomas F. Peeper, Oklahoma State University, Stillwater.

Nineteen field experiments were conducted to evaluate farmers decisions to use herbicides with or without liquid nitrogen fertilizer for broadleaf weed control in hard red winter wheat. Variation in herbicide and rates used indicated that selection decisions were being made for reasons other than knowledge of rates required for weed control. Nitrogen application rates appeared to be selected without a firm basis for decision making. The commercially applied herbicides controlled weeds acceptably, but did not increase net returns. With no credit given for residual weed control, residual nitrogen, or harvesting ease the farmer selected treatments increased net returns at two locations, but decreased net returns at seven locations. Several farmer cooperators indicated that their major purpose for applying herbicides was to insure a weed free harvest and to reduce post-harvest tillage requirements.