of johnsongrass and three destructive sampling dates was used. Photosynthetic net assimilation rate, leaf area, leaf number, plant height, above ground fresh and dry bio-

mass, and root dry biomass were measured 20, 30, and 40 days after planting. From these data relative growth rate and leaf area ratio were calculated. Interspecific com-

petitive ability was determined using a replacement series design. Each 30 cm diameter pot contained six plants for a density of 83 plants/m² in the following R:S mixtures: 6:0, 5:1, 4:2, 3:3, 2:4, 1:5, and 0:6. Under noncompetitive conditions, all growth parameters (photosynthetic net assim-

ilation rate, leaf number, leaf area, above ground bio-
mass, and root biomass) were similar. Under competitive conditions, both biotypes were similar in height and leaf density. Replacement series and relative crowding coef-

ficient (RCC) estimates suggest that the two biotypes were similar in leaf dry biomass production or plant height. (173)

Integrating continuous soil depth distributions of hydrothermal time, seeds, and burial tolerances to improve seedling emergence models. Focella, F. R. and Archer, D. J. USDA-ARS, Soils Lab, Morris, MN. Im-

provements in seedling emergence models may arise by accounting for variable and depth-specific accumulation of hydrothermal time in seed-bearing zones of soil, as well as tolerances of seed germination and seedling emergence to burial depth and, lastly, distribution of seed densities in soil, which is determined by tillage system. We have accounted for all of these variables in a model for com-

mon lambsquarters (Chenopodium album L.). The new model appears to have greater universal application than previous models. (174)

Germination ecology of Mexican whorled milkweed (Asclepias fascicularis), Harmon, D. N. and Young, J. D. *USDA-ARS, Reno, NV. Mexican whorled milkweed (Asclepias fascicularis) is one of the most important spe-
cies of concern in the Asclepias genus. This native but poisonous species is a ruderal species, spreading to fence runs and abandoned farmlands. It is now considered a variable component of the western landscape because of its heavy use by butterflies, bees, and other insects. Mexican whorled milkweed is a perennial species. Establish-

ment can occur by seed dispersal or vegetative propaga-
tion. Our purpose was to investigate seed germination of Mexican whorled milkweed at a wide range of constant and alternating temperatures. Seeds were incubated at 55 constant and fluctuating temperatures and the results were used to calculate quadratic responses. Mexican whorled milkweed germinates in warm temperatures from 30 through 40 C. Very little to no germination occurred at cooler temperatures. This germination strategy favors warm season establishment possibly aiding in avoiding interference from winter annual weeds. Mexican whorled milkweed unique patterns of warmer temperature germi-
nation with a drastic decrease as the incubating tempera-
ture decreases warrants further seed ecology research. Fu-
ture efforts should include examining cold dormancy, os-
motic potential, and root propagation. (175)

Growth and reproductive biology of Rotheiola ex-
alata in Brazil. Christofleitl, K. J. - Carvalho, S. J., P. M., Moreira, M. S.; Nicolosi, M. J.; Lopez-Ovejerio, R. F. 1 and Meidner, D. *ESALQ-USP - LPV, Piracicaba, Sao Paulo, Brazil. Rothe-

iola exaltata was recently introduced in the Brazilian agroecosystems, and it has been spread rapidly in several areas of the country, due to its high competitive ability, difficulty in its management and, specially its high sexual reproductive capacity. Therefore, this research had the ob-

jective of studying the growth, development and repro-
ductive capacity of R. exaltata, through growth analysis. Initially, seeds were placed in plastic box filled with sand and germination and emergence were studied. Then plants were transplanted to plastic pots, 3.0L capacity, filled with sand and fertilized with 100 mL of nutritive solution con-
taining (mg L⁻¹): N: 210; P: 150; K: 310; Ca, 186; S: 32; Mg: 19; Zn: 0.5; B: 0.3; Fe: 5; Mn: 0.4; Cu: 0.5 and Mo: 0.05. Thirteen periodical evaluation of the growth were done, measuring: fresh and dry weight per plant (total, shoot and root), leaf area, and timing of the growth phas-
e. After flowering the number of racemes of 28 plants, and the number of seed of 100 racemes were evaluated. The quantitative variables were analyzed through nonlinear regression analysis, using log-logistic model. The tim-
ing of the flowering stage started at 49 days after seedling, and the plant fresh weight, at this growth stage, was about 20g. By the end of the plant cycle, the plant fresh weight was higher, in average, than 80g and 1,500 cm² of leaf area. In average, the plant had about 62 racemes of 0.23g, with 12 seeds each. These results showed the high poten-
tial growth and sexual reproductive ability of R. exaltata, explaining the reasons for this weed to be a new poten-
tial problem for the Brazilian agriculture. Therefore growers should be aware about the need of preventive measures, in order to reduce the spread of R. exaltata, which infes-
tion is still restricted to certain areas in the country. Data from this research could also be used in order to model the potential spread and competitive ability of the weed. (176)

Effect of soil management and weed control intensi-
ty on the composition of soil seedbanks in a toma-
to-soybean rotation. Garces, M. M. 1 and Martini, C. L. 2 *University of Illinois, Urbana, IL. The composition and population of the weed soil seedbank is important to con-
side when designing weed management programs. The objective was to determine the effect of the soil man-
agement intensity on soil seedbanks in a toma-
to-soybean crop rotation. The management types were: cereal rye cover crop mulch, conventional tillage, stale seed bed. The two weed intensity levels: economic threshold and weed-free. Results were published in 2005 with 10 soil cores collected in each plot. To determine any differences in seed distribution in the soil. As expected, in 2003 there were no differences (alpha = 0.05) in the weed seed density or population among treatments. Seed-
bank numbers were highest in the first 5 cm and the most common weeds were: purslane, annual grasses, redroot pigweed, common lambsquarter, prickly sida and velvet-
tock. (177)

Seedbank persistence of a declining giant ragweed popula-
tion: Initial results of a long-term study. 53