Research was initiated at numerous locations in North Carolina during 2005 to evaluate the effect of various production and pest management practices on peanut yield and quality. Experiments were conducted in Bertie (Peanut Belt Research Station), Chowan, Columbus, Duplin, Edgecombe (Upper Coastal Plain Research Station), Gates, Pitt, and Sampson counties. Pest management trials evaluating the impact of variety selection, fumigation for CBR, planting pattern (twin row versus single rows), and leaf spot spray programs (calendar versus weather-based advisories) were compared at on-farm sites in Chowan, Columbus, and Pitt counties. A variety of pest management trials including weed, disease, and insect management were compared in several trials at two research stations. Trials also included comparisons of runner, Virginia, and Spanish market types. Two or three digging dates were included in these trials. Results indicate that spraying fungicides for foliar disease using weather advisories continues to be as effective as spraying bi-weekly. Variety reaction to CBR, Sclerotinia Blight, and tomato spotted wilt was difficult to discern in several experiments due to low incidence of disease. Similar research will be conducted in 2006 to further evaluate these interactions. Peanut yield was lower in 2 of 4 experiments when Temik (aldicarb) was not applied in the seed furrow (resulting in considerable damage from thrips feeding) followed by application of Gramoxone MAX (paraquat) compared with a treatment consisting of Temik applied in the seed furrow but without Gramoxone MAX applied postemergence. Yield was intermediate between these combinations when Gramoxone MAX was applied and Temik was not included, or when both Temik and Gramoxone MAX were applied. In other experiments, the enhancer FirstUp did not affect peanut response to the in-furrow inoculant Lift. Additionally, the fungicide About (azoxystrobin), the insecticide Admire, and the fertilizer Asset RTU did not affect inoculation of peanut or pod yield when the commercial inoculant Lift was applied in the seed furrow. However, the fungicide Headline (pyraclostrobin) reduced yield when applied with Lift in fields where peanut had never been planted. It is suspected that the emulsifiable concentrate formulation of Headline rather than the active ingredient (pyraclostrobin) adversely affected survival of rhizobium in the tank mixture. In three additional experiments the foliar-applied plant growth regulator Chaperone did not affect peanut yield. Pod yield of the runner market types Georgia Green, Georgia OR1, Georgia OC2, Georgia O3L, and Virugard were comparable to yields of standard Virginia market types. The varieties Tamspan 90 and Olin generally yielded less than the other varieties. A field tour was held in early June at the Peanut Belt and Upper Coastal Plain Research Stations to observe a variety of weed management trials. Several industry representatives, research and extension colleagues, and Cooperative Extension agents attended the field day. A series of plot tours was also conducted in late August that included stops in Bertie, Columbus, Gates, Edgecombe, Pitt, and Sampson counties. Cooperative Extension Agents, industry representatives, University colleagues, and farmers attended these stops.