A field experiment was conducted to evaluate herbicide and application timing on cutleaf groundcherry population, biomass, seed production, and peanut yield. Treatments included: 1) a non-treated control; 2) hand pruning; 3) diclosulam applied preemergence (PRE) at 0.027 kg ai/ha alone; 4) paraquat applied at cracking postemergence (POST) at 0.14 kg ai/ha followed by bentazon at 0.56 kg ai/ha alone or mixed with 5) 2,4-DB at 0.22 kg ae/ha; 6) acifluorfen at 0.28 kg ai/ha; 7) imazapic at 0.07 kg ai/ha; or 8) chlorimuron ethyl at 0.00875 kg ai/ha. Hand pruning and POST herbicides were applied at four weekly intervals beginning June 23rd. Diclosulam applied PRE provided season-long cutleaf groundcherry control; imazapic applied at the two earliest POST timing also provided excellent control. Use of basagran alone or mixed with chlorimuron ethyl, or hand pruning increased cutleaf groundcherry biomass and subsequent seed production compared to the non-treated control in almost all comparisons. Peanut yield reflected cutleaf groundcherry control. Utilizing herbicides that injure but do not control cutleaf groundcherry may increase seed production.