A majority of the no-till acres in the Midwest host large populations of winter annual weeds. With no-till producers facing problematic winter annual weed species during the growing season, an increasingly amount of corn (Zea mays) and soybean (Glycine max) acres are including a cover crop into their rotation management. In essence cover crops and winter annual weeds serve similar purposes in a modern day cropping system. Cover crops are acclaimed to improve soil structure and biology, weed control and soil fertility. However, recent observations have suggested that failure to control winter annual weeds until the time of corn and soybean planting can reduce potential yield by 10% or more, as compared to controlling winter annual weed species in the late fall or early spring. The objective of this study was to compare the effect of removal timing of winter annual weed species and cover crops on soybean vegetation indexes and whether or not the removal timing had a direct correlation to soybean yield. Winter annual weed species that were prevalent within the study acres included common chickweed (Stellaria media), annual bluegrass (Poa annua), shepard’s purse (Capsella bursa-pastoris), buttercup (Ranunculus spp.) and purslane speedwell (Veronica pergrina). Other weed species included waterhemp (Amaranthus rudis) and common lambsquaters (Chenopodium album), which are both summer annuals. Winter annual weed species were removed in the cover crop study using glyphosate, sulfentrazone and chlorimuron-ethyl as a fall burndown after establishing cereal rye (Secale cereal) on October 2, 2013. Winter rapeseed (Brassica napus) was broadcasted concurrently with the cereal rye on October 2, 2013, but winter killed sometime during the month of January 2014. Soybeans were planted on three different dates at two different locations that were within the normal soybean planting parameters for West-Central Illinois: early (May 8, 2013) middle (May 13, 2013) and late (June 7, 2013) using a six row John Deere 7000 planter. Rows were spaced at 76 cm apart and planted at a target seeding rate of 395,000 seeds per/ha. Weeds were removed at four different times relative to their specific planting date: Fall (October 1, 2013); 28 DBP (days before planting), 14 DBP and 0 DBP. Soybean plots were kept weed free from the time of the initial removal until harvest.