Equipping a new planter with the hardware to apply starter fertilizer when planting corn is expensive and applying starter fertilizer at planting slows planting progress and increases the potential for compaction. Farmers asked us whether starter fertilizer was worth the cost and trouble; i.e., were they going to make money. In response we conducted 56 large-plot trials over a 10-year period examining corn response to starter fertilizer (usually a combination of N and P). Much of the detailed research was performed by graduate students Cody Hornaday, Jason Lee, and Daniel Orjuela-Diaz. We found that fertilizer banded near the seed at planting, or with the seed, frequently sped up the rate of plant development and increased dry matter accumulation rate on a growing-degree-day basis. Faster leaf appearance rate resulted in earlier silking despite sometimes increasing total leaf number. Consequently, grain matured earlier and grain was drier when harvested, ~0.5 to ~1.5 percentage points lower moisture in 80% of trials. Accelerated development and drier grain were not always accompanied by increased grain yield, which only occurred in ~45% of trials (averaging ~7 bu/acre in responsive trials). Although dry matter accumulation rate during vegetative growth stages was substantially greater on a growing degree day basis with starter fertilizer, compared to that with no starter fertilizer, there were minimal dry matter differences between starter and no starter treatments when compared at the same growth stage, including at maturity. Based on the average grain yield increase and grain moisture decrease we encountered in our research we concluded that the increased revenue from using starter fertilizer would be profitable even if costs included outfitting a new planter with starter fertilizer hardware.