Cowpea covers the largest area of any grain legume in Africa and is especially important in West Africa, with Nigeria and Niger alone accounting for over 75% of the total cowpea production. Despite successes of international and national crop improvement research in the development and release of a number of improved grain legume varieties, there is limited empirical evidence of adoption and ex-post impacts of improved cowpea. This study assesses the adoption and impacts of improved cowpea varieties on poverty in Nigeria using household survey data from a random sample of 1,525 rural households. The survey was conducted in 10 states in northern Nigeria which together account for over 75% of the total cowpea production in Nigeria. We use the endogenous switching regression model to estimate the poverty reducing effects of adoption of improved cowpea varieties. The results show that 42% of the households adopted improved cowpea. Results also show that adoption of improved cowpea varieties is associated with an average 40% yield gain foradopters. Using the international poverty line of US$1.9 per capita per day, 79% of the adopters and 82% of the non-adopters were found to be poor respectively. A comparison of the observed and counterfactual income distributions for adopters shows a 7 percentage point reduction in poverty among adopters of improved cowpea varieties. This is equivalent to 3 percentage point poverty reduction among the sample households. This translates to about 557,670 people lifted out of poverty in rural Nigeria due to adoption of improved cowpea varieties. We conclude that facilitating information access among smallholder farmers on the benefits of improved varieties is key in increasing the adoption and impacts of improved cowpea varieties in Nigeria.