Appendix B: Power calculations

For the evaluation of KALRO's interventions, our initial power calculations assumed a significance level of 5 percent and a statistical power of 80. We expected attrition to be minimal (and this was true) such that minimum detectable effects were largely unaffected by attrition.

We focused our calculations on the impact of information provision on farmers' knowledge and input choices. The relevant comparisons, as proposed in the preliminary project design, were between 400 farmers in each of the treatment groups and 400 farmers in the control group. That is, each of the comparisons would include 800 farmers, of which 400 were in one of the treatment groups and 400 would be in the control group.

We calculated that a sample size of 400 individuals in each of three treatment arms and a control group would allow us to detect an effect of each of the treatments (compared with the control group) of 0.19–0.23 standard deviations of our key outcome measures depending on take-up assumptions (80 percent and greater). Several of the key outcome variables in our project (e.g. coupon redemption, or reported fertilizer or lime use in any given season) are indicator variables such that the variance of the outcome variable is at most 0.25 – i.e. [p*(1–p)] in a Bernoulli distribution, with p being the probability of the indicator variable taking on the value 1. A conservative estimate of minimum detectable effect were 9 to 11 percentage points in the comparison of treatment and control groups, which were expected to decrease based on additional controls from the baseline surveys.