Worldwide, an estimated 40% of potential crop production is lost annually to pests and diseases. Reducing crop losses is critical to increasing agricultural productivity, which is essential in achieving the sustainable development goals of zero hunger and no poverty. However, the lack of access to timely and relevant advice on crop health problems poses a significant challenge to farmers to take action at the right time to mitigate crop losses. The Centre for Agriculture and Biosciences International (CABI)-led Plantwise programme aims to contribute to addressing this issue through the establishment of networks of plant clinics, where farmers who are struggling with plant pests and diseases can send samples of their ‘sick’ crops to trained plant doctors for diagnosis and plant health advice. The plant clinics have been functioning since 2011 across over 30 countries, but thus far, there has not been a rigorous assessment of the impact of this innovative approach of delivering targeted agricultural extension services. Using a recent panel survey of smallholder maize producers in rural Rwanda, this paper attempts to address this gap by analysing the impact of plant clinics on farm performance (measured by technology adoption, and maize yield and income) and on poverty alleviation (measured by the Progress out of Poverty Index). Employing the correlated random effects estimation methods to account for unobserved heterogeneity, we find that plant clinics significantly increase the adoption of pest management practices to control devastating maize pests, such as fall armyworm and maize stalk borer. We also observe that participation in plant clinics results in significant yield and net income gains of 24% and 30%, respectively. Finally, we find that seeking plant health advice from plant clinics is significantly associated with a 5% reduction in the likelihood of a household falling below the poverty line. We conclude that policies and programmes aimed at promoting the establishment of and farmers’ participation in plant clinics can contribute to increased agricultural productivity and poverty reduction.