

## Abstract

Optimality is in the eye of the stakeholder but in the hands of the decision maker. This paper explores optimal cropping decisions in Balaganur, Karnataka. The scope was limited to intercropping options for the two most prevalent Kharif crops in Balaganur: pigeon pea and pearl millet. We flushed out in detail the choice of objectives on which to decide optimality. This is a crucial step that can often be overlooked because of dogmatic preconceptions or statistical naivety. Our selection of 12 objectives was based on a careful consideration of the end users and a detailed examination of potential statistical tools. After running our simulations and performing our statistical analysis, we began analysing the quality of cropping options from four different perspectives which came up with three different 'best' cropping options. After this human analysis, we performed a variety of mathematical analyses that all concluded that simulation md9\_rcbic was the best cropping option. The presumption behind these calculations is that the end user has no priorities or preferences among our 12 objectives, which is unlikely. Medium duration pigeon pea with 180 cm row spacing intercropped with rcbic911 millet strikes a remarkable balance between production vs risk and calories vs revenue. Of the 24 simulations, this one seems to be spectacular with regards to sustainability, resilience, uncertainty minimization, and food security; however, that is for other's eyes and hands to determine.