

## ABSTRACT

French bean (*Phaseolus vulgaris* L.) is important in the socio-economic farming systems of East and Central Africa. It is a crop with great potential for addressing food insecurity, income generation and poverty alleviation in the region. Enhanced French bean productivity is hindered by a number of biotic and abiotic constraints as the crop is predominantly grown in open fields. The crop is mostly grown under irrigation and cannot withstand prolonged dry spells. Farmers rely heavily on insecticides to control insect pests. This increases the risk of rejection of their produce due to stringent maximum residue levels (MRLs) in export markets. This study was undertaken in the Horticulture Research and Teaching Field, Egerton University, Kenya to determine the potential of coloured net covers in improving French bean water use efficiency and insect pest exclusion. The experiment was set in a Randomized Complete Block Design (RCBD) with six treatments replicated four times. French bean 'Source' was grown under different coloured nets (white, blue, yellow, grey, and tricolour) and control (open field). Variables measured included; pest population, fresh pod yield, total plant biomass, leaf relative water content (LRWC) and water use efficiency for plant growth (WUE DW). Covering French bean with different coloured net covers reduced the numbers of silverleaf whitefly and black bean aphids. Coloured net covers enhanced crop performance marked by higher fresh pod yield and total plant biomass as well as improved LRWC and WUE DW of the crop. Results of this study present the potential of coloured net covers to be used as part of integrated French bean management programme(s) to reduce insect pest population and pesticide application while enhancing water use efficiency and crop performance under tropical field conditions.