

Half of the world's population and especially those in the poorest countries are most vulnerable to malaria. The disease is however entirely preventable and treatable provided that currently recommended interventions one being the use of artemisinin-based combination therapy are properly implemented. A hybrid plant *Artemisia annua* named ('A3'), a clone of artemisinin *annua* is being embraced for cultivation in Western region of Kenya where malaria prevalence levels are above 40%. A number of factors will determine the viable levels of artemisinin in A3. We report the levels of artemisinin in flowers of 'A3' grown in regions of Western Kenya and of soil nutrients Zinc (Zn), Boron (B), Nitrate (NO_3^-) and Ammonium (NH_4^+). High performance Liquid Chromatography, Atomic Absorption Spectrometry and Ion Selective Electrodes were employed. In comparison to the expected levels in soils for artemisinin accumulation; Zn was above the minimum tolerable levels; B was very low in the top-soil but high at in-depth; nitrogen NH_4^+ and NO_3^- ions were found sufficient and the ratio of NO_3^- : NH_4^+ was high. Artemisinin in flower cultivars ranged between 0.04 and 1.17% dry matter. The levels of artemisinin in 'A3' grown in Western region of Kenya are above viable levels although they can be improved if nutrient levels are well managed. These findings showcase the need to expand cultivation of *A. annua* in Western Kenya and consequently produce artemisinin that would be useful in addressing malaria.