In this study, mycorrhizal status of pyrethrum in Kenya was determined. Fungal isolates obtained from pyrethrum fields were screened for efficacy against *M. hapla* and in improving pyrethrum growth. Effect of inorganic P fertilizers and intercropping on *Glomus* sp. (isolate KS14), one of the effective isolate against *M. halpa* was derermined. To determined mycorrhizal status of pyrethrum, spores were extracted from soil samples obtained from 30 different study sites and their abundance (numbers) and composition (types) determined. In addition, percent growing ecozones; Kisii, Limuru study and Molo representing low, mid and high altitude ecozones, respectively. In general, Limuru study sites revealed lower percentage of root colonization, higher spore were characterized and placed into various AMF genera. Except for *Sclerocytis* spp. five of the six known AMF genera were encountered in the study sites. *Glomus* was the most commonly encountered genus (10 isolates) followed by *Acaulospora* (5 isolates). Only one isolate of *Entrophospora* was present.

In the screening tests, arbuscular mycorrhiza fungal (AMF) isolates; KS14 (*Glomus* sp.3); KS 18 (*Glomus etunicatum*), KS74 (*Scutellospora* sp.3), ML34 (*Glomus* sp.6), ML35 (*Glomus* sp.7, LM61(*Glomus* sp.4) and LM83 (*Gigaspora* sp.3) were screened . Fungal mixed inoculum (20g) was incorporated into sterized sand-soil mixture before planting with 6-week-old pyrethrum seedlings. The inoculum consisted of spores, hypla, infected root fragments and soils in which the plants for inoculum production were growing. The plants were inoculation with 6000 *M. hapla* second stage juvenile (J-2) 3 months after fungal inoculation. Dry shoot weights, fresh root weights, percent root colonization by the fungi, nematode gall indices, number of eggs, females and J-2 were determined at the end of the experiment 2 months after nematode inoculation. Root length was also determined where possible. Isolates KS14, LM61, KS18 and KS74 significantly improved top biomasses of fungus-treated and fungus-nematode-treated plants. Isolate KS14 was the most effective (47% top biomass increase) followed by isolates LM61 and KS18 (33%). Isolates ML34, ML35 and LM83 improved top biomasses of fungus-nematode-treated plants. Fungal isolates KS74 and ML34 significantly increased fresh root weights of pyrethrum by 45% and 50%, respectively. Isolate KS18 reduced pyrethrum by 45% and 50%, respectively. Isolate KS18 reduced pyrethrum root length by 18%. Except fungal isolates ML34 and ML35, all the other isolates suppressed *M. hapla* disease severity and egg production. Isolate LM61 (86%) was the most effective followed by KS14 (75%). Isolates KS18, KS74 and LM83 suppressed disease severity and egg production by up to 75%, 32% and 37%, respectively. All the fungal isolates screened significantly reduced the number of females in the root system and J-2 in the soil. The presence of nematodes in fungus-treated plants did not affect root colonization by the fungus except in KS18, ML34 and ML 35-treated plants.

In testing for effects of inorganic P fertilizers on efficacy of KS14, Triple super phosphate (TSP) and Single super phosphate (SSP) were used. The fertilizers were applied at two rates (1 and 2μg/g soil) at the time of fungus inoculation. Two months after, plants were inoculated with the nematodes. The plant growth and nematode disease parameters were determined at the end of the experiment, 2 months after nematode inoculation. The fertilizers at both levels improved plant growth of non-mycorrhized, mycorrhized, non-mycorrhized-nematode and of mycorrhized-nematode-treated plants. The fungus in general improved plant growth on its own or in the presence of nematodes but not in the presence of fertilizers. The fungus, however, improved plant growth by a lesser percentage than both fertilizers at both levels. The fungus unlike the fertilizers, suppressed nematode's disease severity. The suppressive effects of the fungus were,

in most cases reduced by the fertilizers. In addition, the fertilizers significantly reduced root colonization of pyrethrum by the fungus. The nematodes, on the other hand, did not have any significant effects on root colonization by the fungus or on its ability to improve pyrethrum growth. The presence of nematodes in fertilizer or fertilizer-fungus-treated plants, however, significantly reduced pyrethrum growth.

Efficacy of isolate KS14 to improve pyrethrum growth was tested in presence of maize and/or bean intercrops. Pyrethrum plants inoculated with 20g of KS14 and left to grow for 3 months were intercropped with maize and/or beans. Two months after planting the intercrops, pyrethrum dry shoot and fresh root weights were determined. Percent root colonization on the three crops by the fungus was also determined. In general, maize significantly reduced shoot and root weights of mycorrhized and non-mycorrhized plants. In addition, maize significantly reduced root colonization of pyrethrum. Beans on the other hand, significantly reduced shoot and root growth of mycorrhized plants but not of non-mycorrhized plants. Beans did not have any significant effects on root colonization of pyrethrum by the fungus. A combination of both intercrops had no significant effects on shoot weights of mycorrhized pyrethrum but reduced that of non-mycorrhized pyrethrum. Pyrethrum root colonization by the fungus was not affected by the presence of the two intercrops. Both maize and beans are hosts of the fungus.