CHAPTER - 4

RESULTS

Fungi isolated from soils of *Citrus* gardens.

Table number 5 shows variety of mycoflora isolated from two *Citrus* gardens. Two types of soils were selected for this study. Soil sample 'A' was black soil while sample 'B' was red soil. Both the soils show some common genera. Thirty five species of fungi were isolated from 14 genera. Twelve species were common to both the soils, which are *Trichoderma koningi, Aspergillus fumigatus, Aspergillus flavus, Aspergillus niger, Aspergillus ustus, Aspergillus awamori, Aspergillus candidus, Penicillium rugulosum, Penicillium rubrum, Fusarium oxysporum, Fusarium poae* and *Fusarium chlamydosporum*. While *Rhizopus arrhizus, Rhizopus nigricans, Trichodeerma viride, Ttrichoderma glaucum, Aspergillus clavaus, Aspergillus sydowi, Cladosporium cucumerinum, Curvularia llunata, Curvularia inaequalis, Alternaria palandui, Fusarium solani, Fusarium lactis, Fusarium sporotrichioides, Fusarium solani, Bipolaris spicifera, memnoniella echinata, Cunninghamella verticillata, Brachysporium nigrum, Stachybotrys chartarum, Stachhybotrys atra* and *Gliocladium vermoeseni* were rare in occurrence.

The species isolated from black soil are *Rhizopus arrhizus, Rhizopus nigricans, Trichoderma viride, Trichoderma glaucum, Aspergillus clavatus, Cladosporium cucumerinum, Curvularia lunata, Fusarium aurantiacum, Fusarium sporotrichioides, Bipolaris spicifera* and *Stachhhybotrys atra*. While *Trichoderma lignorum, Aspergillus terreus, Aspergillus sydowi, Curvularia inaequalis, Alternaria palandui, Fusarium lactis, Fusarium solani, Memmnoniella echinata, Cunninghamella verticillata, Brachysporium nigrum, Stachybotrys atra* and *Gliocladium vermoeseni* were isolated only from red soil of *Citrus* garden. The order of occurrence of genera was *Aspergillus, Fusarium, Trichoderma, Penicillium, Rhizopus, Curvularia, Alternaria, Bipolaris, Memnoniella, Cunninghamella* and *Stachybotrys*.

Twenty two species were isolated from soil sample 'A' that is black soil while 23 species were isolated from soil sample 'B' that is red soil. Red soil shows rich mycoflora than black soil.

Fungi isolated from soils of Grape gardens:

The observation table number 6 shows different species of fungi isolated from two different gardens of grape. Thirty four species of fungi were isolated from 14 genera

from soils of both the gardens. Out of which, 17 species are common to both black and red soils. These species are, *Rhizopus nodosus, Trichoderma koningi, Aspergillus ustus, Aspergillus flavus, Aspergillus niger, Aspergillus candidus, Penicillium verruculosum, Fusarium poae, Fusarium chlamydosporum, Fusarium sporotrichioides, Fusarium solani, Bipolaris spicifera, Memnoniellla echinata, Verticillium candelabrum* and *Tirchurus spiralis. Mucor pusillus, Trichoderma viride, Trichoderma glaucum, Trichoderma lignorum, Aspergillus fumigatus, Aspergillus terreus, Aspergillus clavatus, Aspergillus candidus, Aspergilllus sydowi, Penicillium minio-luteum, Curvularia pallescens, Fusarium lactis, Cunninghamella verticillata, Verticillium terrestre, Verticillium candelabrum, Nigrospora sphaerica, and Chaetommium olivaceum* were rare in occurrence.

Mucor pusillus, Trichoderma viride, Trichoderma lignorum, Aspergilllus terreus, Aspergillus sydowi, Curvularia pallescens, Fusarium lactis, Fusarium solani, Cunninghamella verticillata, Gliocladium penicillioides and *Curvularia brachyspora* were observed very rare and isolated only from black soil of grape garden. While *Trichoderma glaucum, Aspergillus fumigatus, Aspergillus clavatus, Penicillium minio-luteum, Gliocladium vermoeseni, Nigrospora sphaerica, and Chaetomium olivaceum* were isolated from red soil of grape garden. From all the above mentioned species, *Fusarium poae* and *Aspergillus niger* was observed dominantly in all the seasons. The genera that is, *Aspergillus* and *Fusarium* was more dominant in both the soils. The order of occurrence of dominant genera was *Aspergillus, Fusarium, Trichoderma, Bipolaris, Verticillium, Gliocladium, Penicillium, Curvularia, Memnoniella, Scytalidium, Trichurus, Cunninghamela, Nigrospora* and *Chaetomium.*

Twenty seven species were isolated from black soil and 24 species were isolated from red soil of grape gardens.

From above information, it is clear that the black soil that is soil sample 'C' is rich in mycoflora than red soil of grape garden.

Moisture percentage: -

The moisture percentage of four soils was measured during twelve months. Soil sample 'A' that is black soil of *Citrus* garden shows lowest moisture percentage in the

months of January, May and November, which was 15%. The highest moisture percentage was observed in the months of April, which was 27%. The lowest moisture percentage in soil sample 'B'was observed in the months of May and November which was 17% and highest moisture percentage was observed in April which was 28%. In soil sample 'C' that is black soil of grape garden, the lowest moisture percentage was observed in March, which was 16%, and highest moisture percentage was observed in April, which was 27%. In soil sample 'D' that is red soil of grape garden, the lowest moisture percentage was observed in the months of May and October, which was 17%. While the highest moisture percentage was observed in January, which was 22%.

Soil reaction: -

P^H of all the four soils was determined throughout the year. The P^H of four soils was between 7.0 to 8.8. The lowest P^H in soil sample 'A' was observed in November, which was 7.0. While highest P^H that is 8.8 was observed in May. The lowest P^H in soil sample 'B' was observed in the months of January, February, October and December that was 7.5 while the highest P^H was observed in May, which was 8.2. In soil sample 'C' the lowest P^H was recorded in September, November ad December. The lowest P^H was 7.5. The highest P^H was observed in August, which was 8.5. In the soil sample 'D' the lowest P^H that is 7.0 was recorded in December while the highest P^H that is 8.2 was recorded in February.

Phisico-chemical factors of soil: -

Physico-chemical factors of four soils were recorded throughout the year. Manganese, Iron, Magnesium, Copper and Zinc was determined in four soils.

1) **Manganese:** Manganese in mg /100 gm of soil was recorded in all four soil samples. In soil sample 'A', lowest Manganese was recorded in September that was 0.035%. While highest manganese was recorded in January, July and August which was 0.055%. The lowest manganese that is 0.010% in soil 'B' was recorded in February and highest manganese was observed in June, which was 0.055%. In soil sample 'C', the lowest manganese was observed in January that is

0.015% while highest manganese that is 0.050% was recorded in the months of November and December. The manganese in four soils is between 0.010 % to 0.055%.

2) **Iron:** Iron in mg / 100 gm of soil was observed in four soils during the twelve months. The lowest iron in soil sample 'A' was observed in July that is 1.04% and highest iron was recorded in December that was 1.61%. In soil sample 'B', the lowest iron was recorded in March, which was 0.8% while highest iron was observed in July, which was 1.85%. The lowest iron in soil sample 'C' was recorded in March that is 0.89% and highest iron was recorded in December that was 1.75%. The soil sample 'D' shows the lowest iron in February that is 0.92% while highest iron in December that is 1.90%.

3) **Magnesium:** Magnesium in mg /100 gm of soil of four different soils was recorded throughout the year. The lowest magnesium percentage in soil sample 'A' was observed in January, which was 4.72% while highest magnesium percentage was observed in December, which was 10.05%. In soil sample 'C', the lowest Magnesium percentage was recorded in January, which was 7.52%, and highest magnesium percentage was recorded in February, which was 11.51%. The lowest magnesium that is 5.76% was recorded in soil sample 'D' in March. While highest magnesium that is 10.5% was recorded in August. The magnesium in four soils is between 4.72% to 11.51%.

4) **Copper:** Copper in mg /100 gm of soil was recorded in four soils. The lowest copper was recorded in July, which was 0.012% while highest copper was recorded in January, which was observed in July, which was 0.030%. In soil sample 'C', the lowest percentage of copper was recorded in May that is 0.011%and highest copper was recorded in January, February and March that is 0.026%. The lowest copper in soil 'D' was recorded in April and June that is 0.013% and highest copper was recorded in August and December that is 0.019%.

5) **Zinc**: Zinc in mg /100 gm of soil was recorded throughout the year in four different soil samples. The lowest Zinc in soil sample 'A' was recorded in March, which was 0.010% while highest Zinc was recorded in January, which was 0.084%. The lowest Zinc was recorded in soil sample 'C' was 0.011% in April while highest Zinc was recorded in January that is 0.04%. The lowest Zinc percentage in soil 'D' was 0.014%, which was observed in January while 0.045, was highest Zinc percentage in December. Zinc in four soil samples was between 0.010% to 0.084%.