

ABSTRACT

The present ecological study was conducted to record the distribution of weeds in wheat, maize and potato crop fields of Tehsil Sambrial, District Sialkot, Punjab. Four different villages were selected for each crop and each study site was further divided into three different sub-sites. The plants collected from the selected fields were identified and floristic composition was prepared. Quadrat method was used to find out the distribution of different weed communities. Phytosociological attributes were calculated as percentage (%) frequency, density and percentage (%) cover. On the basis of these three basic parameters, the relative values of each of these calculated to find out the Importance Value (IV) and Importance Value Index (IVI).

The total weeds recorded in wheat fields were 39 which were distributed among 18 families. The most abundant species in wheat fields were *Parthenium hysterophorus*, *Oxalis corniculata*, *Setaria vididus* having abundance value (6.16), (5.85) and (5.8) respectively. The frequently occurring weed species were *Cynodon dactylon*, *Anagallis arvensis* and *Medicago denticulate* having the frequency value 75%. The most densely populated weed species were *Cynodon dactylon* and *Chenopodium album* having density of 3.75 and 3.6 respectively. The weed species with maximum cover were *Cynodon dactylon*, *Medicago denticulate* and *Chenopodium album* with cover value (80.23%), (38.32%) and (33.86%) respectively. The weeds which contain the highest importance value index (IVI) were *Cynodon dactylon*, *Chenopodium album* and *Medicago denticulate* with IVI value (8.73), (5.73) and (5.72) respectively.

The total weeds recorded in the maize fields were 35 which were distributed among 16 families. The most abundant species in maize fields were *Cyperus esculentus*, *Euphorbia prostrata*, *Sorghum halepense* and *Cynodon dactylon* having abundance value (11.5), (10.75), (7) and (6.55) respectively. The frequently occurring weed species were *Cynodon dactylon* and *Cyperus articulatus* having frequency value (100 %) and (90 %) respectively. The most densely populated weed species were *Cyperus articulatus*, *Cynodon dactylon* and *Sorghum halepense* having density value (10.35), (6.55) and (2.8) respectively. The weed species with the maximum cover were *Cyperus articulatus*, *Cynodon dactylon* and *Sorghum halepense* having cover value (85.3), (78.71%) and (30.8%) respectively. The weeds which

contain the highest importance value index were *Cyperus articulate*, *Cynodon dactylon* and *Sorghum halepense* having the IVI value (15.01), (12.17) and (4.95) respectively.

The total weeds recorded in the potato fields were 32 which were distributed among 17 families. The most abundant species in potato fields were *Parthenium hysterophorus*, *Phragmites australis* and *Trianthema portulacastrum* having abundance value (4.7), (4.29) and (4.1) respectively. The frequently occurring weed species were *Phragmites australis*, *Medicago polymorpha* and *Cynodon dactylon* having frequency value (85%), (70%) and (55%) respectively. The most densely populated weed species were *Phragmites australis*, *Parthenium hysterophorus* and *Medicago polymorpha* having density value (3.65), (2.35) and (2.25) respectively. The weed species with the maximum cover were *Cynodon dactylon*, *Medicago polymorpha* and *Fumaria indica* having cover value (78.9%), (30.6%) and (26.5%) respectively. The weeds which contain the highest importance value index were *Cynodon dactylon*, *Medicago polymorpha* and *Phragmites australis* having IVI value (12.73), (8.84) and (8.58) respectively.

Overall, eighty-seven weed species were reported from the study area, out of which two belonging to monocot families, and twenty six to dicot families. Thirty-nine weed species were found only in wheat, thirty-five in maize and thirty-two in potato crop fields while fourteen weed species found common either in case of wheat-maize or wheat-potato combinations. It was found that *Chenopodium album*, *Convolvuls arvensis*, *Cynodon dactylon* and *Parthenium hysterophorus* were common in all the three crops.

Soil samples was collected from each sub-sites and soil analysis were carried out. The results indicated that the soil the texture of the soil was loamy, moisture content was 41%, organic matter was 0.88%, pH was 7.9, EC was 2.6 Dsm^{-1} , HCO_3^{-1} was 14.6 meq/l, Cl^{-1} was 5.3 meq/l, SO_4^{-1} was 4.9 meq/l, Ca^{++} was 8.1 meq/l, Mg^{++} was 5.8 meq/l, Na^{+} was 9.25 meq/l, P was 20.59, K was 202.3 and SAR was 9.05.

In conclusion, the findings of the present study will be a valuable contribution to the agricultural sciences, and may prove useful for the general advancement towards the eradication and management of weeds in crop field to minimize their detrimental effects on crop yields of study area.