# Distribution Pattern and Phytosociological Attributes of Understory Vegetation in Different Agroforestry Systems of Kashmir, India

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**Abstract**: The investigation was carried out in seven different silvipastoral systems viz *Cedrus deodara, Robinia pseudoacacia, Cupressus torulosa, Prunus arminiaca, Ailanthus altissima*, mixed plantations and grassland (control). There were 12 shrub and 43 herb species in all the systems. Among shrubs, *Berberis lycium,* and among herbs, *Cyanodon dactylon* were observed in all the systems. Maximum height (23.91 m) and maximum dbh (91.72 cm) was for the trees in *Robinia pseudoacacia* and *Cupressus torulosa* system, respectively. The highest density (8133 shrubs/ha) was in grassland (control) followed by *Prunus arminiaca>Robinia pseudoacacia*>mixed plantations>*Cupressus torulosa.* The highest density for *Cyanodon dactylon* (86666 tillers/ha) and lowest (10000 tillers/ha) was recorded for *Stipa sibirica*. The basal area (m²ha⁻¹) of herbage in different treatments showed the precedence grassland (control) followed by *Prunus arminiaca>Robinia pseudoacacia> Ailanthus altissima*. Importance value index of different herbage species in different silvipastoral systems revealed that *Cyanodon dactylon* was the dominating species under grassland (control), *Ailanthus altissima* and mixed plantations system. *Oxalis acetosella* was dominating under *Cedrus deodara*. *Lolium perenne* was dominating species under mixed plantations, *Robinia pseudoacacia* and *Prunus arminiaca* agroforestry systems.

**Keywords**: Plantation, Density, Herbs, Grassland, Shrubs, Understory vegetation, Agroforestry systems

Botanical evaluations, encompassing examinations of floristic composition, species diversity, and structural analysis, are fundamental for gaining a comprehensive understanding of forest ecology and ecosystem functions (Pappoe et al., 2010). The definition of floristic composition, which signifies the variety of species within a community, necessitates precise identification of the species present. The determination of floristic composition is an intricate, prolonged process affected by seasonal fluctuations, biotic factors, microclimate, and their interactions within the community.

Individuals belonging to various species in a plant community assume distinct roles in ecosystem functioning, influencing diverse distribution patterns. To comprehend community structure, an examination of the spatial distribution of individuals from each species, floristic composition and distribution of plant communities under different traditional agroforestry systems in Takoli Gad watershed of Garhwal himalayas (Thakur et al., 2005, Bhusara et al., 2016, Singh et al., 2023). Community diversity, portraying variations in species and their quantitative attributes, is gauged to evaluate associations with community properties or environmental conditions In grassland communities, trees are pivotal, displaying varying density and types across diverse locations (Thakur et al.,

2004). India's diverse climate supports 15 types of native woodlands, where trees play a pivotal role in preserving moisture, enhancing soil quality, and offering nutritious feed for animals. Trees significantly contribute to landscape biomass and diversity, with a well-established pivotal role in ecosystem dynamics. Despite prior research on phytosociological attributes, information on the remote areas of Sindh Forest Division, Ganderbal Kashmir, is limited. This research initiative aims to establish a baseline for forthcoming studies, particularly crucial for monitoring plantation areas rich in biological diversity. No sincere effort has been made in this area to analyse the community structure of understorey vegetation under different agroforestry systems over time in the past. Keeping in view this fact the study was conducted in Sindh forest division Ganderbal in different agroforestry systems to compare the floristic composition and community structure of these systems with grassland (control) which was devoid of trees.

## MATERIAL AND METHODS

The even aged mature stands of different kinds of trees were selected for study and evaluated the community structure of different agroforestry systems. The seven land use systems selected were T1-(*Cedrus deodara*), T2-(*Robinia pseudoacacia*), T3-(*Cupressus torulosa*), T4-

(*Prunus arminiaca*), T5-(*Ailanthus altissima*), T6-Mixed stand (*Cupressus torulosa, Robinia pseudoacacia, Ailanthus altissima*), T7-Grassland (No trees).

**Shrub density:** The number of shrubs under each agroforestry systems was done by stratified random sampling in 3 quadrates of size 5×5 m in each sampling plot. The total number of shrubs of each species were counted in each quadrate and categorized into large, medium and small shrubs.

**Herb density:** Phytosociological attributes of herb species under different agroforestry systems were evaluated from 3 quadrates of size 1×1 m in each sampling plot. The samples collected were brought to the laboratory, washed properly with fresh running water and segregated species-wise. The individuals of each species from different quadrates were counted separately and their basal area was calculated following (Phillips 1959**).** Specimens were collected during growing season from study site and identified from Division of Environmental science, SKUAST-Kashmir and centre for Biodiversity and Taxonomy, Department of Botany, University of Kashmir. The data on vegetation was quantitively analysed for density, basal area, frequency, Importance value index (IVI) separately for three different life forms i.e. tree, shrub and herbaceous species (Misra 1969, Phillips 1959).

$$\text{Density} = \frac{\text{Total number of individuals of a species in all quadrates}}{\text{Total number of quadrates studied}}$$

$$\text{Frequency (\%)} = \frac{\text{Number of quadrats in which the species occured}}{\text{Total number of quadrates studied}} \times 100$$

$$\text{Basal area} = \frac{na^2}{4}, \text{ where d = Diameter of tillers}$$

**Importance value index (IVI)** = Relative density+ Relative frequency + Relative basal area

### RESULTS AND DISCUSSION

The highest average height (23.91 m) was recorded for trees in *Robinia pseudoacacia* based agroforestry system followed by the *Cupressus torulosa* (22.33 m). Trees of *Prunus arminiaca* system had the shortest average height (6.95 m) and the grassland did not have any trees (Table 1). The highest average diameter at breast height (dbh) of trees occurred in the *Cupressus torulosa* based system (91.72 cm), while the lowest dbh was in mixed stand (19.91 cm/tree).

The density of shrub species (small, medium and large) in these agroforestry systems ranged from 133.33 to 1200 shrubs/ha (Fig. 1-3). Broad-leaved trees supported a higher number of shrub species, potentially leading to greater shrub

occurrences in *Prunus arminiaca* system. Similarly, herbaceous density was highest in grassland (1239999tillers ha$^{-1}$), with the lowest herb density in *Cedrus deodara* (169999 tillers ha$^{-1}$) (Tables 2-8).

The current investigation, aimed at assessing variations in shrub and herbage growth under different agroforestry systems indicated a decreasing density of shrubs in the order grassland (control) > *Prunus arminiaca* > *Robinia pseudoacacia* > *Cupressus torulosa* > *Ailanthus altissima* > mixed stand > *Cedrus deodara.* Likewise, the density of herbs decreased in the order: grassland (control) > *Prunus arminiaca* >*Robinia pseudoacacia* >*Ailanthus altissima* > *Cupressus torulosa* > mixed stand >*Cedrus deodara*. This trend was attributed to the reduction in relative light intensity under trees by various studies (Guleria et al., 1999, Naugraiya and Pathak 2001 and Ludwig et al., 2004) .The low density of vegetation under tree canopies due to changes in microclimate, light interception, allelochemicals release and other inhibitory effects. Strong competition for space and light accompanied by release of allelochemicals by trees like *Ailanthus altissima* might have prohibited the propagation of shrubs and herbages in these systems. Difference in grassland (control) and herbages in plantations were regulated by few ubiquitous species. Least number of species in deodar plantation was due to pine needle litter deposition on the forest floor which might have restricted germination of herbaceous flora (Gupta et al., 2007, Dangwal et al., (2012). Barbier et al., (2008) concluded that mixing of deciduous and coniferous tree species generally affects understory diversity, but in almost all cases maximum diversity is observed in one of the pure stands, not in mixed stands. Floristic composition is a measure of species diversity in a community and t is a long term process to give clear cut information of species diversity of an area as it is liable to change with season as well as the effect of biotic factors, microclimate and their interaction in any community (Husain et al., 2019). Microclimatic conditions could varies more widely in deciduous and mixed forest stands than in evergreen stands, in response to the annual gradient of light, influencing soil properties (Gazol and Ibanez 2010, Yu and Sun 2013, Marialigeti et al., 2016).

In the *Cedrus deodara* plantation, *Cyanodon dactylon* and *Salvia moorcroftiana* exhibited maximum dominance over other herbage species, categorizing the community as Cyanodon-Salvia type. In *Robinia pseudoacacia* and *Prunus arminiaca* plantations, *Lolium perenne* and *Cynodon dactylon* displayed maximum dominance, designating the community as *Lolium-Cyanodon* type. Similarly, *Salvia moorcroftiana* and *Cyanodon dactylon* recorded the highest Importance value index (IVI) in *Cupressus torulosa* and

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**Table 1.** Growth parameters of tree species and light intensity in different agroforestry systems of Ganderbal Kashmir

| Growth parameters | | T1 | T2 | T3 | T4 | T5 | T6 | T7 |
|---|---|---|---|---|---|---|---|---|
| Height (m) | Minimum | 16 | 18 | 15.2 | 4.2 | 5 | 4 | - |
| | Maximum | 24.5 | 28.6 | 29.7 | 9.4 | 28 | 18 | - |
| | Standard error | 0.29 | 0.48 | 0.97 | 0.18 | 0.78 | 0.48 | - |
| | Standard deviation | 2.28 | 2.96 | 4.32 | 1.26 | 6.18 | 4.34 | - |
| Dbh (cm) | Minimum | 27 | 22 | 52 | 8 | 6 | 6 | - |
| | Maximum | 92 | 46 | 132.2 | 44 | 91 | 34 | - |
| | Standard error | 2.11 | 1.07 | 5.62 | 1.38 | 3.02 | 0.88 | - |
| | Standard deviation | 16.20 | 6.65 | 25.14 | 9.96 | 23.98 | 7.86 | - |
| Relative light intensity (%) | | 21.81 | 58.21 | 45.24 | 69.16 | 47.85 | 24.76 | 100.00 |

T1-*Cedrus deodara*;T2- *Robinia pseudoacacia*;T3- *Cupressus torulosa*;T4- *Prunus arminiaca* ;T5-*Ailanthus altissima*; T6- mixed stand *(Cupressus torulosa, Robinia pseudoacacia, Ailanthus altissima*;T7-grassland(control)

**Table 2.** Phytosociological attributes of herbs in *Cedrus deodara* based agroforestry system

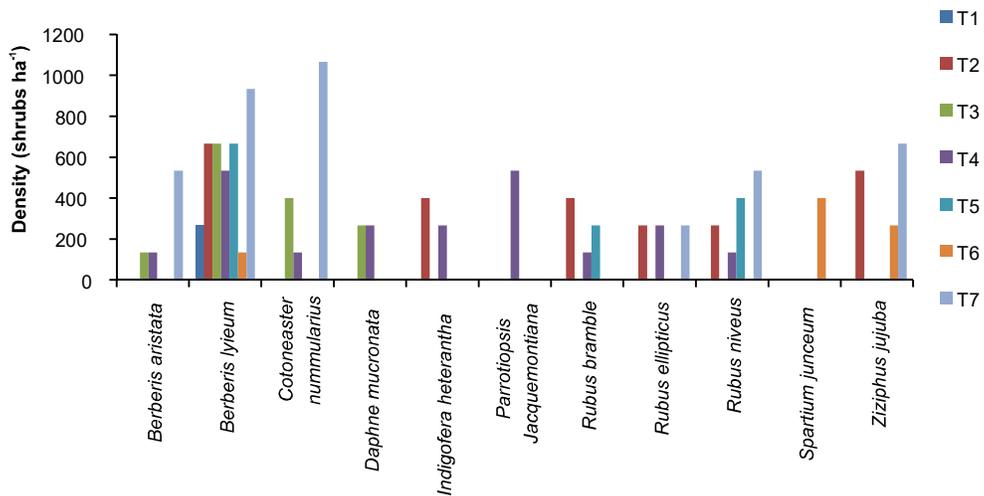| Species name | Relative density (%) | Relative frequency (%) | Relative basal area (%) | Importance value index (%) |
|---|---|---|---|---|
| *Asplenium species* | 8.47 | 12.50 | 0.53 | 22.84 |
| *Cyanodon dactylon* | 15.25 | 12.50 | 39.31 | 69.45 |
| *Oxalis acetosella* | 16.95 | 12.50 | 7.74 | 39.85 |
| *Oxalis corniculata* | 6.78 | 12.50 | 3.21 | 23.55 |
| *Plantago lanceolata* | 11.86 | 12.50 | 15.51 | 41.73 |
| *Salvia moorcroftiana* | 13.56 | 12.50 | 25.17 | 53.35 |
| *Stipa sibirica* | 6.78 | 12.50 | 4.27 | 24.62 |
| *Trifolium pretense* | 6.78 | 12.50 | 4.26 | 24.61 |

**Table 3.** Phytosociological attributes of herbs in *Robinia pseudoacacia* based agroforestry system

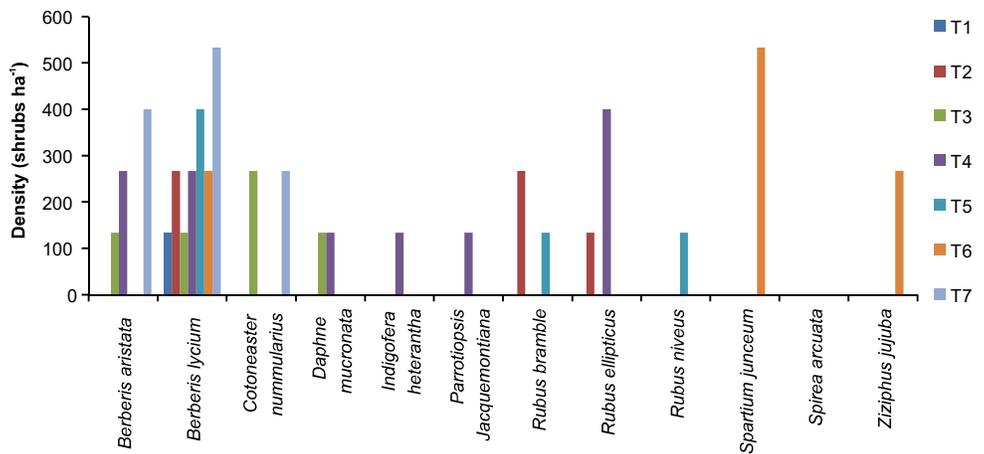| Species name | Relative density (%) | Relative frequency (%) | Relative basal area (%) | Importance value index (%) |
|---|---|---|---|---|
| *Amaranthus viridis* | 4.68 | 6.38 | 12.29 | 23.36 |
| *Asplenium species* | 7.81 | 6.38 | 6.38 | 20.57 |
| *Bothriochloa ischaemum* | 7.03 | 6.38 | 1.92 | 15.34 |
| *Centaurea iberica* | 7.03 | 6.38 | 10.61 | 24.03 |
| *Chenopodium axanthum* | 4.68 | 6.38 | 5.02 | 16.09 |
| *Conyza Canadensis* | 3.12 | 4.26 | 3.68 | 11.06 |
| *Cynodon dactylon* | 10.93 | 6.38 | 8.96 | 26.28 |
| *Lolium perenne* | 21.09 | 6.38 | 18.58 | 46.05 |
| *Medicago minima* | 4.68 | 6.38 | 3.85 | 14.92 |
| *Plantago lanceolata* | 3.90 | 6.38 | 6.65 | 16.94 |
| *Plantago major* | 7.81 | 6.38 | 6.57 | 20.76 |
| *Poa annua* | 3.12 | 6.38 | 2.55 | 12.06 |
| *Poa bulbosa* | 3.90 | 6.38 | 3.35 | 13.63 |
| *Scandix pectenveneris* | 3.90 | 6.38 | 4.49 | 14.78 |
| *Stipa sibirica* | 3.12 | 6.38 | 2.57 | 12.08 |
| *Trifolium pretense* | 3.12 | 6.38 | 2.56 | 12.06 |
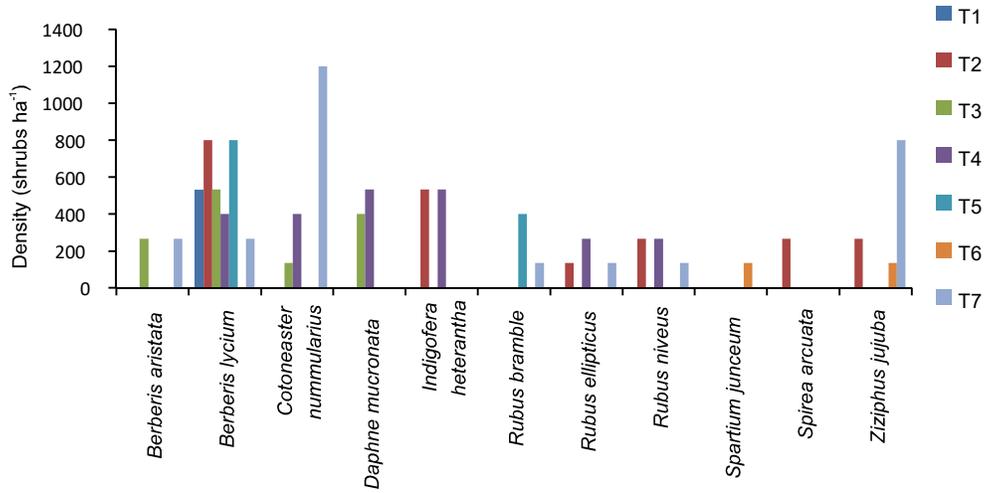
T1-*Cedrus deodara;*T2- *Robinia pseudoacacia;*T3- *Cupressus torulosa;*T4- *Prunus arminiaca* ;T5-*Ailanthus altissima;* T6-mixed stand *(Cupressus torulosa, Robinia pseudoacacia, Ailanthus altissima;*T7-grassland(control)

**Fig. 1.** Density of small sized shrubs in different agroforestry systems of Kashmir



(See Fig 1 for details)

**Fig. 2.** Density of medium sized shrubs in different agroforestry systems of Kashmir



(See Fig 1 for details)

**Fig. 3.** Density of large sized shrubs in different agroforestry systems of Kashmir

**Table 4.** Phytosociological attributes of herbs in *Cupressus torulosa* based agroforestry system

| Species name | Relative density (%) | Relative frequency(%) | Relative basal area (%) | Importance value index (%) |
|---|---|---|---|---|
| *Centaurea iberica* | 5.48 | 11.54 | 8.10 | 26.20 |
| *Chenopodium album* | 5.48 | 11.54 | 4.40 | 22.50 |
| *Cynodon dactylon* | 16.44 | 11.54 | 13.19 | 44.40 |
| *Frageria vesca* | 5.48 | 11.54 | 4.42 | 22.51 |
| *Marubium vulgare* | 5.48 | 7.69 | 7.22 | 21.47 |
| *Oxalis acetosella* | 9.59 | 11.54 | 7.85 | 30.87 |
| *Oxalis corniculata* | 9.59 | 11.54 | 8.17 | 31.18 |
| *Salvia moorcroftiana* | 16.44 | 11.54 | 38.93 | 70.14 |
| *Stipa sibirica* | 9.59 | 11.54 | 7.72 | 30.73 |

**Table 5.** Phytosociological attributes of herbs in *Prunus arminiaca* basedagroforestry system

| Species name | Relative density (%) | Relative frequency(%) | Relative basal area (%) | Importance value index (%) |
|---|---|---|---|---|
| *Achillea millefolium* | 1.73 | 2.86 | 1.51 | 6.09 |
| *Agrimonia eupatoria* | 2.88 | 2.86 | 4.30 | 10.03 |
| *Amaranthus caudatus* | 1.73 | 2.86 | 3.85 | 8.43 |
| *Amaranthus viridis* | 2.02 | 2.86 | 4.65 | 9.53 |
| *Arctium lappa* | 2.88 | 2.86 | 6.72 | 12.46 |
| *Artemisia absinthium* | 1.44 | 2.86 | 1.03 | 5.33 |
| *Arnebia hispidissima* | 1.44 | 2.86 | 2.71 | 7.01 |
| *Asplenium species* | 1.73 | 2.86 | 1.24 | 5.83 |
| *Bothriochloa ischaemum* | 2.88 | 2.86 | 0.69 | 6.43 |
| *Cichorium intybus* | 2.88 | 2.86 | 2.09 | 7.83 |
| *Conyza Canadensis* | 2.88 | 2.86 | 2.98 | 8.72 |
| *Cynodon dactylon* | 6.05 | 2.86 | 4.36 | 13.27 |
| *Daucus carota* | 2.31 | 2.86 | 2.89 | 8.05 |
| *Fragaria nubicula* | 2.02 | 2.86 | 1.46 | 6.33 |
| *Frageria vesca* | 1.15 | 2.86 | 1.10 | 5.11 |
| *Lespedeza species* | 4.03 | 2.86 | 3.02 | 9.91 |
| *Lolium perenne* | 7.49 | 2.86 | 5.81 | 16.16 |
| *Malva neglecta* | 2.31 | 2.86 | 1.66 | 6.82 |
| *Marubium vulgare* | 1.44 | 2.86 | 1.70 | 6.00 |
| *Medicago minima* | 3.17 | 2.86 | 2.29 | 8.32 |
| *Plantago lanceolata* | 2.59 | 2.94 | 4.46 | 10.15 |
| *Plantago major* | 4.03 | 2.94 | 3.43 | 10.65 |
| *Rumex nepalensis* | 2.59 | 2.94 | 2.15 | 7.84 |
| *Salvia moorcroftiana* | 4.03 | 2.94 | 2.29 | 9.52 |
| *Scandix pectenveneris* | 3.46 | 2.94 | 4.02 | 10.63 |
| *Setaria viridis* | 3.75 | 2.94 | 2.28 | 9.20 |
| *Solanum nigrum* | 2.31 | 2.94 | 2.07 | 7.46 |
| *Sorghum helpense* | 3.75 | 2.94 | 2.31 | 9.23 |
| *Stipa sibirica* | 1.15 | 2.94 | 0.96 | 5.12 |
| *Taraxicum officinale* | 2.02 | 2.94 | 1.67 | 6.75 |
| *Trifolium pretense* | 3.46 | 2.94 | 2.86 | 9.47 |
| *Trifolium repens* | 2.02 | 2.94 | 1.67 | 6.75 |
| *Urtica dioica* | 2.59 | 2.94 | 3.86 | 9.55 |
| *Viola odorata* | 2.02 | 2.94 | 1.66 | 6.74 |

**Table 6.** Phytosociological attributes of herbs in *Ailanthus altissima* based agroforestry system

| Species name | Relative density (%) | Relative frequency(%) | Relative basal area (%) | Importance value index (%) |
|---|---|---|---|---|
| *Arctium lappa* | 4.55 | 8.57 | 12.83 | 27.20 |
| *Centaurea iberica* | 3.41 | 5.71 | 5.48 | 15.55 |
| *Chenopodium album* | 4.55 | 8.57 | 3.97 | 18.34 |
| *Conyza Canadensis* | 5.68 | 8.57 | 7.12 | 22.94 |
| *Cynodon dactylon* | 11.36 | 8.57 | 9.92 | 32.98 |
| *Frageria vesca* | 4.55 | 8.57 | 3.98 | 18.35 |
| *Lespedeza species* | 9.09 | 8.57 | 8.24 | 28.41 |
| *Medicago minima* | 4.55 | 8.57 | 3.97 | 18.34 |
| *Poa annua* | 3.41 | 5.71 | 2.96 | 13.03 |
| *Poa bulbosa* | 5.68 | 5.71 | 5.19 | 18.15 |
| *Salvia moorcroftiana* | 9.09 | 8.57 | 23.41 | 43.58 |
| *Scandix pectenveneris* | 5.68 | 5.71 | 6.97 | 19.93 |
| *Trifolium pratense* | 6.82 | 8.57 | 5.95 | 23.21 |

**Table 7.** Phytosociological attributes of herbs in mixed tree based agroforestry system

| Species name | Relative density (%) | Relative frequency(%) | Relative basal area (%) | Importance value index (%) |
|---|---|---|---|---|
| *Agrimonia eupatoria* | 7.55 | 13.64 | 15.08 | 36.26 |
| *Bothriochloa ischaemum* | 5.66 | 9.09 | 1.83 | 16.58 |
| *Cichorium intybus* | 5.66 | 9.09 | 5.50 | 20.25 |
| *Cynodon dactylon* | 15.09 | 13.64 | 14.58 | 43.31 |
| *Lespedeza species* | 9.43 | 13.64 | 9.46 | 32.53 |
| *Lolium perenne* | 24.53 | 13.64 | 23.76 | 61.92 |
| *Oxalis corniculata* | 20.75 | 13.64 | 21.56 | 55.95 |
| *Stipa sibirica* | 11.32 | 13.64 | 8.23 | 33.19 |

*Ailanthus altissima* system, classifying the community as Salvia-Cyanodon type. In mixed stand, *Lolium perenne* and *Oxalis corniculata* dominated, making it a *Lolium-Oxalis* type community. Lastly, in grassland (control), *Salvia moorcroftiana* and *Lolium perenne* exhibited maximum dominance, categorizing the community as *Salvia-Lolium* type. *Berberis lycium* was common in all agroforestry systems, while among herbaceous species *Cynodon dactylon* was observed in all systems. The dominance of specific species in each community was attributed to their adaptability and growth in particular environments (Gupta et al., 2002). Understorey species composition in these forests differed which is a manifestation of type (species and density) of over storey trees and their influence likely to occur on herbaceous layer diversity by modifying resource availability and environmental conditions relevant to herbages (Vockenhuber et al., 2011, Manzoor and Jazib (2020). The importance of canopy-species leaf litter as a key factor influencing soil acidity and thereby nutrient stocks, whereas the upper 10 cm of soil are most significantly influenced by tree-species effects (Augusto et al., 2003). Additionally, thickness of litter layer varies according to tree species (Augusto et al., 2002).

## CONCLUSION

The herbaceous growth showed strong dependence on light intensity, density of trees and canopy cover. There was significant decrease in functional parameters of herbs under trees as compared to grassland . *Cyanodon dactylon* was the dominating species under grassland (control), *Ailanthus altissima* and *Cupressus torulosa* plantations. *Oxalis acetosella* was dominating under *Cedrus deodara* plantations. *Lolium perenne* was dominating species under mixed stand, *Robinia pseudoacacia* and *Prunus arminiaca* plantations. The type of overstorey trees had insignificant influence on shrub and herbaceous composition but significantly influenced the herbaceous growth. The magnitude of density, basal area and biomass of herbs and shrubs under different trees was less in comparison to grassland (control).

**Table 8.** Phytosociological attributes of herbs in grass land based system

| Species name | Relative density (%) | Relative frequency(%) | Relative basal area (%) | Importance value index (%) |
|---|---|---|---|---|
| *Achillea millefolium* | 1.28 | 2.88 | 1.18 | 5.41 |
| *Agrimonia eupatoria* | 2.82 | 2.88 | 4.44 | 10.28 |
| *Amaranthus caudatus* | 1.79 | 1.92 | 4.22 | 8.02 |
| *Amaranthus viridis* | 2.31 | 2.88 | 5.62 | 10.93 |
| *Artemisia absinthium* | 1.79 | 2.88 | 1.36 | 6.12 |
| *Arnebia hispidissima* | 1.54 | 2.88 | 3.05 | 7.55 |
| *Bothriochloa ischaemum* | 3.08 | 2.88 | 0.78 | 6.89 |
| *Centaurea iberica* | 2.05 | 2.88 | 2.88 | 7.91 |
| *Chenopodium album* | 2.05 | 2.88 | 1.56 | 6.60 |
| *Chenopodium axanthum* | 1.54 | 2.88 | 1.53 | 6.03 |
| *Cichorium intybus* | 3.33 | 2.88 | 3.07 | 9.45 |
| *Conyza Canadensis* | 2.31 | 2.88 | 3.63 | 8.94 |
| *Cynodon dactylon* | 6.67 | 1.92 | 5.07 | 13.99 |
| *Cymbopogan nardus* | 1.03 | 2.88 | 1.55 | 5.51 |
| *Daucus carota* | 1.54 | 2.88 | 1.55 | 6.05 |
| *Frageria vesca* | 2.05 | 2.88 | 4.07 | 9.11 |
| *Lespedeza species* | 5.13 | 2.88 | 4.05 | 12.31 |
| *Lolium perenne* | 6.15 | 2.88 | 5.04 | 14.37 |
| *Malva neglecta* | 2.56 | 2.88 | 1.95 | 7.52 |
| *Medicago minima* | 3.08 | 2.88 | 2.35 | 8.46 |
| *Plantago lanceolata* | 2.56 | 2.88 | 4.06 | 9.63 |
| *Plantago major* | 1.54 | 2.88 | 1.20 | 5.70 |
| *Poa annua* | 1.28 | 1.92 | 0.97 | 4.24 |
| *Poa bulbosa* | 1.03 | 2.88 | 0.82 | 4.78 |
| *Poa pretense* | 1.03 | 2.88 | 0.71 | 4.67 |
| *Rumex nepalensis* | 4.10 | 2.88 | 3.13 | 10.32 |
| *Salvia moorcroftiana* | 4.36 | 2.88 | 9.79 | 17.24 |
| *Scandix pectenveneris* | 3.33 | 2.88 | 3.56 | 9.94 |
| *Setaria viridis* | 4.62 | 2.88 | 2.62 | 10.34 |
| *Sorghum helpense* | 4.10 | 2.88 | 2.33 | 9.52 |
| *Stipa sibirica* | 0.77 | 2.88 | 0.59 | 4.28 |
| *Taraxicum officinale* | 2.05 | 1.92 | 1.56 | 5.64 |
| *Trifolium pratense* | 3.33 | 2.88 | 2.53 | 8.91 |
| *Trifolium repens* | 2.82 | 2.88 | 2.14 | 7.99 |
| *Urtica dioica* | 2.82 | 2.88 | 3.86 | 9.70 |
| *Viola odorata* | 1.54 | 2.88 | 1.17 | 5.66 |

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