



## A Phyto-sociological Association of Weeds in Summer-Kharif Crops of Kashmir Valley Under Different Eco-Situations

PURSHOTAM SINGH\*, PARMEET SINGH, LAL SINGH, SAMEERA QAYOOM, BA LONE, RAIHANA H KANTH, GURDEEP SINGH, MA GANAI, AND KN SINGH

Division of Agronomy, Sher-e-Kashmir University of Agricultural Sciences & Technology, Kashmir, Shalimar, J&K, India

### ABSTRACT

#### ARTICLE INFO

Received on : 06.07.2015  
Accepted on : 06.08.2015  
Published online : 01.09.2015

The study on the phyto-sociological association of weeds in summer crops viz. rice (*Oryza sativa*), maize (*Zea mays*), saffron (*Crocus sativus*) and pulses of Kashmir valley was conducted during 2013 at varying altitudes from 1500 to 2500 m above mean sea level (amsl). Areas where rice is cultivated two eco-situations exist, first with abundance of soil moisture is infested with weed species like *Potamogeton distinctus*, *Polygonum hydropiper*, *Monochoria vaginalis*, *Ammannia baccifera*, *Gratula japonica*, *Cyperus defformis*, *C. irria*, *Scirpus juncooides* etc. In second eco-situation where farmers have to irrigate rice fields as per availability of water the fields are infested with weeds like *Echinochloa crusgalli*, *Gratula japonica*, *Cyperus defformis*, *C. irria*, *Cyperus rotundus* etc. Up to 1700 m maximum importance value index (IVI) of *Potamogeton distinctus* (29.28%) among broad leaves, *Echinochloa crusgalli* (27.15%) among grasses and *Cyperus difformis* (18.88%) among sedges was noticed in rice, *Amaranthus viridis* (20.33%) among broad leaves, *Digitaria sanguinalis* (16.9%) among grasses and *Cyperus rotundus* (20.14%) among sedges in maize and in saffron Star of Bethlehem (*Ornithogalum mbellatum*) (31.85%) among grasses, *Amaranthus viridis* (18.23%) among broad leaves and *Cyperus rotundus* (26.18%) among sedges. From 1700 to 2000m amsl maximum IVI of *Potamogeton distinctus* (33.03%) among broad leaves, *Echinochloa crusgalli* (15.48%) among grasses and *Cyperus difformis* (15.89%) among sedges was noticed in rice and *Amaranthus viridis* (22.08%) among broad leaves, *Digitaria sanguinalis* (17.15%) among grasses, *Cyperus rotundus* (14.53%) among sedges and among others *Chenopodium album* was 18.3% in maize + pulses. Above 2000 m amsl *Potamogeton distinctus* (33.59%) and *Marsilea qadrifolia* (28.35%) among broad leaves, *Echinochloa crusgalli* (17.08%) among grasses was, *Cyperus difformis* (17.11%) and *Cyperus iria* (17.12%) among sedges and among others *Polygonum hydropiper* was 17.18% in rice, in maize + pulses maximum IVI of 18.32% was of *Amaranthus viridis* among broad leaves, 14.37% of *Digitaria Sanguinalis* and 14.93% of *Cynodon dactylon* among grasses, 12.96% of *Cyperus rotundus* among sedges and 13.53% of *Medicago sativa* was observed in maize + pulses.

**Keywords:** Phyto-sociology, IVI, weed species

### INTRODUCTION

Kashmir valley is located at 73° 45' - 75° 35' E longitude and 32° 25' - 34° 55' N latitude with 3.25 lakh hectares of land under different crops. The productivity of main Kharif crops like rice (*Oryza sativa*), maize (*Zea mays*), saffron (*Crocus sativus*) and pulses is low due to various production constraints (Singh et al., 2012). Weed infestation is one of the factors responsible for low productivity (Kumar et al., 2014 and Singh et al., 2015). Due to a limited growth period during cropping

season having initial three months with low temperature ranging from 15 to 20 °C and remaining two months with moderate temperature ranging from 20 to 35°C and starts decreasing thereof along with high moisture in the earlier periods poses a great problem for weed control. Sowing of seed is usually done in the last week of April for rice (under protected conditions) and maize, during this period the temperature is low along with lot of moisture which results in the early germination of weeds resulting in greater competition for crops (Dangwal et al., 2010a and Dangwal et al., 2010b). Gupta et al., (2008) studied the dynamics of cereal crop weeds of Doon valley with special reference to rice, maize and

\*Corresponding Author Email: [drpurshotam@gmail.com](mailto:drpurshotam@gmail.com)

wheat fields. They reported 151 weed species belonging to 118 genera and 31 families; 57 weeds were reported from rice, 77 from maize and 71 from wheat fields. Hussain *et al*, (2009) also find a varying flora due to the difference in agro-ecological conditions in the study areas. Thus knowledge of weed flora, population and distribution is prerequisite to formulate economic and effective weed control strategy. Little information is available on crop weed association under different eco-situations; however, some information on weeds of *rabi* crops (Singh, 2007) and taxonomical aspects is available. Thus, an attempt was made to survey weed flora associated with summer / kharif crops in Kashmir valley at varying altitudes ranging from 1500 to 2500 m above mean sea level.

## MATERIALS AND METHODS

Crop-weed association survey was taken up in the different zones based on altitude within the valley of Kashmir, which can be broadly divided into three zones *i.e.* Zone A Lower belt of valley (< 1700 m above mean sea level), Zone B mid altitude (1700 to 2000 m above mean sea level) and Zone C high belts (> 2000 m above mean sea level). The observations were taken from crop fields from each zone at every 10 kilometer distance, 100-200 m away from the road to eliminate the effect of road and trees on natural growth of weeds in association with the crops. Species – wise weed count was recorded using quadrates of 50x50 cm size placed randomly at four spots in a field moving diagonally. Average of 15 fields was taken from each crop from each zone. Weeds at bunds and surrounding areas were not considered, as weed flora directly associated with crops after transplanting and before and at harvesting was recorded. The survey was concluded during the *kharif* 2013. The data were

analyzed for quantitative and qualitative studies using the formulae as provided by DWSR Jabalpur:

- (a) Density m<sup>2</sup> = 
$$\frac{\text{Total no. of individuals of sp. A in all the quadrates}}{\text{Total number of quadrates plotted}}$$
  
(No. of individuals per 50cm x 50cm quadrates should be multiplied by 4 to obtain the density m<sup>-2</sup>)
- (b) Relative density (%) = 
$$\frac{\text{Density of species A} \times 100}{\text{Sum density of all species}}$$
- (c) Frequency % = 
$$\frac{\text{Number of quadrates where the species A occurred}}{\text{Total number of quadrates plotted}} \times 100$$
- (d) Relative Frequency (%) = 
$$\frac{\text{Frequency of species A} \times 100}{\text{Sum Frequency of all species}}$$
- (e) Importance Value Index (IVI) = 
$$\frac{\text{Relative Density} + \text{Relative Frequency}}$$

## RESULTS AND DISCUSSION

Rice (*Oryza sativa*) as grain crop and maize (*Zea mays*) / maize +pulses as grain and fodder crops were observed cultivated followed by brown sarson / oat as a common double cropping system comprising about 50% of the area under the sites surveyed in all the zones. Saffron (*Crocus sativus*) is cultivated as rain fed crop in Kerews (*Lacustrine deposits*) mid altitude zone of the valley in a limited areas. Herbicide application is adopted only in case of rice where as it is not followed by farmers for

**Table 2:** Premium Attributes of Swarna Gaurav

Attributes	Swarna Gaurav	#Vikrant
Branches per plant	8.0-10	6-8
Days to anthesis	59-64 days after sowing	62-71 days after sowing
Pod -Shape	Long	Long
Pod -Colour	Green	Green
Pod -Length	4.0-4.5cm	3.0-4.0cm
Seeds/pod	3-4	3-4
Pod/plant	80-90	54-78
1000- Seeds weight (g)	281.80	239.40
Seed coat colour	Pale brown to light brown	Pale brown to light brown
Seed shape	Spherical in shape with 78.% sphericity	Spherical in shape with 83.03 sphericity
Cotyledon color	Light to pale yellow in colour	Light to pale yellow in colour

# Check Variety

other crops under the study. Even manual weeding was observed only at few sites.

### Weeds associated with *Oryza sativa*

The survey revealed that rice areas are mainly divided in two eco-situations viz. i.e.) sufficient water available areas and ii) limited water available areas. Under sufficient water available areas or high moisture areas infestation of weeds like *Potamogeton distinctus*, *Polygonum hydropiper*, *Monochoria vaginalis*, *Ammannia baccifera*, *Gratula japonica*, *Cyperus defformis*, *C. irria*, *Scirpus juncooides* etc. were observed, where as in areas with limited water availability weeds like *Echinochloa crusgalli*, *Gratula japonica*, *Cyperus defformis*, *C. irria*, *Cyperus rotundus* etc. were found. The survey revealed that 12, 11 and 11 weed species were associated with rice in the Zone A, Zone B and Zone C respectively, indicating that at lower belts (Zone A) broad spectrum of weeds were recorded than higher belt due to better growth conditions for both weeds and crops as higher belts even under temperate conditions are subjected to more restricted growth period (Table 1). In all the three zones, *Potamogeton distinctus* exhibited maximum importance value index (IVI) which was 29.28 in zone A, 33.03 in zone B and 33.59 in zone C. In zone A *Potamogeton distinctus* was followed by *Echinochloa crusgalli* (27.15), *Cyperus difformis* (18.88), *Polygonum hydropiper* (16.97), *Ammannia baccifera* (16.39), *Gratula japonica* (15.15), *Aeschynomene indica* (15.15), *Scirpus juncooides* (14.84), *Cyperus iria* (12.15) and *Monochoria*

*vaginalis* (11.77) with greater than an IVI of 10. In zone B *Potamogeton distinctus* was followed by *Echinochloa crusgalli* (15.48), *Cyperus difformis* (18.88), *Polygonum hydropiper* (16.97), *Ammannia baccifera* (16.39), *Gratula japonica* (25.59), *Aeschynomene indica* (23.9), *Scirpus juncooides* (14.84), *Cyperus iria* (12.15) and *Monochoria vaginalis* (11.77) with greater than an IVI of 10. In zone C *Potamogeton distinctus* was followed by *Marsilea qadrifolia* (28.35), *Polygonum hydropiper* (17.81), *Cyperus iria* (17.12), *Cyperus difformis* (17.11), *Echinochloa crusgalli* (17.08), *Scirpus juncooides* (14.80), *Segeteria segtifolia* (14.12), *Gratula japonica* (14.08), *Aeschynomene indica* (13.33), *Monochoria vaginalis* (12.58) with greater than an IVI of 10.

### Weeds associated with *Zea mays*

Pure crop of maize is taken in the lower belts i.e. zone A mainly for cob purpose. Nearly 14 weed species were observed in this zone which included 4 grasses, 8 broad leaf 1 sedge and 1 others (Table 2). *Amaranthus viridis* exhibited maximum importance value index (IVI) of 20.33 and was followed by *Cyperus rotundus* (20.14), *Chenopodium album* (18.75), *Marsilea qadrifolia* (16.92), *Digitaria sanguinalis* (16.9), *Veronica biloba* (15.1), *Convolvulus arvensis* (14.79), *Sorghum helipense* (14.72), *Ageratum conyzoides* (14.3), *Cynodon dactylon* (13.36) and *Poa annua* (11.25) with greater than an IVI of 10. Batista et al, (2014) reported that Asteraceae family was the most represented in number of species. *Sida* spp (Malvaceae) showed greater potential to cause damage

**Table 1:** Relative density, relative frequency and importance value index of weeds associated with rice (*Oryza sativa*)

Scientific name	Zone A <1700 m amsl			Zone B 1700-2000 m amsl			Zone C >2000 m amsl		
	R De	R Fe	IVI	R De	R Fe	IVI	R De	R Fe	IVI
<i>Aeschynomene indica</i>	7.41	8.98	15.15	14.04	9.86	23.90	4.51	8.82	13.33
<i>Alisma plantago aquatic</i>	2.47	5.39	7.86	-	-	-	-	-	-
<i>Ammannia baccifera</i>	12.96	8.98	16.39	-	-	-	-	-	-
<i>Cyperus difformis</i>	11.70	7.18	18.88	6.74	9.15	15.89	9.02	8.09	17.11
<i>Cyperus iria</i>	5.56	6.59	12.15	2.25	8.45	10.70	9.77	7.35	17.12
<i>Echinochloa crusgalli</i>	16.67	10.48	27.15	5.62	9.86	15.48	7.52	9.56	17.08
<i>Gratula japonica</i>	6.17	8.98	15.15	15.73	9.86	25.59	5.26	8.82	14.08
<i>Lindernia procombans</i>	3.09	4.49	7.58	-	-	-	-	-	-
<i>Marsilea qadrifolia</i>	-	-	-	11.24	8.45	19.69	18.79	9.56	28.35
<i>Monochoria vaginalis</i>	3.09	8.68	11.77	5.06	7.04	12.10	3.76	8.82	12.58
<i>Polygonum hydropiper</i>	6.79	10.18	16.97	7.30	9.86	17.16	7.52	10.29	17.81
<i>Potamogeton distinctus</i>	18.50	10.78	29.28	22.47	10.56	33.03	22.56	11.03	33.59
<i>Scirpus juncooides</i>	5.56	9.28	14.84	4.49	10.56	15.05	4.51	10.29	14.80
<i>Segeteria segtifolia</i>	-	-	-	5.06	6.30	11.4	6.77	7.35	14.12

R De-Relative Density, R Fe- Relative Frequency, IVI-Importance value index

to maize. *Urochloa ruziziensis* at planting density of 10 kg/ha provided greater competition with weeds in the integration with maize.

### Weeds associated with *Zea mays* + Pulses

In middle and upper belts of valley there is shortage of fodder during the winter months, so the farmers don't go for single crop of maize but prefer inter cropping of pulses with maize for improving the quality of fodder. The survey revealed that 16 weed species were associated with maize + pulses in the Zone B and Zone C (Table 2). In both the zones *Amaranthus viridis* exhibited maximum importance value index (IVI) which was 22.08 in zone B and 18.32 in zone C. In zone B *Amaranthus viridis* was followed by *Chenopodium album* (18.3), *Digitaria sanguinalis* (17.15), *Cynodon dactylon* (16.5), *Convolvulus arvensis* (15.86), *Cyperus rotundus* (14.53), *Poa annua* (14.38), *Sorghum helipense* (14.21), *Stellaria media* (12.44), *Matricaria chamomilla* (10.59) and *Ageratum conyzoides* (10.12) with greater than an IVI of

10. In zone C *Amaranthus viridis* was followed by *Cynodon dactylon* (14.93), *Digitaria sanguinalis* (14.37), *Convolvulus arvensis* (14.24), *Sorghum halepense* (13.80), *Medicago sativa* (13.53), *Artimisia indica* & *Cyperus rotundus* (12.96), *Ageratum conyzoides* (12.40), *Polypogon annua* (11.98), *Oxalis acetosella* (11.70), *Poa annua* (10.99), *Veronica biloba* (10.57) and *Polygonum aviculare* (10.01) with greater than an IVI of 10.

### Weeds Associated with *Crocus sativus*

Saffron is cultivated mostly in the middle belt. This crop requires a lot of labour for its cultivation and only manual weeding is done which is labourious and not economical as no chemical has been yet tested fir this crop till date as the behaviour of the weeds associated with this crop has not been studied nearly 10 weed species were observed which included 3 grasses, 3 broadleaf 1 sedge and 3 others (Table 3). *Ornithogalum mbellatum* exhibited maximum importance value index of 31.85 and was followed by *Cyperus rotundus* (26.18),

**Table 2:** Relative density, relative frequency and importance value index of weeds associated with maize/maize + pulses

Scientific name	Zone A <1700 m amsl			Zone B 1700-2000 m amsl			Zone C >2000 m amsl		
	R De	R Fe	IVI	R De	R Fe	IVI	R De	R Fe	IVI
<i>Ageratum conyzoides</i>	5.88	8.42	14.30	4.43	5.69	10.12	5.65	6.75	12.40
<i>Amaranthus viridis</i>	9.80	10.53	20.33	12.32	9.76	22.08	10.73	7.59	18.32
<i>Artimisia Indica</i>	-	-	-	-	-	-	6.21	6.75	12.96
<i>Chenopodium album,</i>	9.80	8.95	18.75	9.36	8.94	18.30	-	-	-
<i>Convolvous arvensis</i>	6.37	8.42	14.79	9.36	6.50	15.86	7.91	6.33	14.24
<i>Cynodon dactylon</i>	4.41	8.95	13.36	8.37	8.13	16.50	7.34	7.59	14.93
<i>Cyperus rotundus</i>	12.25	7.89	20.14	6.40	8.13	14.53	6.21	6.75	12.96
<i>Digitaria sanguinalis</i>	6.37	10.53	16.9	7.39	9.76	17.15	6.78	7.59	14.37
<i>Hypericum perforatum</i>	-	-	-	-	-	-	3.95	4.22	8.17
<i>Marsilea qadrifolia</i>	13.24	3.68	16.92	-	-	-	-	-	-
<i>Matricaria chamomilla</i>	3.43	4.74	8.17	2.46	8.13	10.59	3.95	5.06	9.01
<i>Medicago sativa</i>	-	-	-	-	-	-	8.47	5.06	13.53
<i>Melilotus indica</i>	-	-	-	2.46	6.50	8.96	-	-	-
<i>Oxalis acetosella</i>	-	-	-	-	-	-	6.21	5.49	11.70
<i>Poa annua</i>	4.41	6.84	11.25	7.88	6.50	14.38	5.08	5.91	10.99
<i>Polygonum aviculare</i>	2.94	5.26	8.20	2.96	5.69	8.65	4.52	5.49	10.01
<i>Polypogon Annua</i>	-	-	-	-	-	-	5.65	6.33	11.98
<i>Setaria viridis</i>	4.41	2.63	7.04	3.94	4.88	8.82	-	-	-
<i>Sorghum helipense</i>	7.35	7.37	14.72	6.89	7.32	14.21	6.21	7.59	13.08
<i>Stellaria media</i>	-	-	-	8.37	4.07	12.44	-	-	-
<i>Taraxacum officinale</i>	-	-	-	3.94	4.07	8.01	-	-	-
<i>Veronica biloba.</i>	9.31	5.79	15.1	3.45	4.07	7.52	5.08	5.49	10.57

R De-Relative Density, R Fe- Relative Frequency, IVI-Importance value index

**Table 3:** Relative density, relative frequency and importance value index of weeds associated with saffron

Scientific name	Zone A <1700 m amsl			Zone B 1700-2000 m amsl			Zone C >2000 m amsl		
	R De	R Fe	IVI	R De	R Fe	IVI	R De	R Fe	IVI
<i>Ageratum conzyoides</i>	2.98	9.09	12.07	-	-	-	-	-	-
<i>Allium vineale</i>	11.31	7.69	19.00	-	-	-	-	-	-
<i>Amaranthus viridis</i>	7.74	10.49	18.23	-	-	-	-	-	-
<i>Cirsium arvense</i>	6.55	6.99	13.54	-	-	-	-	-	-
<i>Convolvulus arvensis</i>	10.71	6.99	17.70	-	-	-	-	-	-
<i>Cynodon dactylon.</i>	8.93	12.59	21.52	-	-	-	-	-	-
<i>Cyperus rotundus</i>	14.29	11.89	26.18	-	-	-	-	-	-
<i>Euphorbia serrata</i>	6.55	11.19	17.74	-	-	-	-	-	-
<i>Ornithogalum mbellatum</i>	17.86	13.99	31.85	-	-	-	-	-	-
<i>Tulipa stellata</i>	13.10	9.09	22.19	-	-	-	-	-	-

R De-Relative Density, R Fe- Relative Frequency, IVI-Importance value index

*Tulip stellata* (22.19), *Cynodon dactylon* (21.52), *Allium vineale* (19.0) *Amaranthus viridis* (18.23), *Euphorbia serrata* (17.74), *Convolvulus arvensis* (17.7), *Cirsium arvense* (13.54) and *Ageratum conzyoides* (12.07) all having an IVI of above 10. Thus, rice was found severely infested with *Potamogeton distinctus* at varying altitudes and followed by *Echinochloa crusgalli*, *Cyperus difformis* in lower and middle belt and *Marsilea quadrifolia* and *Polygonum hydropiper* at higher belts. Pure crop of maize at lower belt was found severely infested with *Amaranthus viridis* and was followed by *Cyperus rotundus*, *Chenopodium album*, *Marsilea quadrifolia* and *Digitaria sanguinalis*, where as maize + pulses showed the association of weeds like *Amaranthus viridis* which was followed by *Chenopodium album*, *Digitaria sanguinalis*, *Cynodon dactylon*, *Convolvulus arvensis* and *Cyperus rotundus* in middle and upper zones. *Ornithogalum mbellatum*, *Cyperus rotundus*, *Tulip stellata*, *Cynodon dactylon* and *Allium vineale* were predominant weeds associated with Saffron.

## CONCLUSION

This study concludes that the phytosociological association of weeds in summer/kharif crops viz. rice (*Oryza sativa*), maize (*Zea mays*), saffron (*Crocus sativus*) and pulses of Kashmir valley, which was conducted at varying altitudes from 1500 to 2500 m above mean sea level (amsl). The results revealed that upto 1700m amsl the most dominated weeds were *Potamogetone distinctus*, among broad leaves, *Echinochloa crusgalli* among grasses and *Cyperus difformis* among sedges in rice, in case of maize, *Amaranthus viridis* among broad leaves, *Digitaria sanguinalis* among grasses and *Cyperus rotundus* among sedge and in saffron Star of Bethlehem (*Ornithogalum*

*mbellatum*) among grasses, *Amaranthus viridis* among broad leaves and *Cyperus rotundus* among sedges. From 1700 to 2000m amsl the dominated weeds were *Potamogeton distinctus* among broad leaves, *Echinochloa crusgalli* among grasses and *Cyperus difformis* among sedges in rice and *Amaranthus viridis* among broad leaves, *Digitaria sanguinalis* among grasses, *Cyperus rotundus* among sedges and among others *Chenopodium album* in maize + pulses. Above 2000 m amsl *Potamogeton distinctus* and *Marsilea quadrifolia* among broad leaves, *Echinochloa crusgalli* among grasses *Cyperus difformis* and *Cyperus iria* among sedges and among others *Polygonum hydropiper* were major weeds in rice, on the other hand maximum dominating weeds were *Amaranthus viridis* among broad leaves, *Digitaria Sanguinalis* and *Cynodon dactylon* among grasses, *Cyperus rotundus* among sedges and *Medicago sativa* in maize + pulses.

## REFERENCES

- Batista Alessandra, Aparecida Giacomini, Luciana Gerdes, Waldssimiler Teixeira de Mattos, João Batista de Andrade. 2014. Phytosociological Survey of Weeds in Areas of Crop-Livestock
- Dangwal LR, Singh A, Singh T, Sharma A and Sharma C. 2010b. Effect of weeds on the yield of wheat crop in Tehsil Nowshera. *J. American Sci.* 6 (10):405-407.
- Dangwal LR, Singh Amandeep, Singh Tajinder, Sharma Antima and Sharma Chanchal. 2010a. Common weeds of rabi (winter) crops of tehsil Nowshera, district Rajouri (Jammu & Kashmir), India. *Pak. J. Weed Sci. Res.* 16 (1): 39-45.
- Gupta A, Joshi SP and Manahas RK. 2008. Multivariate analysis of diversity and Composition of weeds communities of wheat fields in Doon valley. Ecological research Lab.,

- Department of Botany, DAV (PG). College, Dehradun) Uttrakhand, India.
- Hussain F, Shah SM, Fazal-e-Hadi and Asadullah. 2009. Diversity and ecological characteristics of weeds of wheat fields of University of Peshawar Botanical Garden at Aza Khel, District Nowshera, Pakistan. *Pak. J. Weed Sci. Res.* **15** (4):283-294.
- Integration. *American Journal of Plant Sciences* **5**: 1090-1097.
- Kumar P, Singh O and Ahlawat IPS. 2014. Weed Dynamics, Growth and Yield of Wheat Crop as Influenced by Different Tillage and Herbicide Management under Rice-Wheat Cropping System. *Journal of AgriSearch* **1**(3): 161-167.
- Singh AK, Singh D, Singh AK, Gade RM and Sangle UR. 2012. Good Agronomic Practices (GAP) - An efficient and eco-friendly tool for sustainable management of plant diseases under changing climate scenario. *J. Plant Disease Sci.* **7** (1):1-8
- Singh KN, Shoukat Ara1, Wani GA, Badrul Hasan and Khanday BA. 2007 A Phyto-sociological Association of Weeds in Winter Crops of Kashmir Valley. *Indian J. Weed Sci.* **39** (1 & 2): 74-77.
- Singh P, Singh L, Singh P, Lone BA, Qayoom S, Ahmad L, Ganai MA, Kanth RA and Fayaz A. 2015. Response of lentil (*Lens culinaris* Medik) and weeds to different weed management practices under temperate conditions. *Journal of Agrisearch* **2** (1): 72-74.

**Citation:**

Singh P, Singh P, Singh L, Qayoom S, Lone BA, Kanth H, Singh G., Ganai MA and Singh KN. 2015. A Phyto-sociological association of weeds in Summer-Kharif crops of Kashmir Valley under different eco-situations. *Journal of AgriSearch* **2** (3): 183-188