Original Research Article

Performance of different Aglaonema (*Aglaonema Commutatum*) varietiesunderPrayagrajagro-climaticconditions

Abstract

ThepresentinvestigationwasundertakenintheDepartment of Horticulture, Sam Higginbottom University ofAgriculture, Technology And Sciences, Prayagraj, during August, 2023 to April, 2024. Theexperiment was laid out in completely randomized design with eight different aglaonemavarieties *viz.*, Dove, Earnest Round Leaf, Watson Dwarf, Butterfly, Ice, Red Lipstick, Nitidum and Rotundum, replicated thrice and carried out under50% shade net conditions. Variety Butterfly reported significantly better performancecomparedtoother varietiesintermsofgrowthparameterslikeplantheight(48.6cm),number of leaves (5.4), plant spread (31.2 cm^2), stem girth (5.7 cm), leaf area (129.6 cm^2),minimum leaf production interval (12.6 days), number of new sprouts (7), chlorophyll content (21.6),plantgrowthindexbasedonheightoftheplants(7.5),plantgrowthindexbasedonnumberofleaves(12.6) and survivalpercentage(100%).

Keywords:*aglaonema,performance, shadenet,varieties*

1. INTRODUCTION

Aglaonema, derived from the Greek words 'aglaos' (shining) and 'nema' (thread), is agenus renowned for its visually appealing foliage (**Henny, 2019**). These plants are widelyutilized in homes, offices, and public spaces and enhance interior decor through theirvariedshapes,sizes,andcolors,therebycreatingaestheticallypleasingandsoothingenvironments (**Restianto *et al.*, 2024**). They also significantly contribute to urban ecosystems by providing habitat for a variety of wildlife, including birds and insects thus, promotingbiodiversityevenindenselypopulatedareas.

Aglaonema is a versatile and resilient plant that enhances indoor environments withbothaestheticappealandhealthbenefits.Itscapacitytothriveinlowlightconditionsandits

low maintenance requirements make it an ideal choice for both novice and experiencedgardeners (**Henny *et al.*, 2009**). The adaptability to indoor conditions, coupled with its abilityto improve air quality, makes aglaonema a valuable addition to homes and workplaces,contributingtoahealthierandmorevisuallypleasingenvironment.So,consideringthei mportance ofthis crop inurban landscape, this research was aimed toinvestigate themostsuitable aglaonema variety for survival, establishment, growth and development under Prayagraj agro-climatic conditions

2. MATERIALSANDMETHODS

Theinvestigationwascarriedoutunder50%shadenethouseconditionsinHorticulturalRese archField,DepartmentofHorticulture,NainiAgriculturalInstitute,SHUATS, Prayagraj, during 2023-2024.The experiment was laid out inCompletely Randomized Design (CRD) with 8 varieties and each variety replicated thrice.The experimental material consisted of aglaonema varieties *viz.*, V_1-Aglaonema Dove, V_2-Aglaonema Earnest Round Leaf, V_3- Aglaonema Watson Dwarf, V_4- Aglaonema Butterfly,V_5-AglaonemaIce,V_6-AglaonemaRedLipstick,V_7-AglaonemaNitidum,andV_8-Aglaonema Rotundum. The data recorded during the experiment were subjected to statisticalanalysisbyusinganalysisofvariance(ANOVA).

3. RESULTSANDDISCUSSION

3.1 GrowthperformanceofdifferentAglaonemavarieties

Significant variations were observed among the eight aglaonema varieties studied across allthe growth parameters,presentedinTable1.Significantly taller plants (48.6 cm) were observed in variety V_4 (Butterfly) followedbyvarietyV_5(Ice,46.0cm)whileshorterplants(37.8cm)wasrecordedinvarietyV_7(Nitidu m).Significantly more number of leaves (5.4) were observed in variety V_4(Butterfly) followed by variety V_5(Ice, 5.1) while lesser number ofleaves per plant (2.5 cm) was recorded in variety V_7 (Nitidum). More plant spread (31.2 cm) was observed in variety V_4 (Butterfly) followedby variety V_5(Ice, 29cm) while lesser plant spread (17.7 cm) was observed in variety V_6(Red Lipstick). Significantly more stem girth (5.7cm) was observed in variety V_4 (Butterfly) wasfollowed by variety V_5(Ice, 5.3cm) and the lesser stem girth was observed in variety V_7(Nitidum, 3.4 cm).Significantly bigger estimated leaf area (129.56 cm^2)was observed in variety V_4 (Butterfly) followed by variety V_1(Ice, 94.5 cm^2) while smallerestimated leaf area (48.8 cm^2) was observed in variety V_6(Red Lipstick).

The variation in plant height, number of leaves, plant spread, stem girth and leaf area can be attributed to genetic differences, growth rates, and environmental conditions. Variationinplant height andnumberofleavesperplantaredrivenbydifferences in the rate of vegetative growth among the genotypes. Theplantspreadandtheleafareaiscrucialforphotosyntheticactivityasit enhances the interception of solar energy, significantly influencing growth and flower yield.This observation is supported by studies conducted by **Srinivasa and Reddy (2005)**, **Femina*etal.*(2006),Rajeevan *etal.*(2007)**and**Agasimani*etal.*(2011)**inAnthurium,whosimilarlyreportedtheimportanceofplant spreadinmaximizingphotosyntheticefficiencyandoverallplantproductivity. Varieties like Butterfly and Ice may have genetic traits that promote thicker stem growth, resulting inlarger girth measurements. Varieties adapted to favourable conditions are likely to exhibitbetter growth and thicker stems compared to those less adapted or facing growth-limitingconditions (**Russ and Pertuit, 2001**).

3.2 Survivalandestablishmentperformanceofdifferent*Aglaonema*varieties

From the presentinvestigation, it isconcludedthat significant variationswere observedamongtheeightaglaonemavarietiesstudiedacrossallthesurvivalandestablishmentperformance and the data is presented in Table 2. Significantly higher chlorophyll content (68.2 mg/g) was observed in variety V_7(Nitidum)followed by variety V_5 (Ice, 35.56 mg/g) lower chlorophyll content (4.20 mg/g) was observed invariety V_6 (Red Lipstick). Significantly higher plant growth index based on plant heightwas recorded invariety V_4 (Butterfly, 7.5) followed by variety V_5 (Ice, 6.4) whereas lesser plant growth indexwas observed in V_7(Rotundum, 3.4)Significantly higher survival and establishment percentage was observed in variety V_4 andV_5 (Butterfly, 100% & Ice, 100%) followed by variety V_7(Nitidum, 86.5%), while lowersurvival and establishment percentage (60%) observed in variety V_2(Earnest Round Leaf).

The variationin chlorophyll content, higher plant growth index andsurvival and establishment percentage of different varieties might be attributed to adaptability ofdifferent varieties having different genetic makeup which give different response to a givenenvironmental conditions of a specific location.Variation in SPAD value among thevarietiesisprimarilyinfluencedbygenetictraitsandenvironmentalconditions.Genetic variationsplayasignificantroleeachvarietypossessesdistincttraitsthataffectchlorophyllsynthesis andmetabolism(**Shriram*etal.*2008**). Varietiesthat arewell-suited totheprevailing

environmentalconditions andreceiveoptimal careduringestablishmentaremorelikelytoachievehighersurvivalrates. These results are in conformity with **Feminaetal.(2006),Rajeevan *etal.*(2007) a**nd**Agasimanie*t al.*(2010)**in the crop anthurium.

4. CONCLUSION

On the basis of the research trial conducted on aglaonema (*Aglaonema commutatumschott)*under50%shadenet conditions,itisconcludedthatvarietyV_4(Butterfly)performed significantly better in terms of plant height, stem girth, leaf area, plant spread, number ofleaves, plant growth index based on plant height per plant, plant growth index based onnumber ofleaves per plant, survival rate and establishment.

Table1.GrowthperformanceofdifferentAglaonemavarieties

Variety	Plant height*(cm)	Number ofleaves*	Plantspread*(cm^2)	Stem girth *(cm)	Leafarea (cm^2)
V_1– Dove	40.5	3.5	24.2	4.3	94.5
V_2 - Earnest Round Leaf	43.4	4.1	19.1	4.5	89.8
V_3 - Watson Dwarf	39.7	4.7	25.5	4.7	68.6
V_4– Butterfly	48.6	5.4	31.2	5.7	129.6
V_5– Ice	46.0	5.1	29.0	5.3	54.7
V_6 - Red Lipstick	39.2	3.9	17.7	4.7	48.8
V_7 - Nitidum	37.8	2.5	21.6	3.4	84.3
V_8 - Rotundum	-	-	-	-	-
F-TEST	**S**	**S**	**S**	**S**	**S**
SE.d(±)	0.32	0.21	0.37	0.2	1.54
$CD_{0.05}$	0.69	0.45	0.79	0.5	3.3
CV	1.13	6.05	1.87	5.9	2.31

***240Daysafterplanting**

Table2.Survivaland establishmentperformanceof differentAglaonemavarieties

Variety	Chlorophyll content	PlantGrowthIndex(basedonplant height)	Survivalper centage(%)
V_1 - Dove	23.0	3.8	73.3
V_2 - Earnest Round Leaf	20.0	3.8	60
V_3 - Watson Dwarf	29.6	5.5	66.6
V_4 - Butterfly	21.6	7.5	100
V_5 - Ice	35.6	6.4	100
V_6 - Red Lipstick	4.2	5.6	80
V_7 - Nitidum	68.2	3.4	86.5
V_8 - Rotundum	-	-	-
F-TEST	**S**	**S**	**S**
SE.d(±)	0.3	0.13	4.23
$CD_{0.05}$	0.65	0.28	9.07
CV	1.29	3.13	6.4

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