BIBLIOGRAPHY

TERCERO, KALYN A. October, 2008. Growth and Flowering of Colored Callas as Affected by the Number of Eyebuds in the Corm as Planting Materials. Benguet State University, La Trinidad, Benguet.

Adviser: Fernando R. Gonzales, PhD.

ABSTRACT

This study was conducted at the Ornamental Horticulture Research Area, Benguet State University, La Trinidad, Benguet from September 2007 to March 2008, to determine the effects of the number of eyebuds in the corms as planting materials in colored calla lily, and the economics of using the different techniques in calla lily corm production.

Corms with different number of eyebuds were planted in the growing media of 1:1 alnus leaves compost + garden soil. The variety used were white calla (check variety), yellow callas, purple callas and green callas. Results revealed that white callas with three eyebuds in the corm were the latest to produce roots and had the longest roots and shoots and produced more shoots per plant two months from planting. There were no rotted corms in all the treatments observed. All the corms survived, two months from planting.

The calla lilies produced only one flower for the duration of the study. White calla with there eyebuds in the corm produced more corms per plant and with more eyebuds per corm.

Yellow callas had the longest stems, while purple callas had the shortest stems at flowering. Significantly, the green callas with three eyebuds produced the longest flower budlength at harvest (50% anthesis).

Corms with three eyebuds is therefore, recommended for better cutflower quality and its has longer vaselife.

TABLE OF CONTENTS

INTRODUCTION

Calla Lilies are unique and elegant flowering plant that make a spectacular addition to the home garden. They are also very popular for bridal bouquets and cutflower arrangement. White calla are quite common, it is referred to as the local indigenous calla lily that are grown in Cordillera. These plants are also available in an array of beautiful colors including shades of green, pink, purple, yellow and orange.

Calla Lily of the genus *Zanthedeshia* belong to the family Aracea. It is more closely related to caladium and does not have the same habit and cultural requirement as found in the liliums. There are six known species of the genus such as *Z. aethhipica*, the common white calla lily; *Z. elliottiana*, the yellow calla; *Z. albumaculata*, the cream flowers; *Z. pentlandii*, deciduous or gold; *Z. rehmanii*, the pink and purple calla; and *Z. jucanda*, deciduous flower and spotted, but not use horticulturally.

Growing colored calla can be develop as a profitable business in Baguio and Benguet. Production of calla lilies as one of the flower industries can contribute to the economy of the country. It is a good source of income for our flower growers. However, only few flower growers in the Cordillera do the production because of expensiveness of the rhizomes or corms as a planting material. Growers save the rhizomes and corms from the previous plant for the next cropping.

Rhizome division is the most common propagation method used in calla lily, but varies depending on the species.

In the view of point seen in calla lily production, this study aims to help the calla lily growers to determine the effect of number of eyebuds in colored calla lily corm and it's effect in the cutflower yield and vaselife. Further, this study will help the students,

teachers and farmers to serve as guide for them, as the future reference on the growth and flowering of calla lily as affected by number of eyebuds in the corms as planting materials.

This study was conducted at the Ornamental Horticulture Research Area, Benguet State University, La Trinidad, Benguet from September 2007 to March 2008 to determine the effect of the number of eyebuds in the corm on the growth and flowering of colored calla; and its effect on the cutflower yield and vaselife.

REVIEW OF LITERATURE

The Plant Characteristics

Calla Lily of the genus *Zanthedeshia* belongs to the family Aracea. It is more closely related to caladium and does not have the habit and cultural requirements as found in true liliums.

There are six known species of the genus such as *Z. aethiopica,* which is a robust plant with thick stems carrying large, broad, fleshy dark green leaves. Grown commercially in Benguet in large quantities; *Z rehmannii* bear flowers ranging in color pink to wine red; *Z. albumaculata,* deciduous, cream flowers; *Z elliottiana* has yellow or golden flower and tall stems from early summer. It has a heart shaped, dark green, upright leaves which are covered with translucent white spots; *Z. pentlandii* deciduous or gold and *Z. jucanda,*, deciduous yellow and spotted, but not use horticulturally.

Cutflower yield is dependent on cultivar, tuber size and growth regulator applications. One to three flowers can be expected from 1 -5 centimeters diameter tuber. The flowers are green at macobud stage and gain full color upon opening. After pollination flowers often deepen on the color, begin to regreen and close (Rimando, 2001).

Propagation

On the propagation of colored calla lily, the most common used is by rhizomes and division (Larson, 1980).

Propagation of the species can be done by seed, although this propagation is limited to the true species, which have limited color range. Division of tubers after lifting

is a common means increasing initial stock numbers. This type of propagation should not be sustained for longer than two to three years as it is a very conducive method over the spread of viral and bacterial (Welsh and Baldwin, 1986).

Planting

Plant calla lily tubers, 2" deep with the developing shoots pointed upward (Garden Calla Lily Information").

Planting depth and density is widely dependent on size of tubers and expected duration in the ground. Tubers should have twice their depth of soil on top once the planting hole is covered (Rimando, 2001).

Irrigation

After planting, water is sparingly until leaves are unfurled. Provided soil and good drainage, generous amount of water can be applied and during flowering period. Once flowering complete, irrigation may be reduced to minimize bacterial soft viruses incidence (Rimando, 2001).

Light Requirement

Calla Lilies planted outdoors grow best – they require full sun to partial shade, depending on the climate.

Full sun encourages brighter and richer calla lily bloom color. In warmer climates through they should be planted in partial shade to avoid temperatures (Garden Calla Lily Information).

Soil Requirements

Calla Lily tubers require a loose, well draining soil (Garden Calla Lily Information). It grows in moist provided they have adequate drainage. Sandy loams are preferred as in additions to having good drainage makes lifting of the tuber easier. Moreover, tubers are easier to clean than those in sticker soils. Soil PH should be adjusted to 6.0 – 6.5 (Rimando, 2001).

Climatic Adaptability

Janick (1972) stated that climate, the summation of and areas weather which involves temperature, moisture and light effect are the factors whose actions and interactions must be considered in the physical environment of plants. This can be determined when where the plant will grow.

Callas prefer warm weather with the daytime temperature of between 70-75^{o}F and cooler nights around 55°F.

Variety Evaluation

Edmund and Andrew (1964) said that varieties differ in productivity as expression of hereditary genes influenced by the environment. According to Villareal and Wallace (19), the variety best adapted by the environment reflects the high yield potential.

Growth and yield of foliage depends on the interaction between the environmental factors and practices applied on them. Each plant has characteristics such as color, leaf shape, size and growth rate that determine its potential for consumer satisfaction (Manaker, 1981). Botangen (1983) reported that the heights of the different varieties from each other presumably because of varietal characteristics.

Morfe (1980), stated that there are varieties to give good results. They may not vary latest but there are varieties which will not fail to make good plant and flower. There is a good selection of colors and lots of them are plant suitable for the show bench. Most of these will flower the whole year under growing conditions.

Cutflower Characteristics

According to Baldwin and Welsh (1986), calla lily flower stem height is between 60-90 cm for premium grade cutflowers. Shorter stemmed flowers (30-40 cm) can be used as "posy arade" at a lower price. Flower quantity is dependent on cultivar/specie, tuber corm size and growth regulator application, one to three flowers can be expected from a 4-5 cm diameter (2 – inch tuber).

Vaselife and Longevity of Cutflowers

Temperature is the major factor affecting the storage and vaselife of flowers. This is through its influence on the respiration rate of the flowers, their response to ethylene, moisture loss and damage (Anonymous, undated).

Emilio (1996), stated that the rate of the respiration has a bearing on the longevity of any cutflowers.

MATERIALS AND METHODS

Materials

The materials used in the study were the corms of 4 varieties of colored calla lilies, greenhouse, plastic bags, 1:1 garden soil + alnus leaves compost and labeling materials.

Methods

This study was arranged in Factorial Completely Randomized Design (CRD) with the four varieties of colored calla lily as factor A and the number of eye buds in the corm as factor B. There were three replications per treatment combination. All sample plants were given the same maintenance and management routine operation practices such as irrigation, crop protection and fertilizer applications.

The treatments were as follows:

Factor A: Calla Lily Variety

Treatment Code	Variety	
V1	White calla	*Zanthedeshia aethiopica*
V2	Yellow calla	*Zanthesdia elliottiana*
V3	Purple calla	*Zanthedesdia rehmanii*
V4	Goddess green calla	*Zanthesdia aethipica*

Factor B: Number of Eye Buds in the Corm

T1 – 1 eyebud

T2 – 2 eyebuds

T3 – 3 eyebuds

The data gathered were as follows:

1. Number of days to root formation. This was taken by counting the number of days from planting the corms in the rooting media to root formation.

2. Length of roots (cm). This was taken by measuring the length of the roots after 2 months from planting.

3. Number of days to shoot emergence. This was taken by counting the number of days from planting to shoot emergence.

4. Number of shoots emerged. This was taken by counting the number of shoots that emerged from the corm.

5. Shoot lengths (cm). This was taken by measuring the length of the shoots produced after 2 months from planting.

6. Percentage (%) survival. This was obtained by using the following formula:

$$\text{Percentage of survival} = \frac{\text{Number of corm survived}}{\text{Total number of corms planted}} \times 100$$

7. Number of rotted corms. This was taken by counting the number of rotted corms after 2 months from planting in the growing media.

8. Percentage (%) of rotted corms. This was obtained by following the formula

$$\text{Percentage of survival} = \frac{\text{No. of rotted corm/single line}}{\text{Total number of corms planted}} \times 100$$

9..Yield

a. Number of corms. This was taken by counting the number of corms produced per plant.

b. Number of flower. This was taken by counting the number of flower produced per plant for the duration of the cropping period.

10. Cutflower quality

a. Stem length at harvest (cm). This was taken at 50% anthesis.

b. Flower bud length at harvest (cm). This was taken at 50% anthesis.

c. Vaselife. This was taken by counting the number of days of aesthetic value from placing the cutflowers in the vase up to the onset of senescence.

11. Documentation of the study through pictures.

RESULTS AND DISCUSSION

Number of Days to Root Formation

Effect of variety. Table 1 presents the number of days to root formation (0.5 cm long) as affected by the different varieties used. Among the four varieties, white calla lily plants were the earliest to produce roots with a mean of 4.11 days. This was followed by green calla lily with a mean of 8.44 days; while, yellow and purple calla lilies were the latest to produce roots with comparable means of 13.44 days and 14.22 days, respectively.

Effect of number of eyebuds in the corm. Significant differences were likewise observed among the three propagation materials used which are the number of eyebuds in the corm, as shown in table 1. Growing callas with three eyebuds in the corm significantly produced the earliest roots with a mean of 9.00 days from planting which had least number of days to produce roots, but was statistically comparable to those grown from corms with two eyebuds with a mean of 10.42 days. Significantly delayed root formation was noted in corms with only one eyebuds which had a mean of 10.75 days.

Interaction effect. No significant interaction effects were observed between the calla varieties and number of eyebuds in the corm on the number of days to root formation.

Length of Roots

Effect of variety. Significant differences were obtained in the length of roots measured two months from planting the corms of the different varieties. White calla lily

corms produced the longest roots with a mean of 16.22 cm but was statistically comparable to green calla lily which had a mean 14.89 cm. Slightly shorter roots were measured on yellow calla lily which had a mean of 13.89 cm. Purple calla lily had corm with a mean of 13.11 cm roots which the shortest roots measured among the four varieties growth.

Effect of number of eyebuds in the corm. Table 2 shows that there were no significant differences noted on the length of roots measured as affected by different propagation materials two months from planting. Nonetheless, three eyebuds present in the corm of planting produced the longest roots with a mean of 15.00 cm. The other varieties had comparable root lengths of 13.89 to 16.22 cm two months from planting.

Table 1. Number of days to root formation (0.5 cm root length)

TREATMENT	MEAN (Days)
Variety	
White calla (Check variety)	4.11[c]
Yellow calla	13.44[a]
Purple calla	14.22[a]
Green calla	8.44[b]
Number of Eyebuds in the Corm	
One eyebud	10.75[a]
Two eyebuds	10.42[ab]
Three eyebuds	9.00[b]

Means with common letter are not significantly different at 5% level of DMRT

Table 2. Length of roots two months from planting

TREATMENT	MEAN (cm)
Variety	
White calla (Check variety)	16.22[a]
Yellow calla	13.89[bc]
Purple calla	13.11[c]
Green calla	14.89[ab]
Number of Eyebuds in the Corm	
One eyebud	13.75[a]
Two eyebuds	14.83[a]
Three eyebuds	15.00[a]

Means with common letter are not significantly different at 5% level of DMRT

Interaction effect. The combined effects of the different calla varieties and number of eyebuds in the corm on length of roots two months from planting were not significant.

Number of Days to Shoot Emergence

Effect of variety. Table 3 presents the significant differences on the number of days to shoot emergence among the four varieties. White calla were the earliest to produce shoots with a mean of 7.56 days. This was followed by green calla with a mean of 12. 67 days then followed by yellow calla lily with a mean of 18.44 days. Significantly delayed shoot emergence was noted on purple calla lily with a mean of 22.44 days.

Effect of number of eyebuds in the corm. There were no significant differences noted on the number of days to shoot emergence as affected by the different propagation materials used which are the number of eyebuds in the corm. Nonetheless, three eyebuds in the corm with a mean of 14.50 days had the earliest to produce shoots.

Interaction effect. The combine effects of calla varieties and number of eyebuds in the corm on the number of days to shoot emergence were not significant.

Number of Shoot Emerged

Effect of variety. There were no significant differences noted on the number of shoots counted from the four varieties two months from planting the corms. Nonetheless,

Table 3. Number of days to shoot emergence

TREATMENT	MEAN (Days)
Variety	
White calla (Check variety)	7.56[d]
Yellow calla	18.44[b]
Purple calla	22.44[a]
Green calla	12.67[c]
Number of Eyebuds in the Corm	
One eyebud	16.00[a]
Two eyebuds	15.33[a]
Three eyebuds	14.50[a]

Means with common letter are not significantly different at 5% level of DMRT

white calla lily had higher number of shoots with a mean of 2.22, but was statistically comparable to the other varieties with a mean of 1.67 to 1.78 shoots per plant.

Effect of number of eyebuds in the corm. Statistical analysis showed that there were highly significant differences on the number of shoots emerged as affected by the different number of eyebuds in the corm. Three eyebuds in the corm produced more corms with a mean of 2.42. This was followed by two eyebuds in the corm with a mean of 1.92. The least number of shoot emerged was obtained in one eyebud in the corm with a mean of 1.17.

Interaction effect. There were no significant interaction between callus varieties and number of eyebuds in he corm on the number of shoot emerged two months from planting the corm.

Table 4. Number of shoot emerged two months from planting

TREATMENT	MEAN (Number)
Variety	
White calla (Check variety)	2.22[a]
Yellow calla	1.67[a]
Purple calla	1.78[a]
Green calla	1.67[a]
Number of Eyebuds in the Corm	
One eyebud	1.17[c]
Two eyebuds	1.92[b]
Three eyebuds	2.42[a]

Means with common letter are not significantly different at 5% level of DMRT

Shoot Length

Effect of variety. Table 5 shows that significantly longer shoots were measured on white calla lily with a mean of 21.22 cm. This was followed by green calla lily with a mean of 17.33 cm. Slightly smaller shoots were measured in yellow calla lily with a mean of 12.89 cm. Shortest shoots were obtained from purple calla lily with a mean of 11.44 cm two months from planting the corm.

Effect of number of eyebuds in the corm. Significant differences were observed among the different propagation materials which are the number of eyebuds present in the corm. Three eyebuds in the corm had the longest length measured with a mean of 16.50 cm. Growing callas with only one eyebud in the corms produced the shortest shoots measured with a mean of 15.08 cm, but was statistically comparable to callas grown from corms with two eyebuds with a mean of 15.58 cm.

Interaction effect. The combined effects of calla varieties and number of eyebuds in the corm on shoot length two months from planting, did not differ significantly.

Percentage of Survival

Results revealed that there were no significant differences obtained on the percentage of survival as affected by calla varieties grown and the number of eyebuds in the corm two months from planting.

Growth and quality of plants depend on the interaction between environmental factors and practices applied on them (Manaker, 1981).

Table 5. Shoot length

TREATMENT	MEAN (cm)
Variety	
White calla (Check variety)	21.22[a]
Yellow calla	12.89[c]
Purple calla	11.44[d]
Green calla	17.33[b]
Number of Eyebuds in the Corm	
One eyebud	15.08[b]
Two eyebuds	15.58[ab]
Three eyebuds	16.50[a]

Means with common letter are not significantly different at 5% level of DMRT

Number of Rotted Corms

Results shows that there were no rotted corms observed two months from planting the corms in the growing media as affected by calla varieties and number of eyebuds in the corm.

Percentage of Rotted Corms

Based on the results, there were no rotted corms calculated as affected by varieties and different numbers of eyebuds in the corm two months from planting.

Number of Flowers

Results revealed that only one flower was produced per plant for the duration of the study. Therefore, there were no significant difference recorded on the number of flowers per plant as affected by the calla varieties grown and number of eyebuds present in the corm.

Morfe (1980), mentioned that there were varieties that can be relied to give good results. They may not vary, but there are varieties which will not fail to make a good plant and flower.

Furthermore, Rimando (2001) stated that cutflower yield is dependent on cultivar, tuber, tuber size and growth regulator applications. One to three flowers can be expected from 4 - 5 centimeters diameter tuber in callas.

Number of Corms

Effect of variety. Table 6 shows the effect of varieties on the number of corms produced per plant. Significantly, white calla lily had the highest number of corms produced with a mean of 2.22, but was comparable to yellow and green calla lilies with a mean of 2.00 and 1.89. Purple calla lily produced the least number of corms with a mean of 1.33.

As Edmund and Andrews (1964) reported, the varieties differ in productivity as expression of hereditary genes influenced by the environment. The variety best adopted to environment reflects the high yield potential.

Effect of number of eyebuds in the corm. The effect of number of corms produced shown in Table. Propagation materials with three eyebuds in the corm significantly produced more corms with a mean of 1.83, lesser number of corms were

Table 6. Number of corms produced

TREATMENT	MEAN
Variety	
White calla (Check variety)	2.22[a]
Yellow calla	2.00[a]
Purple calla	1.33[b]
Green calla	1.89[a]
Number of Eyebuds in the Corm	
One eyebud	1.58[b]
Two eyebuds	1.83[ab]
Three eyebuds	2.17[a]

Means with common letter are not significantly different at 5% level of DMRT

produced by growing callas using corms with only one eyebud with a mean of 1.58 corm per plant.

Interaction effect. No significant interaction effects were rated between calla varieties and number of eyebuds in the corm, with regards to the number of corm produced per plant.

Number of Eyebuds per Corm

Effect of variety. Significantly, white calla lily had the higher number of eyebuds produced in the corm with a mean of 2.11, compared to the other varieties. Statistical analysis shows the comparable number of eyebuds on yellow, purple and green calla lilies with means of 1.67, 1.56 and 1.22 respectively.

Effect of number of eyebuds in the corm. There were no significant differences recorded on the number of eyebuds produced in the corms lifted from the ground after flowering. However, growing callas with two eyebuds and three eyebuds in the corms produced more eyebuds per corm in the daughter corms with the same mean of 1.75 corms per plant. Shortest number of eyebuds was recorded on one eyebuds in the corm.

Interaction effect. No significant interaction effects were observed between calla varieties and number of eyebuds in the corms with regards to the number of eyebuds produced in the daughter corms after planting.

Table 7. Number of eyebuds per corm

TREATMENT	MEAN
Variety	
White calla (Check variety)	2.11[a]
Yellow calla	1.67[b]
Purple calla	1.57[b]
Green calla	1.22[b]
Number of Eyebuds in the Corm	
One eyebud	1.42[a]
Two eyebuds	1.75[a]
Three eyebuds	1.75[a]

Means with common letter are not significantly different at 5% level of DMRT

Stem Length of Cutflower at Harvest

Effect of variety. Table 8 shows that significantly longer stems were measured in yellow calla at harvest (50% anthesis) with a mean of 46.49 cm. This was followed by green calla lily with a mean of 41.22 cm. Slightly shorter stems were measured on white calla lily with a mean of 39.11 cm. Shortest stems were measured in purple calla lily with a mean of 20.22 cm.

Baldwin and Welsh (1986) stated that the flower stem length between 60-90 cm for premium grade cutflowers. Shorter stemmed flowers (30-40 cm) can be used as a "posy" grade at lower price.

Effect of number of eyebuds in the corm. Results revealed that the stem length at harvest (50% anthesis) was not significant as affected by number of eyebuds in the corm. Nonetheless, using corms with only one buds in the corm produced longer stems compared to the other varieties.

Interaction effect. No significant interaction effects between variety and number of eyebuds in the corm with regards to stem length at harvest (50% anthesis).

Flower Budlength at Harvest

Effect of variety. Table 9 shows the effect of varieties on the flower budlength at harvest (50% anthesis). Significantly green calla lily had the longer flower budlength with a mean of 15.00 cm, followed by yellow calla lily with a mean of 11.67 cm. Slightly shorter was measured in white calla lily with a mean of 9.44 cm. Shortest flower budlength was measured in purple calla lily with mean length of 8.89 cm.

Table 8. Stem length at harvest

TREATMENT	MEAN (cm)
Variety	
White calla (Check variety)	39.11[c]
Yellow calla	46.89[a]
Purple calla	20.44[d]
Green calla	41.22[b]
Number of Eyebuds in the Corm	
One eyebud	37.25[a]
Two eyebuds	37.08[a]
Three eyebuds	36.42[a]

Means with common letter are not significantly different at 5% level of DMRT

Effect of number of eyebuds in the corm. Table 9 shows that there were no significant differences on the effect of number of eyebuds in the corm with regards to the flower budlength at harvest (50%) anthesis).

Interaction effect. Statistical analysis showed that no significant effect were obtained between varieties and number of eyebuds in the corm.

Vaselife

Effect of variety. The duration of aesthetic value of calla lily cutflowers harvest at 50% anthesis and held in tap water shown in Table 9. Result shows that green and yellow calla lilies had the longest vaselife with a same mean of 15.00 days. This was

followed by white calla lily with a mean of 13.56 days, although comparable with purple calla lily with a mean of 12.77 days

Temperature is the major factor affecting the storage and vaselife of flowers. This is influenced on the respiration rate of the flower, their response to ethylene, moisture and physical damage.

Effect of number of eyebuds in the corm. Table 10 shows that there were no significant effect of the number of eyebuds in the corm with regards to the vaselife of the cutflowers. Means ranged from 13.58 days to 14.33 days.

Interaction effect. Statistical analysis showed that there were no significant effect obtained between calla varieties and number of eyebuds in the corm with regards to vaselife.

Table 9. Flower budlength at harvest

TREATMENT	MEAN (cm)
Variety	
White calla (Check variety)	9.49[c]
Yellow calla	11.67[b]
Purple calla	8.89[c]
Green calla	15.00[a]
Number of Eyebuds in the Corm	
One eyebud	11.17[a]
Two eyebuds	11.25[a]
Three eyebuds	11.33[a]

Means with common letter are not significantly different at 5% level of DMRT

Table 10. Vaselife

TREATMENT	MEAN (Days)
Variety	
White calla (Check variety)	13.56[b]
Yellow calla	15.00[a]
Purple calla	12.77[b]
Green calla	15.00[a]
Number of Eyebuds in the Corm	
One eyebud	14.33[a]
Two eyebuds	13.58[a]
Three eyebuds	14.33[a]

Means with common letter are not significantly different at 5% level of DMRT

Figure 1. Overview of the experiment

Figure 2. White calla at flowering

Figure 3a. Yellow calla at vegetative stage

Figure 3b. Yellow calla flower at 50% anthesis (harvesting stage)

Figure 4a. Purple calla at vegetative stage

Figure 4b. Purple calla at flowering stage

Figure 5. Green calla at flowering stage (right bud stage)

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

This study was conducted at the Ornamental Horticulture Research Area, Benguet State University, La Trinidad, Benguet from September 2007 to March 2008 to determine the effect of the number of eyebuds in colored calla lily corm and the economics of using the different techniques in calla lily corm production.

Results revealed that there were no significant difference obtained on the number of days to root formation as affected by calla varieties and number of eyebuds in the corm. Significant difference was noted on the number of days to shoot emergence as affected by calla varieties but no significant differences on the effect of number of eyebuds in the corm.

Significantly, the longest roots and shoots was measured in white calla lily with three eyebuds in the corm while the shortest roots and shoots was measured in purple calla lily with one eyebud in the corm. Statistically, comparable number of shoots emerged were observed in the different calla varieties with mean ranging from 1.67 to 2.22 but no significant differences as affected by the number of eyebuds in the corm.

There were no significant differences was recorded on the percentage of survival. No rotted corms also counted or recorded in the growing media two months from planting.

On yield, white calla lily with three eyebuds in the corm produced more corms and eyebuds. For flower yield, the varieties with different number of eyebuds in the corm produced one flower per plant.

On cutflower quality, yellow had the longest stem length at harvest (50% anthesis), while purple calla was the shortest. Significantly, green calla lily had the longest flower budlength at harvest (50% anthesis) as affected by calla varieties and number of eyebuds in the corm. However, the shortest flower budlength was measured on purple calla lily with one number of eyebuds in the corm.

Vaselife is the duration of aesthetic value of cutflowers placed in the vase up to onset of senescence. Results shows that yellow and green calla lilies with one and three eyebuds in the corm had the longest vaselife.

Conclusion

Based on the results of the study, corms with three eyebuds can be used as a propagation materials for better cutflower quality and for it has longest vaselife especially yellow calla lily and green calla lily.

Recommendation

It is recommended that corms with three eyebuds should be used as a propagation materials for better cutflower quality and has a longer vaselife especially on yellow and green calla lilies.

LITERATURE CITED

ANONYMOUS, 2005. Tuber Commercial Growing, Information, August 18, 2007 http://ks.essortment.com/growingcallali_rncg.htm.

ANONYMOUS, 2005. Colored Calla Lily Bulb in all Colors Grants. August 18, 2007. http://www.flowerbulbs.com/ql_calla_commercial.php.

ANONYMOUS, ___. Agricarta. April 12, 2008. http://www.aginfone.com/agincarta.htm.

BALDWIN, S. and WELSH, T.E. 1986. Calla Lilies. A New Zealand Perspective Department of Hort. Sci. Massey University, Parlmeuton North, New Zealand. Pp. 40-46.

BOTANGEN, A. 1983. Varietal Performance of Eggplant under La Trinidad, Benguet Condition. BS Thesis. Mountain State Agricultural College, La Trinidad, Benguet. Pp. 23-24.

EDMUND, J.R. and F.S. ANDREWS. 1964. Fundamentals of Horticulture. New Delphi. Tata Mc Grow Hill Book Co. Inc. Pp. 403-404 and 407-409.

JANICK, J. 1972. Horticultural Science. San Francisco. W.H. Freeman and Co. P. 441.

LARSON, R.A. 1980. Introduction to Floriculture. Department of Horticulture Science. North Carolina State University. Raleigh, North Carolina. Pp. 290.

MANAKER, J.W. 1981. Interior Plantscapes Intallation Maintenance and Management. New Jersey. Prentice Hall. P. 283.

MORFE, 1980. African Violets. Australia Summit Book. P. 72.

RIMANDO, T. Jr. 2001. Ornamental Horticulture: A little giant in the Tropics. SEAMO Regional Center for Graduate Study and Research in Agriculture. UPLB. Pp. 190-192.

VILLAREAL, and WALLACE. _____

WELSH, T.E. and S. BALDWIN. 1986. Calla Lilies. A New Zealand Perspective Department of Hort. Sci. Massey University, Parlmerston North, New Zealand.

APPENDICES

Appendix Table 1. Number of days to root formation after two months

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	5	5	5	15	5
T_2	5	3	5	13	4.33
T_3	3	3	3	9	3
V_2T_1	11	13	16	39	13
T_2	15	16	11	42	14
T_3	13	13	13	39	13
V_3T_1	16	14	15	45	15
T_2	17	14	13	46	15.33
T_3	16	10	13	39	13
V_4T_1	8	10	11	29	9.67
T_2	8	8	10	26	8.67
T_3	5	8	8	21	7

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	601.000	200.333	67.40**	3.01	4.72
Block	2	20.722	10.361	3.49 ns	3.40	5.61
AB	6	4.833	0.806	0.27 ns	2.52	3.67
Error	24	71.333	2.972			
Total	35	697.889				

ns – not significant Coefficient of variation – 17.14%

Appendix Table 2. Length of roots (cm)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	14	16	15	45	15
T_2	17	17	18	52	17.33
T_3	18	15	16	49	16.33
V_2T_1	13	15	12	40	13.33
T_2	14	16	11	41	13.67
T_3	14	13	17	44	14.67
V_3T_1	10	14	12	36	12
T_2	14	13	14	41	13.67
T_3	15	13	13	41	13.67
V_4T_1	15	14	15	44	14.67
T_2	16	13	15	44	14.67
T_3	14	15	17	46	15.33

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	48.750	16.250	7.13**	3.01	4.72
Block	2	11.056	5.528	2.43 ns	3.40	5.61
AB	6	6.500	1.083	0.48 ns	2.52	3.67
Error	24	54.667	2.278			
Total	35	120.972				

ns – not significant Coefficient of variation = 10.39%

Appendix Table 3. Number of days to shoot emergence

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	8	10	8	26	8.67
T_2	9	6	7	22	7.33
T_3	8	6	6	20	6.67
V_2T_1	18	23	16	57	19
T_2	16	20	23	59	19.67
T_3	16	17	17	50	16.67
V_3T_1	28	20	18	66	22
T_2	23	25	21	69	23
T_3	26	23	18	67	22.33
V_4T_1	14	13	16	43	14.33
T_2	11	13	10	34	11.33
T_3	10	14	13	37	12.33

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	1150.556	383.519	52.29**	3.01	4.72
Block	2	13.556	6.778	0.92 ns	3.40	5.61
AB	6	23.111	3.852	0.53 ns	2.51	3.67
Error	24	176.000	7.333			
Total	35	1363.222				

ns – not significant Coefficient of variation = 17.73%

Appendix Table 4. Shoot lengths (cm)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	21	21	20	62	20
T_2	19	22	22	63	21
T_3	22	21	23	66	22
V_2T_1	12	13	13	38	12.67
T_2	13	15	12	40	13.33
T_3	14	13	11	38	12.67
V_3T_1	10	12	10	32	10.67
T_2	11	12	13	35	11.67
T_3	10	11	14	35	11.67
V_4T_1	18	16	15	49	16.33
T_2	17	15	16	48	16
T_3	20	18	21	59	19.67

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	532.556	177.519	98.32**	3.01	4.72
Block	2	12.389	6.194	3.43*	3.40	5.61
AB	6	18.944	3.157	1.75 ns	2.51	3.67
Error	24	43.333	1.806			
Total	35	607.222				

ns – not significant Coefficient of variation = 8.55%

Appendix Table 5. Number of shoot emerged

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	2	1	1	4	1.33
T_2	3	2	2	7	2.33
T_3	3	4	2	9	3
V_2T_1	1	1	1	3	1
T_2	1	2	2	5	1.67
T_3	2	3	2	7	2.33
V_3T_1	1	1	2	4	1.33
T_2	2	1	2	5	1.67
T_3	2	3	2	7	2.33
V_4T_1	1	1	1	3	1
T_2	2	2	2	6	2
T_3	2	2	2	6	2

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	1.889	0.630	2.27 ns	3.01	4.72
Block	2	9.500	4.750	17.10**	3.40	5.61
AB	6	0.944	0.157	0.57 ns	2.51	3.67
Error	24	6.667	0.278			
Total	35	19.000				

ns – not significant Coefficient of variation = 28.75%

Appendix Table 6. Stem length at harvest (cm)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	38	39	37	114	38
T_2	42	40	39	121	40.33
T_3	40	39	38	117	39
V_2T_1	48	47	48	143	47.67
T_2	47	46	48	141	47
T_3	46	47	45	138	46
V_3T_1	22	21	21	63	21
T_2	18	21	20	59	19.67
T_3	23	21	18	62	20.67
V_4T_1	42	43	42	127	42.33
T_2	39	42	43	124	41.33
T_3	40	41	39	120	40

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	3547.194	1182.398	644.94**	3.01	4.72
Block	2	4.667	2.333	1.27 ns	3.40	5.61
AB	6	18.889	3.148	1.72 ns	2.51	3.67
Error	24	44.000	1.833			
Total	35	3614.750				

ns – not significant Coefficient of variation = 3.67%

Appendix Table 7. Flower budlength at harvest (cm)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	9	9	10	28	9.33
T_2	10	9	9	28	9.33
T_3	9	10	10	29	9.67
V_2T_1	11	12	11	34	11.33
T_2	12	13	11	36	12
T_3	10	13	12	35	11.67
V_3T_1	10	9	8	27	9
T_2	9	8	9	26	8.67
T_3	8	9	10	27	9
V_4T_1	15	15	15	45	15
T_2	15	16	14	45	15
T_3	16	15	14	45	15

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	207.639	69.213	92.28**	3.01	4.72
Block	2	0.167	0.083	0.11^{ns}	3.40	5.61
AB	6	0.944	0.157	0.21^{ns}	2.51	3.67
Error	24	18.000	0.750			
Total	35	226.750				

ns – not significant Coefficient of variation = 7.70%

Appendix Table 8. Vaselife (days)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	15	13	12	40	13.33
T_2	14	12	12	38	12.67
T_3	16	13	15	44	14.67
V_2T_1	16	15	15	46	15.33
T_2	15	14	14	43	14.33
T_3	15	15	16	46	15.33
V_3T_1	12	13	14	39	13
T_2	13	14	12	39	13
T_3	12	12	13	37	12.33
V_4T_1	16	16	15	47	15.67
T_2	15	14	14	43	14.33
T_3	14	15	16	45	15

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	32.972	10.991	11.98**	3.01	4.72
Block	2	4.500	2.250	2.45ns	3.40	5.61
AB	6	7.278	1.213	1.32ns	2.52	3.67
Error	24	22.000	0.917			
Total	35	66.750				

ns – not significant Coefficient of variation = 6.80%

Appendix Table 9. Number of corms

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	2	2	2	5	1.67
T_2	2	3	2	7	2.33
T_3	3	2	2	7	2.33
V_2T_1	1	1	2	4	1.33
T_2	2	2	2	6	2
T_3	3	2	3	8	2.67
V_3T_1	2	1	1	4	1.33
T_2	1	1	1	3	1
T_3	2	1	2	5	1.67
V_4T_1	2	2	1	5	1.67
T_2	2	2	2	6	2
T_3	2	2	2	6	2

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	3.861	1.287	6.62**	3.01	4.72
Block	2	2.056	1.028	5.29*	3.40	5.61
AB	6	1.722	0.287	1.48ns	2.51	3.67
Error	24	4.667	0.194			
Total	35	12.306				

ns – not significant Coefficient of variation = 23.69%

Appendix Table 10. Number of eyebuds per corm

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
V_1T_1	2	2	1	5	1.67
T_2	2	2	2	6	2
T_3	3	3	2	8	2.67
V_2T_1	1	2	1	4	1.33
T_2	1	2	2	5	1.67
T_3	2	3	1	6	2
V_3T_1	1	2	2	5	1.67
T_2	2	2	2	6	2
T_3	1	1	1	3	1
V_4T_1	1	1	1	3	1
T_2	1	2	1	4	1.33
T_3	2	1	1	4	1.33

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULATED F	
					0.05	0.01
Treatment	3	3.639	1.213	4.37*	3.01	4.72
Block	2	0.889	0.444	1.60ns	3.40	5.61
AB	6	3.111	0.519	1.87	2.51	3.67
Error	24	6.667	0.278			
Total	35	14.306				

ns – not significant Coefficient of variation = 32.16%