စိုက်ပျိုးရေး၊ မွေးမြူရေးနှင့်
ဆည်မြောင်းဝန်ကြီးဌာန
စိုက်ပျိုးရေးဦးစီးဌာန

ပန်းမာန် ကဏ္ဍ ဖွံ့ဖြိုးတိုးတက်စေရန် Gamma ရောင်ခြည် အသုံးပြု၍ မျိုးသစ်များ ရရှိရန် ဆောင်ရွက်ခြင်း

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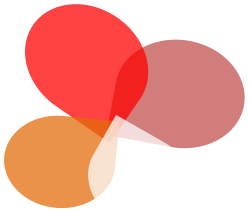
Introduction

- Floriculture has become an economically important role in the world
- Used for cut flowers, flower pots, decorative flowers as well as landscaping
- Colorful and varied flowers by using modern technology
- Mutation is important due to the desirability of the mutant.
- More than 3,200 mutant cultivars produced worldwide
- Mutation results in new traits which are passed on from parent to offspring



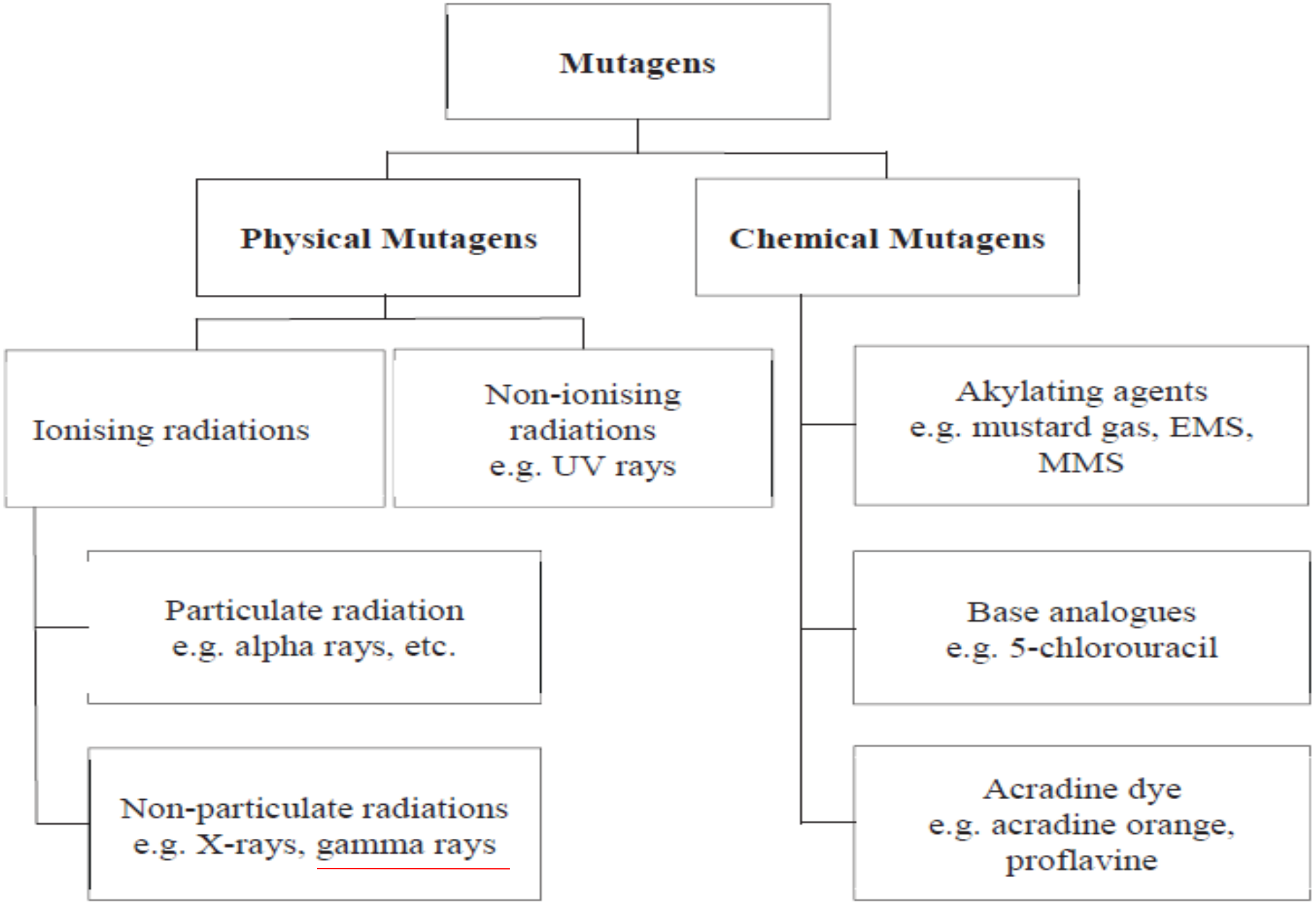


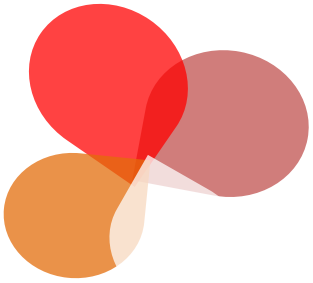
Figure 1. Common mutagens used in plant mutation induction.

Introduction

- Mutation by radiation is the most commonly used method to obtain new cultivars
- Especially vegetatively propagated plants including chrysanthemum.
- Chrysanthemum is one of the beautiful flowers in the world
- Very little research on floriculture and production of new cultivars in Myanmar.
- Necessary to conduct researches on the production of new cultivars of flowers using the resources available in our country.

Objectives

- To know the suitable concentration of gamma radiation to obtain new cultivars of chrysanthemum
- To observe these new cultivars could be able to marketable and superior to the existing cultivars



Collected cultivars

သရဖူ

ကိုရီးယား

ငုရွေဝါ

ဖိုက်စတား

အိုစာမရမ်း

ရွှေစိမ်း

စတားနီ

ရွှေဖြူ

ဆမ်းမားဝါ

ဆမ်းမားဖြူ

လပ်ကီး

သဲနီ

Materials and Methods

Treated cultivars - 4
Source - Shan State
Sowing Date - 22-12-2020

Shwe Sein

Shwe Phyu

Star Ni

Summer Yellow

Materials and Methods

- Evenly grow and well rooted cutting plants used for irradiation

Materials and Methods

Rate of Gamma radiation

(Treatments)

- 0 (Control)
- 10 Gy
- 20 Gy
- 30 Gy

25 plants / Treatment

Gamma Chamber

Data collection

- Survival (%)
- Plant height (cm)
- No. of flower/ plant
- No. of branches/plant
- Flower size
- Flower color

Color chart

✓ Statistical analyses were performed using Statistix 8 Analytical Software version 2.0.

Results and Discussion

Survival rate (%)

- Collected one month after transplanting

Name / Trt	0	10 Gy	20 Gy	30 Gy
Star Red	90	80	55	50
Golden White	90	80	60	55
Golden Green	95	90	80	70
Summer Yellow	85	65	55	20

Star Ni

control

10 Gy

mutant

20 Gy

mutant

Characters of mutant cultivar (Star Ni)

No	Character	Control	10 Gy	20 Gy	30 Gy
1	Plant height (cm)	71 a *	63 b	38 c	-
2	No of branches/plant	13 a	12 a	6 b	-
3	No of flowers/plant	6 a	6 a	4 b	-
4	Flower size (Length/Width)cm	4.5 /4.2	4.3/4.2	3.5 /3.5	-
5	Flower color	RAL 3027	RAL 3017	RAL3018	-

* Means separation within rows by LSD test at $p = 0.05$.

Shwe Phyu

control

10 Gy

20 Gy

mutant

Characters of mutant cultivar (Shwe Phyu)

No	Character	Control	10 Gy	20 Gy	30 Gy
1	Plant height (cm)	74 a *	73 a	70 b	-
2	No of branches/plant	14 a	12 a	7 b	-
3	No of flowers/Inflorescence	27 a	20 a	14 b	-
4	Flower size (Length/Width)cm	3.6 / 3.2	3.8 / 3.7	4 /3.7	-
5	Flower color	White (greenish yellow center)	White (greenish yellow center)	White (clear yellow center)	-

* Means separation within rows by LSD test at *p = 0.05.*

Shwe Seinn

control 10 Gy 20 Gy 30 Gy

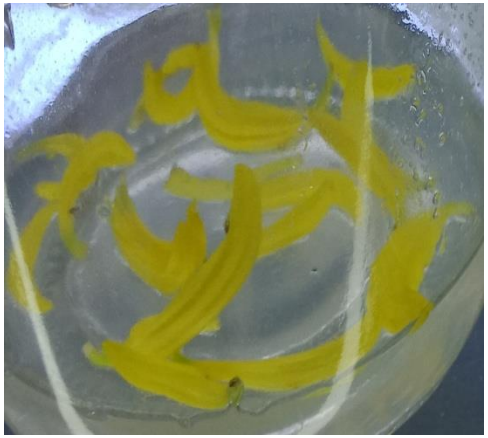
mutant

Characters of mutant cultivar (Shwe Sein)

No	Character	Control	10 Gy	20 Gy	30 Gy
1	Plant height (cm)	77 a *	73 b	66 c	60 d
2	No of branches/plant	16 a	14 b	9 d	11 c
3	No of flowers/Inflorescence	58 a	46 b	18 c	27 d
4	Flower size (Length/Width)cm	4.5/4	4/3.5	3.5/3.5	3/2.5
5	Flower color	RAL1018	RAL1023	RAL1028	RAL1016

* Means separation within rows by LSD test at $p = 0.05$.

Propagation by plant tissue culture method



1

2

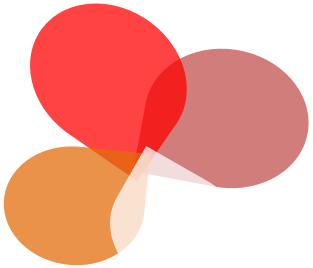
1. Inoculation of ray - florets on MS medium
2. Start shooting two months after initiation

Conclusion and Recommendation

- Three of the four treated cultivars showed significant symptoms
- In 2.0 krad treated cultivars significant change in flower color and shape and plant height ,the numbers of flowers per plant and flower size were reduced
- No different between control and 1.0 kard treated plants except Star Ni flower
- Gamma irradiation should not over the concentration of 3 krad in chrysanthemum plants.
- Gamma irradiation should be applied to the shoots which propagation by tissue culture method
- Using molecular technique should be used for identification
- Distinct cultivars should be conserved for propagation.

Technology Transfer

- Chrysanthemum flower production
- Green house cultivation
- Tissue culture technique
- Selection of marketable cultivars



THANK YOU