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Study of Effect of Temperature, Water, Light and Darkness on Seed Germination in *Luffa aegyptiaca Mill.*

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Abstract
Present observe describes the effect of temperature, water, light and darkness on seed germination in *Luffa aegyptiaca Mill* . (Cucurbitaceae). Seed germination is a Physico-chemical manner by using which the dormant embryo of the seed resumes active increase and forms seedling. Hormones are special organic materials related with increase associated occasions of flora ABA (abscisic acid.) is one among them. Seeds germination is adversely affected by the presence of abscisic acid. Auxins are control many features in flowers. Vernalization cuts the vegetative segment to result in flowering ensuing in elevated yield. Flowering is caused by florigen which synthesized with the aid of leaves. Stress is a temporary section which may be skilled by plant in any country of development. Water pressure can be as a result of lack or excess of water. On hydration, the seeds swell to mucilage formation. Excess or loss of salt results in salt stress. Commentary of plant growth is recorded after 15- 90 days and unearths that 1stpot offers first-class consequences. Due to this pot are installed environmental situation for statement of temperature effect, on seed germination & find that in early period of increase i.e. before flowering pots having most effective soil at 25^{0}C temperature showed better boom of root and better variety of leaves and large length of leaves. However later period pot having soil supplemented with bio-fertilizer and special temperature condition than circulate seed have germination but plant increase is lower. That result suggests bio-fertilizer and temperature is more effect at the boom of plants.

Keywords: Temperature, Water, Light, Darkness, Seed Germination, *Luffa aegyptiaca Mill*.

Introduction

Luffa aegyptiaca Mill. is broadly dispensed in the tropics and subtropics, as a cultivated and naturalized plant. Its cultivation is of historical starting place and its miles difficult to decide whether or not the local home is Africa or Asia. The plant takes place wild in West Africa. *Luffa* accommodates 7 species, four of these local to the old international tropics and 3 quite more distantly associated species indigenous to South the United States. Hybrids of *Luffa aegyptiaca Mill*. and *Luffa acutangula* are observed in cultivation. Those are bitter and inedible, however appropriate for the manufacturing of sponges.

Many elements are accountable for seed germination (Hilhort 1990).Water, temperature and air is essential for seed germination. Water is a basic necessity for seed germination as well as finest temperature & adequate quantity of air is also required for seed germination (Bradford &Bewley, 2002). Most of the seeds do not require light for his or her germination but light is critical for the germination of a few

photograph-blastic seeds. Seed germination depends on both internal and outside conditions (Bewley, 1997 b).The most important outside elements encompass temperature, water, oxygen, light or darkness (Borthwick et.al.1954). Numerous plant lives require exceptional variables for successful seed germination (Singh 1953); regularly this depends at the individual seed variety and is closely connected to the ecological conditions of a plant's herbal habitat (Copeland, & McDonald, 1995). For a few seeds, their destiny germination response is suffering from environmental conditions all through seed formation; most often these responses are forms of seed dormancy (Baskin and Baskin, 2001, Fenner& Thompson 2005). Our study goal is to the observation of the impact of temperature, water, mild and darkness on seed germination in *Luffa aegyptiaca Mill*.

Systematic position (According to Bentham & Hooker 1862)

Division - Phanerogams
Class - Dicotyledones
Sub-class - Polypetalae
Series - Calyciflorae
Order - Passiflorales
Family - Cucurbitaceae
Genus - *Luffa*
Species - *aegyptiaca*

Materials and methods

1st pot is installed favorable environmental circumstance where to be had is sufficient temperature. Now observe of low or excessive temperature impact on seed germination. 2nd pot ware put in favorable circumstance however give the extra water amount and regular water are given by drip approach. Now on this pot we take a look at the impact of water on seed germination. Third pot is installed artificial light wherein temperature is low. Now we study the impact of light on seed germination. 4th pot is put in darkish room for germination wherein temperature is reduced & observes the darkness effect of seed germination. 10-10 seeds of *Luffa aegyptiaca Mill* had been sown in every pot & examine the impact of temperature, water, mild, and darkness on seed germination of *Luffa aegyptiaca Mill*. The pots have been watered as in line with need and outcomes have been recorded after 15-90 days. The parameters for recording consequences is root and shoot period, number, of leaves, flower and culmination according to flowers (Dadlani& Agrawal, 1987).

Observation

The parameters for the check of effect of Temperature, Water, light and Darkness on Seed Germination of *Luffa aegyptiaca Mill* has been categories on fallowing:

(1) Temperature effect: Pots are putted in environmental situation & discovered the impact of temperature in seed germination. Seed sown the temperature is approximate at 25^0C and after 11days all sown seed are germinated. After 15 day of the seed sown we're gazing that pot no.1 the seeds are grown and locate that radical boom is better than plumule and increase the leaf size and leaf shade is plenty green. In line with time the temperature in regularly elevated whilst the temperature is 32^0C than regular affected to plant boom and the vegetation and fruits are gradually lower in size. Whilst the temperature is 400C whom lots flower are upward push at plant but these the cause of high temperature most flower and leaf are fall down at flowers and culmination are also small in length.

(2) Water effect: This is the pot experiments extra water added to seed germination and at the time of seed sowing the environment temperature approximate 25^0C. accordingly within the pot after 30 days of seed sowing there are not germinate of some other seed in water logging situations due to the fact seeds are dormant degree inside the motive of difficult seed coat and water logging circumstance. as a result after 35 day the water quantity is less within the pot and it at the same time as after five days the seed germination is being. However after 40-50 days of seed germination tons flower and culmination are rise up at plant. However these reason of high temperature, now not right boom of leaves, fruit and flower. Consequently fruit are smaller in length. While temperature is long past up approximate 41^0C than leaves are dry and boom of plant is lower.

(3) Light impact: For the germination of seed we took this pot in synthetic mild at room temperature. After 10 days of seed sowing 4 seed are germinated this time approximate 160C of room temperature as a consequence the cause of low temperature there aren't any extra seed germination. therefore in this pot at the time of seed germination plumule period is gradually will increase and leaf are small in length and the leaf shades is green yellowish and after 50 days plant boom is absolutely stopped and plant are dies on the low temperature situation.

(4) Darkness impact: This kind of examine is performed by Anderson & Boardman, (1964) on the greening of darkish-grown bean plant. Bean vegetation were grown within the darkish for 10-14 days and then transferred to non-stop artificial mild for varying durations. After illumination, the plastids were purified by means of differential and density-gradient centrifugation. The structure of the plastids turned into studied by using section-assessment and fluorescence microscopy. In our experiments the pots are put on darkish room for the seed germination and to the study of darkness results of seed germination. On this situation room temperature had been between 14-170C due to the fact in keeping with time the temperature is changed. Out of 8 days 3 seeds are germinate due to the fact no other seed germination at low temperature and absence of light. Therefore in this pot on the time of seed germination plumule duration is gradually will increase and leaves are small in size and leaf coloration is greenish yellow. After 45 days plant growth is less at low temperature and absent of sunlight resultant the leaves are yellowish and plant died. All this four parameters result is presented in the table-1.

Table – 1:Growth of *Luffa aegyptiaca* plants after 15-90 days in various pots

after days	15				30				45				60				75				90			
POT NO.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
RL (cm)	3	-	6	5	6	-	7	7	12	5	9	10	14	7	10	D	17	10	D	D	19	14	D	D
SL (cm)	2	-	9	10	19	-	20	19	60	4	35	30	100	25	45	-	130	60	-	-	160	90	-	-
LN	4	-	2	2	14	-	6	5	50	4	9	8	130	12	14	-	200	55	-	-	250	125	-	-
FN	-	-	-	-	-	-	-	-	1	-	-	-	7	-	-	-	12	3	-	-	15	6	-	-
FrN	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	5	-	-	-	6	3	-	

abbreviation :RL=Root length, SL= Shoot length, LN=number of leaves, FN= Flower numbers, FrN= Fruit number ,D=Death

Table-2: Rate of germination in *Luffa aegyptiaca* 16^0C in darkness.

SN	Days of germination	Germination (%)	Rate of germination
1	1	0	0
2	5	78	76
3	10	90	12
4	15	92	2

Plant growths are recorded after 15, 30, 45, 60, 75 and 90 days and discover that 1st pot offers exceptional results. Because of this pot are installed environmental situation for commentary of temperature effect, on seed germination. It is obvious from effects of tables that in early period of growth i.e. earlier than flowering pots having best soil at 25^0C temperature confirmed better growth of root and better variety of leaves and huge size. But later length pot having soil supplemented with bio-fertilizer and distinctive temperature condition than move seed have germination but plant increase is decrease. That result shows bio-fertilizer and temperature is more impact on the growth of plant life (Hsiao &Vidaver 1989). Seeds had been imbibed in water for 15 days in darkness at 16^0C. Germination changed into recorded every day up to 15 days (table-2). The temperature effect on seed germination is given in fallowing figure.

Discussion

For the seed germination is important of daylight, oxygen and mild because inside the absent of mild on extra chloroplast are manufacture or absolutely absent of chloroplast (Mayer and Mayer, 1982). While leaf sizes are small and yellow in shade consequently 25-30^0C temperature is critical for the seed germination. In the pot no.1, 25^0C temperature is occupant on the seed germination time that's important for germination and plant increase consequently well boom of plant. However temperature is boom at 40^0C than plant growth is quite effected and the leaves and flowers are decline from vegetation. For that reason greater water in pot no.2, after 30 days on seed germination whilst lower water quantity than after 35 days seed germination is begin. Accordingly in pot no. Three, seeds are germinate in presence of artificial light however plant increase is enormously effects at low temperature and occasional light circumstance. While pot no. Four, installed dark room where light and temperature could be very low for this region few seeds are germinated.

Conclusion

Some inner & outside elements affected seed germination and the physiological strategies of seed germination. Some crucial ones are Water – Dry seeds do no longer germinate and water is essential for his or her germination. Suitable temperature – Seeds require a gold standard temperature for their germination. Most advantageous temperature range for exceptional germination of seed is 25 to 30ºC. Light – most of the seeds both do now not require mild or do now not germinate within the presence of light. Some seeds need mild for germination. Seedlings grow greater vigorously throughout darkness alternatively in mild. Darkness – The seedling will become too lengthy and yellow in the absence of mild. Chlorophyll dose no longer from and stem becomes tender long and yellow in the plant life grown in the absence of mild. a few inner function like adulthood of embryo-Many seeds first of all does now not have hormones required for the improvement of the embryos. Such seeds take time for germination. Viability – normally the seeds remain possible for a specific period. Maximum viability has been stated inside the

case of lotus seeds. Dormancy – in many plant life seed remains in dormant stage for a while (Hendrick&Taylorson 1974).

Economically the *Luffa aegyptiaca Mill* is cultivated in the course of the country. Fruits are used as vegetable & dried fruits used as a bathtub sponge. It's far used for washing and scrubbing utensils in addition to the human frame & the manufacture of hats, insoles of shoes, automobile-wipers, pot-holders, table-mats, door and bathtub-mats, sandals and gloves. The fiber has also been used for its shock and sound soaking up homes, as an example in helmets and as a clear out in engines. Medicinally *Luffa aegyptiaca Mill*. Root used for the treatment of constipation and as a diuretic and leaves used to sell wound restoration and to maturate abscesses. The seed oil is used for the treatment of pores and skin issues. Unripe end results were used as fish poison.

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