# SUMMARY

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The ornamental woody trees are very important. In addition to their use in landscape or as wind breaks, some of them are considered as timber trees and utilized mainly in industries like furniture, fuel and other uses.

Some of the trees were chosen to study the effect of nutrion with potassium nitrate ($KNO_3$) during germination stage compared with soaking the seeds in different solutions (thiourea and yeast extract) as well as the effect of seed collection date on the germination and seedling growth.

The experiments were carried out at the Experimental Station of Horticulture Recearch Institute in Giza during 1999-2000 and 2000-2001 seasons.

## *A.* The first part:-

**- Effect of putassium nitrate ($KNO_3$) as nutrition, thiourea (thiocarbamide $CH_4N_2S$) and yeast extract on germination and seedlings growth:-**

The trees chosen were *Albizzia lebbeck* Banth. and *Taxodium distichum* (L.) Rech. The seeds were soaked in 1000, 5000 or 10000 p.p.m. potassium nitrate ($KNO_3$) for 24 hrs., 1000, 3000 or 5000 p.p.m. thiourea (Thiocabamide $CH_4N_2S$) for 24 hrs., 1000, 3000, 5000 or 7000 p.p.m. yeast extract for 24hrs. in addition to the control (soaking in tap- water for 24 hrs). The seeds of *Albizzia lebbeck* Banth. were collected on the 15th of March and planted in the 15th of July in the same season while, *Taxodium distichum* (L.) Rich. seed were collected on the 15th of November and planted on 15th of December in the same season.

The treated seeds were planted in pots of 30 cms diameter and 20 cms depth, filled with a mixture of sand and clay (1:1 v/v) under the normal nursery conditions. Twenty seeds were planted in each pot.

**The following results were obtained:-**

**A- *Albizzia lebbeck* Benth.:-**

1-The highest germination percentage and rate resulted from soaking the seeds in potassium nitrate ($KNO_3$) at 1000 p.p.m..

2-The fastest germination periodicity resulted from soaking the seeds in thiourea at 1000 p.p.m..

3-The tallest seedlings and the highest number of leaves resulted from soaking the seeds in potassium nitrate ($KNO_3$) at 1000 p.p.m..

4-The thickest seedlings were produced from soaking the seeds in potassium nitrate ($KNO_3$) at 1000 or 5000 p.p.m..

5-The tallest roots resulted from soaking the seeds in either potassium nitrate ($KNO_3$) at 5000 p.p.m. or soaking the seeds in thiourea at 3000 p.p.m..

6- The heaviest fresh weight of stem, leaves and roots resulted from soaking the seeds in thiourea at 3000 p.p.m..

7- The heaviest dry weight of stem resulted from soaking the seeds in either thiourea at 3000 or 5000 p.p.m..

8- The heaviest dry weight of leaves was obtained from soaking the seeds in either thiourea at 3000 p.p.m. or yeast extract at 5000 p.p.m..

9- The heaviest dry weight of roots resulted from soaking the seeds in thiourea at 3000 and 5000 p.p.m..

**B- *Taxodium distichum* (L.) Rich.:-**

1- The highest germination percentage resulted from soaking the seeds in yeast extract at 7000 p.p.m..

2- The highest germination rate was obtained from soaking the seeds in potassium nitrate ($KNO_3$) at 1000 p.p.m..

3- The fastest germination periodicity resulted from soaking the seeds in potassium nitrate ($KNO_3$) at 5000 p.p.m..

4- The tallest and thickest seedlings with the highest number of leaves resulted from soaking the seeds in thiourea at 5000 p.p.m..

5- The tallest roots resulted from soaking the seeds in yeast extract at 1000 p.p.m..

6- The heaviest fresh and dry weights of the stem, leaves and roots resulted from soaking the seeds in thiourea at 5000 p.p.m..

## B. The second part:-

- **Effect of date of seed collection on germination and seedlings growth:-**

The trees chosen were *Albizzia lebbeck* Benth., *Taxodium distichum* (L.) Rich. and *Cupressus sempervirens* L.

The seeds of *Albizzia lebbeck* Benth. were collected in November 15$^{th}$ , December 15$^{th}$, January 15$^{th}$, February 15$^{th}$ and March 15$^{th}$ from El Ismailia during the two seasons.

The seeds of *Taxodium distichum* (L.) Rich. were collected in September 15th, October 15th, November 15th, and December 15th from El Fayom during the two seasons.

The seeds of *Cupressus sempervirens* L. were collected in September 15th, October 15th, November 15th, December 15th and January 15th from El Kassasin during the two seasons.

The seeds were planted directly in pots 30 cms. diameter and 20 cms depth, filled with a mixture of sand and clay (1:1 v/v) under the normal nursery conditions as 25 seeds were planted in each pot and each replicate contained 4 pots (100 seeds) in each date four replicats from each plant.

**The following results were obtained:-**

**A. *Albizzia lebbeck* Benth.:-**

1- The highest seed content of total phenols resulted from the seeds collected in the third date (15th Jan.).

2- The highest seed content of total amino acids and total carbohydrates resulted from the seeds collected in the second date (15th Dec.).

3- The highest seed content of total indoles were obtained from the seeds collected in the first date (15th Nov.).

4- The heaviest weight of 100 seeds and moisture (%) resulted from the seeds collected in the first date (15th Nov.).

5- The highest germination percentage, rate and periodicity were obtained from the seeds collected in the fifth date (15th Mar.).

6- The tallest seedlings were obtained from the seeds collected in the second date (15th Dec.)

7- The highest number of leaves resulted from the seeds collected in the third (15th Jan.) or the second date (15th Dec.).

8- The thickest seedlings were produced from the seeds collected in the first (15th Nov.) or the second date (15th Dec.).

9- The tallest roots resulted from the seeds collected in either the first (15th Nov.) or the second date (15th Dec.).

10- The highest number of nodules resulted from the seeds collected in the second date (15th Dec.).

11- The heaviest fresh weight of stem, leaves and nodules were obtained from the seeds collected in the second date (15th Dec.).

12- The heaviest fresh weight of roots resulted from the seeds collected in either the first (15th Nov.) or the second date (15th Dec.).

13- The heaviest dry weight of stem and nodules were obtained from the seeds collected in the second date (15th Dec.).

14- The heaviest dry weight of leaves and roots resulted from the seeds collected in the third (15th Jan.) and the second date (15th Dec.).

It is clear that the best date was the fifth date (15th Mar.) since it gave superiority in seed germination while, the best date was the second date (15th Dec.) for superiority in seedlings growth because the seed collection in the fifth date (15th Mar.) was accompanied with lowest levels of the seed content of total phenols and total indoles level. However, in the second date (15th Oct.) the seed contents of total amino acids and total carbohydrates level were the highest levels.

**B. *Taxodium distichum* (L.) Rich. :-**

1- The highest seed content of total phenols resulted from the seeds collected in the first date (15th Sep.).

2- The highest seed content of total amino acids resulted from the seeds collected in the second date (15th Oct.).

3- The highest seed content of total carbohydrates results from the seeds collected in the third date (15th Nov.).

4- The highest seeds content of total indoles was produced from the seeds collected the fourth date (15th Dec.).

5-The heaviest weight of 100 seeds resulted from the seeds collected in and the second date (15th Oct.).

6- The highest germination percentage and rate resulted from the seeds collected in the third date (15th Nov.).

7- The highest seeds moisture (%) resulted from the seeds collected in the first date (15th Sep.).

8- The highest germination periodicity resulted from the seeds collected in the first (15th Sep.) and the third date(15th Nov.).

9- The tallest seedlings and the highest number of leaves were obtained from the seeds collected in the second date (15th Oct.).

10- The thickest seedlings resulted from the seeds collected in the second (15th Oct.) and the third date (15th Nov.)

11- The tallest roots were obtained from the seeds collected in the fourth (15th Dec.) and the first date (15th Sep.).

12- The heaviest fresh weight of stems and leaves were obtained from the seeds collected in the second (15th Oct.) and the fourth date (15th Dec.).

13- The heaviest fresh weight of roots was obtained from the seeds collected in the first (15th Sep.) and the fourth date (15th Dec.).

14- The heaviest dry weight of stem resulted from the seeds collected in the second (15th Oct.) and the fourth date (15th Dec.).

15- The heaviest dry weight of leaves were obtained from the seeds collected in either the first (15th Sep.) or the fourth date (15th Oct.).

16- The heaviest dry weight of roots resulted from the seeds collected in the second date (15th Oct.).

It is clear that the best date was the third date (15th Nov.) since it gave superiority in seed germination while, the best date was the second date (15th Oct.) for superiority in seedling growth because the seed collection in the third date (15th Nov.) was accompanied with the highest seed contents of total carbohydrates and the lowest total phenols levels. However, in the second date (15th Oct.) the seed content of total amino acids level were the highest while, total indoles levels were the lowest.

**C. *Cupressus sempervirens* L. :-**

1- The highest seed contents of total phenols, total amino acids and total carbohydrates resulted from the seeds collected in the third date (15th Nov.).

2- The highest seed contents of total indoles and seeds moisture (%) were obtained from the seeds collected in the first date (15th Sep.).

3- The heaviest weight of 100 seeds and the highest germination percentage, rate and periodicity resulted from the seeds collected in the third date (15th Nov.).

4- The tallest seedlings, with the highest number of leaves and the thickest seedlings were obtained from the seeds collected in the second date (15th Oct.).

5- The tallest roots resulted from the seeds collected in the third (15th Nov.) and the first date (15th Sep.).

6-The heaviest fresh and dry weight of stems, leaves and roots resulted from the seeds collected in the second date (15th Oct.).

It is clear that the best date was the third date (15th Nov.) for superiority in seed germination while, the best date was the second date (15th Oct.) for superiority in seedling growth because the seed collection in the third date (15th Nov.) was accompanied with the highest seed contents of total carbohydrates and total amino acids total indoles level was the lowest.

**Recommendation:-**

From the prerviously mentioned results in could be concluded that seed collection and seed dormancy of these trees may be broken to obtain good seedling as follows:-

1- For *Albizzia lebbeck* Benth. soaking the seeds in potassium nitrate ($KNO_3$) at 1000 p.p.m. gave the highest germination percentage and a good seedlings growth.

Seeds may be collected in the fifth date (15th Mar.) to give the highest germination percentage, followed by the seeds

collected in the second date (15th Dec.) to give a good seedlings growth.

2- For *Taxodium distichum* (L.) Rich. soaking the seeds in yeast extract at 7000 p.p.m. gave the highest germination percentage while, soaking the seeds in thiourea at 5000 p.p.m. gave a good seedling growth.

Seeds may be collected in the third date (15th Nov.) to give the highest germination percentage, followed by the seeds collected in the second date (15th Oct.) to give a good seedling growth.

3- For *Cupressus sempervirens* L. seeds may be the seeds collected in the third date (15th Nov.) to give the highest germination percentage followed by the seeds collected in the second date (15th Oct.) to give a good seedling growth.