

HASTENING SEED GERMINATION OF *CASSIA FISTULA* LINN.

by

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**Summary.** Seed of *Cassia fistula*, an ornamental flowering tree, treated with concentrated sulphuric acid for 15 minutes and 30 minutes and then thoroughly washed and soaked in water for 24 hours before sowing, started germinating the next day and gave, with in 5 days, 84 and 90% germination, respectively. Soaking in acid for one hour, followed by 24 hours soaking in water gave 76% germination after 5 days. About 90% germination was obtained in 20 days with acid soaking for 15 and 30 minutes not followed by water soaking. Hot water soaking for 24 hours resulted in 26% germination in 5 days which increased to 36% in 20 days. Soaking seed in hydrogen peroxide for 15 minutes, 30 minutes and one hour followed by soaking in water for 24 hours gave, in 5 days, 7, 8 and 11% germination, respectively. When soaking in hydrogen peroxide was not followed by soaking in water, germination was delayed by 5 days. Control and cold water soaking for 24 hours gave only about 8% germination in 20 days.

**Introduction.** *Cassia fistula* is a beautiful ornamental tree with profuse and gorgeous yellow panicles of flowers. It is widely grown as an ornamental in Pakistan. Because of hard seed coat, seed germination is slow-less than 10 % in 20 days. A number of treatments were tried to find out if the germination could be hastened. The results are reported below:

**Method.** Seed pods of *Cassia fistula* were collected from the trees in June, 1980 and the seed extracted from them mechanically. Sound seed were separated from the unsound. 300 sound seed were allotted to each treatment in six replications of 50 seed each. The treatments were as follows:

| Number         | Description   |
|----------------|---|
| T <sub>1</sub> | No treatment.   |
| T <sub>2</sub> | Soaking in cold water for 24 hours.   |
| T <sub>3</sub> | Soaking in H <sub>2</sub> O <sub>2</sub> for 15 minutes then in cold water for 24 hours.  |
| T <sub>4</sub> | Soaking in H <sub>2</sub> O <sub>2</sub> for 30 minutes, then in cold water for 24 hours. |
| T <sub>5</sub> | Soaking in H <sub>2</sub> O <sub>2</sub> for 60 minutes, then in cold water for 24 hours. |
| T <sub>6</sub> | Soaking in H <sub>2</sub> O <sub>2</sub> for 15 minutes.                                  |
| T <sub>7</sub> | Soaking in H <sub>2</sub> O <sub>2</sub> for 30 minutes.                                  |

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|                 |  |
|-----------------|--|
| T <sub>8</sub>  | Soaking in H <sub>2</sub> O <sub>2</sub> for 60 minutes.   |
| T <sub>9</sub>  | Soaking in sulphuric acid (H <sub>2</sub> SO <sub>4</sub> ) for 15 minutes, then in cold water for 24 hours. |
| T <sub>10</sub> | Soaking in H <sub>2</sub> SO <sub>4</sub> for 30 minutes, then in cold water for 24 hours.                   |
| T <sub>11</sub> | Soaking in H <sub>2</sub> SO <sub>4</sub> for 60 minutes, then in cold water for 24 hours.                   |
| T <sub>12</sub> | Soaking in H <sub>2</sub> SO <sub>4</sub> for 15 minutes.  |
| T <sub>13</sub> | Soaking in H <sub>2</sub> SO <sub>4</sub> for 30 minutes.  |
| T <sub>14</sub> | Soaking in H <sub>2</sub> SO <sub>4</sub> for 60 minutes.  |
| T <sub>15</sub> | Immersing seed in boiled water, then allowing to cool for 24 hours.  |

All seed were rolled in Arasan and then sown in moist sand in petri dishes and the dishes were kept in a germinator under an alternating temperature of 30° C for eight hours and 16° C for 16 hours. The test was conducted for 40 days, from 20th June to 30 th July, 1980.

**Results.** The results of germination are given below:

| Treatment       | Germination % after |         |         |         |
|-----------------|---------------------|---------|---------|---------|
|                 | 5 days              | 10 days | 20 days | 40 days |
| T <sub>1</sub>  | 0                   | 4       | 7       | 7       |
| T <sub>2</sub>  | 5                   | 8       | 8       | 8       |
| T <sub>3</sub>  | 7                   | 8       | 8       | 10      |
| T <sub>4</sub>  | 8                   | 10      | 10      | 12      |
| T <sub>5</sub>  | 11                  | 12      | 12      | 13      |
| T <sub>6</sub>  | 0                   | 10      | 12      | 14      |
| T <sub>7</sub>  | 0                   | 10      | 14      | 16      |
| T <sub>8</sub>  | 0                   | 4       | 6       | 8       |
| T <sub>9</sub>  | 84                  | 88      | 88      | 90      |
| T <sub>10</sub> | 90                  | 92      | 92      | 92      |
| T <sub>11</sub> | 76                  | 82      | 82      | 83      |
| T <sub>12</sub> | 0                   | 32      | 90      | 91      |
| T <sub>13</sub> | 0                   | 40      | 86      | 88      |
| T <sub>14</sub> | 0                   | 10      | 20      | 20      |
| T <sub>15</sub> | 26                  | 33      | 36      | 40      |

The best treatments are soaking in sulphuric acid for 15 minutes and 30 minutes followed by soaking in cold water for 24 hours. There is no significant difference in these two treatments.

The second best treatment is soaking in sulphuric acid for one hour followed by soaking in water for 24 hours. It appears that soaking in sulphuric acid for one hour reduces germination as compared to soaking in sulphuric acid for 30 minutes.

Soaking in acid for 15 to 30 minutes not followed by soaking in water for 24 hours is the next best treatment giving about the same germination as the above acid plus water soaking treatments but after 20 days. There is no significant difference between acid soaking for 15 minutes and 30 minutes. Prolonging the soaking time in acid to one hour, not followed by soaking in water for 24 hours, reduces germination percentage even after 40 days to 20%. Immersing seed in boiled water which was then allowed to cool for 24 hours gave 26% germination within 5 days, rising to 40% after 40 days.

There is no significant difference between soaking seed in cold water and in hydrogen peroxide for 15 minutes, 30 minutes and 60 minutes, all followed by soaking in cold water for 24 hours. If hydrogen peroxide soaking is not followed by soaking in cold water, germination is delayed and starts after 6 days instead of one day. Control gave the lowest germination percentage.

| Treatment       | 5 days | 10 days | 20 days | 40 days |
|-----------------|--------|---------|---------|---------|
| T <sub>1</sub>  | 0      | 4       | 7       | 7       |
| T <sub>2</sub>  | 2      | 4       | 8       | 17      |
| T <sub>3</sub>  | 7      | 8       | 8       | 17      |
| T <sub>4</sub>  | 8      | 10      | 10      | 17      |
| T <sub>5</sub>  | 11     | 11      | 11      | 17      |
| T <sub>6</sub>  | 0      | 10      | 11      | 17      |
| T <sub>7</sub>  | 0      | 10      | 14      | 17      |
| T <sub>8</sub>  | 0      | 4       | 0       | 17      |
| T <sub>9</sub>  | 38     | 38      | 38      | 17      |
| T <sub>10</sub> | 00     | 00      | 00      | 17      |
| T <sub>11</sub> | 35     | 35      | 35      | 17      |
| T <sub>12</sub> | 0      | 32      | 00      | 17      |
| T <sub>13</sub> | 0      | 05      | 38      | 17      |
| T <sub>14</sub> | 0      | 10      | 00      | 17      |
| T <sub>15</sub> | 30     | 30      | 30      | 17      |