Garden of Inheritance – A small Guide.

Welcome Novice! Here you can learn how to discover the Laws of Heredity using a simulator.

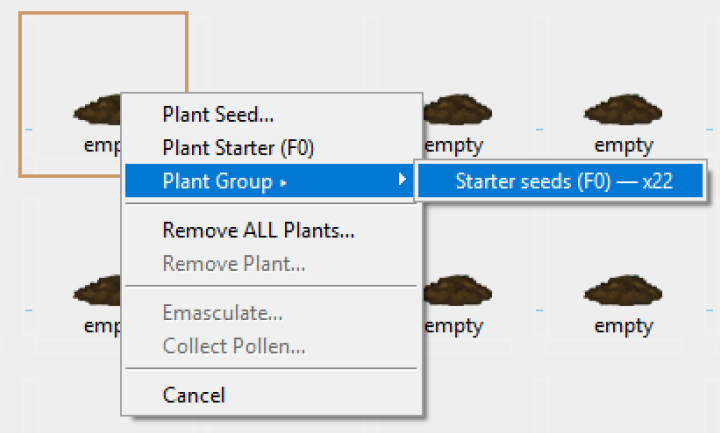
I. Unlocking the Mendelian Law of Dominance

(Flower Colour Example)

Press **"H"** for help and shortcut keys.

1. **Don't Start the Day Cycle.**
   - Use Fast Forward (FF) only.

2. **Plant the Starter Seeds (F0)**
   - Right-click on an empty plot → Plant Group → Starter Seeds F0.



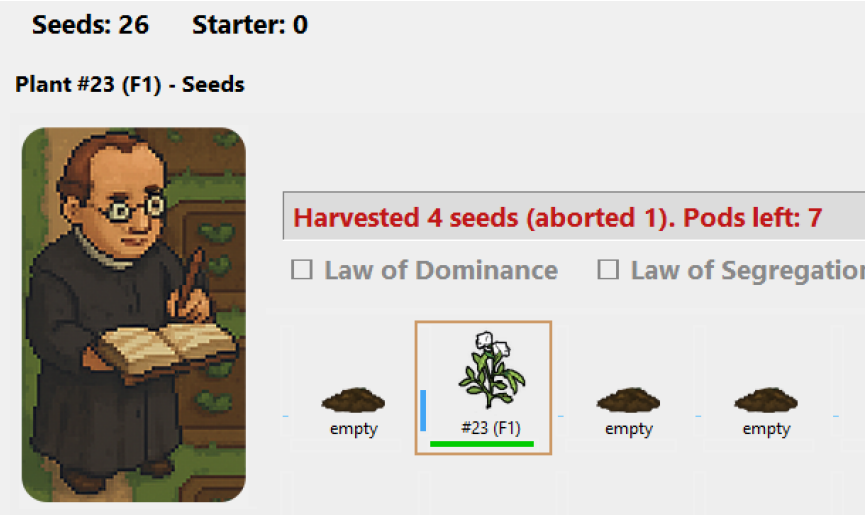
3. **Grow the Plants to Maturity**

   - Click Fast Forward (shortcut F) and enter ~35 days to let plants grow until mature pods develop.

   (Watering is handled automatically during FF).

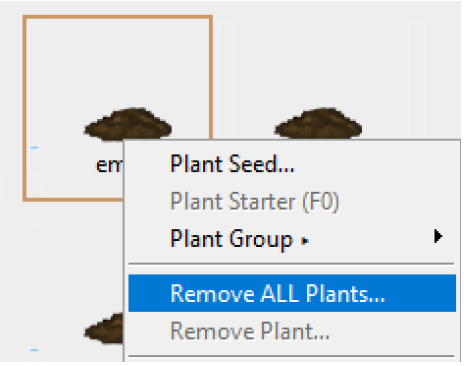
4. **Harvest White-Flower Seeds**
   - Select any plant with white flowers.
   - Click Harvest Seeds (shortcut S) once to collect a few seeds from a single pod.

5. **Harvest Purple-Flower Seeds**
    - Select 3–4 purple-flowered plants and harvest three pods (3x shortcut “S” for ~10-15 seeds) from each.
    - Harvest counts appear briefly in the Notification box below the Date/Temperature/Weather display.



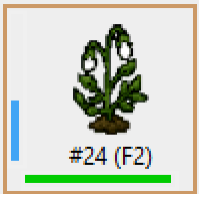
6. **Plant the Harvested Seeds**
    - Plant the seeds in groups as done for the F0 Starter seeds and grow them using FF until they form mature pods.
    - Harvest only very few seeds from white-flowered (recessive) plants.
    - Choose wisely the purple batches without (white-flowered individuals) as a plant homozygous for purple flower color is needed.

7. **Create Space for the Next Generation**
    - Right-click → Remove ALL plants

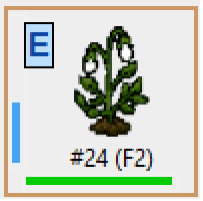


8. **Plant Seed Groups**
    - Right-click an empty plot → Plant Group to select harvested seeds.
    - Groups are planted around the selected plot.
    - Open the Summary (Shift + O) for some additional information on your seeds and to discard unwanted ones.

9. **Emasculate Plants at the Budding Stage**
    - Grow plants to the budding stage.

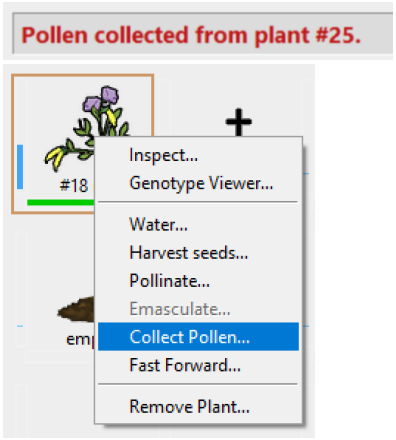


    - Right-click → Emasculate (shortcut E).
    - Successful emasculation shows an **"E"** indicator.

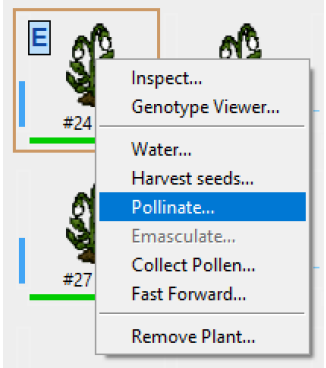


    - Do not miss the right stage, avoid too many FF days.
    - Peas self-fertilize if not emasculated!

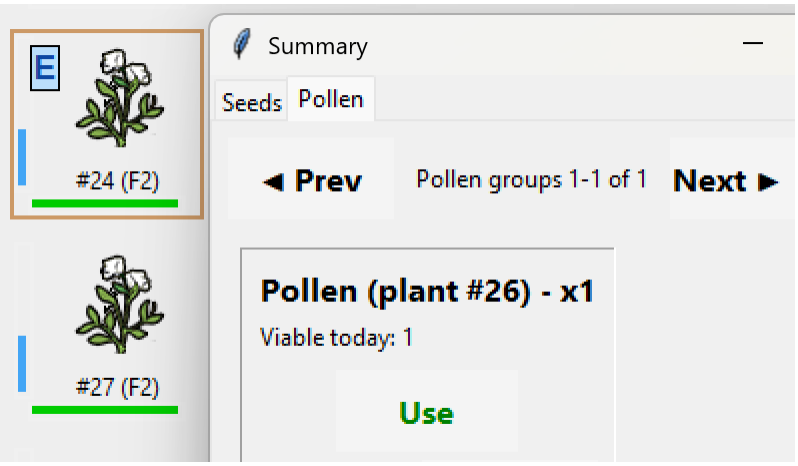
10. **Collect Pollen During Flowering**
    - During morning/noon flowering: select a plant → Collect Pollen (shortcut C).



11. **Perform Cross-Pollination**
    - Right-click an emasculated plant → Pollinate (shortcut P).

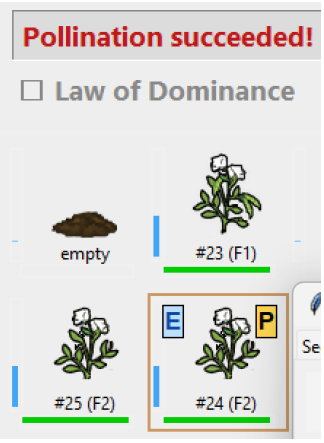


    - The Summary Window will pop up.



- Choose a previously collected pollen and click the “Use” button.

- A **“P”** indicator confirms success.

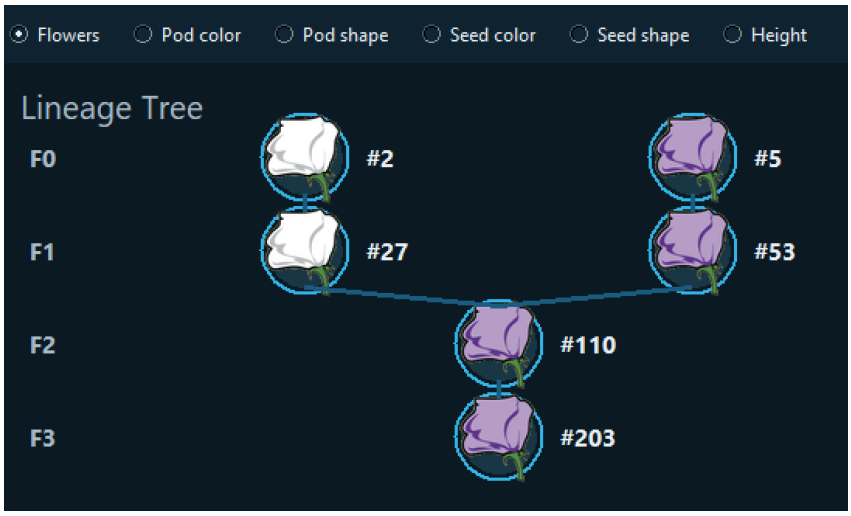


12. Grow and Harvest the Crossed Pods

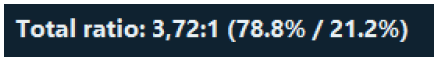
- Let crossed pods grow.
- Harvest seeds from all pods.
- Plant the crossed seeds and observe phenotypes.

13. Analyse Inheritance (Discovering Mendelian Laws 1-3)

- Open Trait Inheritance Explorer:
    - **i.** Right-click on a plant → click Inspect (or use the Inspect button).
        1. Take a look at the Lineage Tree



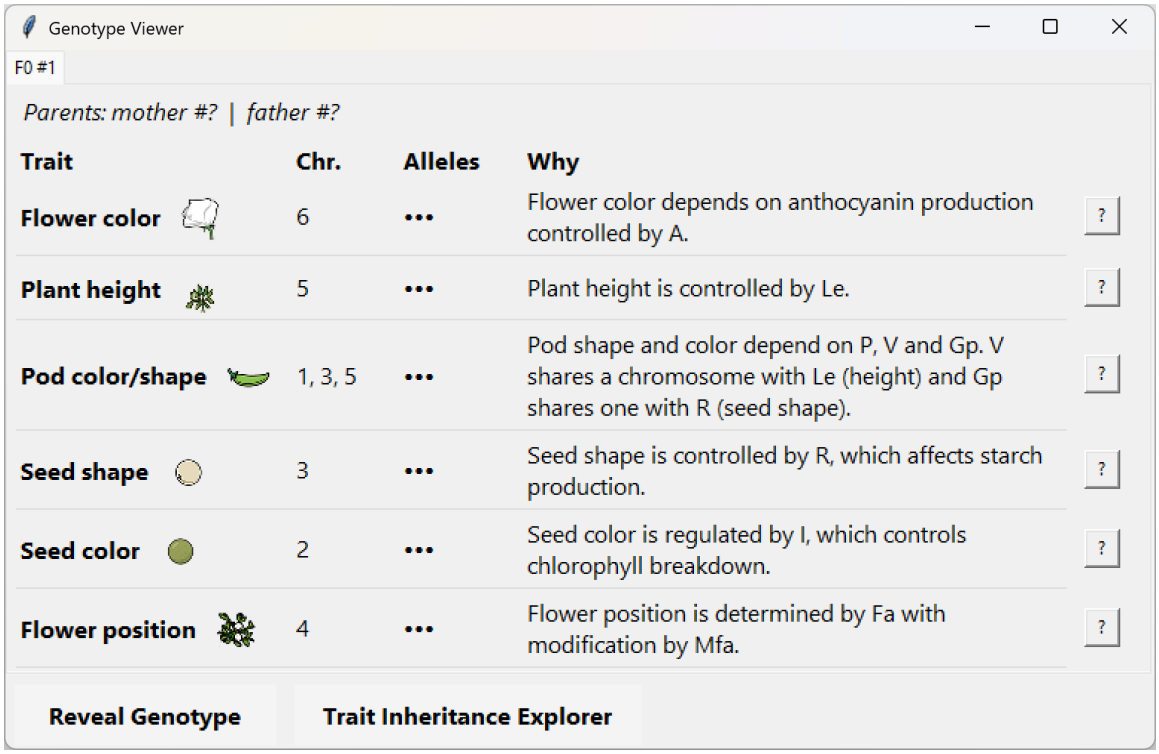
2. Choose different traits and watch Ratio (right bottom)



ii. Export plants whose inheritance patterns illustrate Mendelian laws.

1. This will credit any Mendelian Law triggered by the selected plant and its siblings and produce a .txt file with useful information of this plant (sim folder/export).

- You can also take a look at the Genotype Viewer. Note: Taking a look at the plants traits is for free, but revealing the Genotype (e.g. A/A, A/a, a/a) will not allow you to unlock any of the Mendelian Laws anymore.



II. How to successfully grow plants in this Simulator (General remarks)

1. **Planting Seeds**
    a. Click an empty plot to plant a seed.
    b. Each plot can contain exactly one plant.
    c. After planting, the plot displays a seed icon, showing that growth has started.
2. **Growth Stages**
    a. Plants grow through several development phases (seed → seedling → young plant → adult).
    b. Each phase advances as the in-game day progresses.
3. **Weather and Temperature Effects**
    a. Temperature may change several times per day and affects growth and water levels.
    b. Rain increases water levels for all plants.
    c. Extreme heat speeds up water evaporation, so check your plants more often on hot days.
4. **Harvesting Seeds**
    a. When a plant reaches its final stage and all traits are revealed, a Harvest Seeds button appears.
    b. Harvesting creates a new packet of seeds based on that plant's genotype.
    c. You can plant these new seeds in any empty plot to grow the next generation (F1, F2, etc.).
5. **Fast-Forward Mode**
    a. Use Fast Forward to speed up many in-game days while still simulating weather, watering, and growth.
6. **Plant Death**
    a. Plants with very low health have an increasing chance of dying.
    b. Dead plants disappear from the plot and must be replanted with a new seed.
7. **Re-Planting and Experimenting**
    a. Once a plot becomes empty (either through harvest or plant death), you can plant a new seed at any time.
    b. Try planting many different combinations to explore Mendelian inheritance patterns. Can you discover the three Mendelian laws?