**Student worksheet: Wind-dispersed seeds**

Most plants grow from seeds. Seed **dispersal** is important because when baby plants, or **seedlings**, fall right beneath the parent plant, they grow too closely together and **compete** for light, water, and nutrients. During dispersal, seeds are spread over a wide area, decreasing the competition between seedlings and allowing plants to grow in new territory (where they might be better able to thrive).

Seeds are dispersed in many different ways. In flowering plants such as apple trees, dogwood, or blueberries, the seeds are located inside an edible fruit. Animals eat both the fruit and the seeds, and the undigested seeds are dispersed in animal feces. Other fruits, such as coconuts, float and can be carried by water. Some fruits, which are typically not as tasty or sweet, get a ride from unsuspecting animals such as sand spurs. These seeds have hooks that attach to an animal's furry coat. Wind can also disperse seeds if the seeds are lightweight: Dandelion fruits are suspended from cottony parachutes and are carried away by the wind. The fruit of maple trees have wings that let them float on air; fruits such as these are called samaras.

Wind-dispersed seeds are generally small in size (more lightweight) and have special structures such as wings or fluff to catch the wind and travel far.

**In this experiment, you will design a fruit that uses wind to disperse far from its parent. The fruit that is blown the farthest from the fan is the winner!**

Draw your model fruit here:

Table 1

Data showing how far my model fruit will disperse in the wind

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mass of fruit (g) | Surface area of fruit (cm2) | Trial | Distance traveled (cm) | Average distance traveled (cm) |
| Fruit model  number |  |  | Trial 1 |  |  |
| Trial 2 |  |
| Trial 3 |  |
| Trial 4 |  |

Question: What factors help a wind-dispersed seed travel far from the parent tree?

Hypothesis:

Prediction:

What design did the winning "fruit" have? Why was this a particularly effective disperser? Was it built better, stronger, or lighter?

What were the variables in this experiment?

Independent:

Dependent:

Controlled:

What was our control (the comparison group)?

Name three ways plants disperse their seeds:

Class data

Table 2

Average distance traveled by fruit models when dispersed by wind

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Distance  traveled (cm) | Mass (g) | Surface area (cm2) | Average distance traveled (cm) |
| Control (no wings added) | Trial 1 |  |  |  |
| Trial 2 |
| Trial 3 |
| Trial 4 |
| Model # 1 | Trial 1 |  |  |  |
| Trial 2 |
| Trial 3 |
| Trial 4 |
| Model # 2 | Trial 1 |  |  |  |
| Trial 2 |
| Trial 3 |
| Trial 4 |
| Model # 3 | Trial 1 |  |  |  |
| Trial 2 |
| Trial 3 |
| Trial 4 |
| Model # 4 | Trial 1 |  |  |  |
| Trial 2 |
| Trial 3 |
| Trial 4 |
| Model # 5 | Trial 1 |  |  |  |
| Trial 2 |
| Trial 3 |
| Trial 4 |
| Model # 6 | Trial 1 |  |  |  |
| Trial 2 |
| Trial 3 |
| Trial 4 |

Conclusion: Does the data support one of the hypotheses made in class? Which one? How?

Table 3

Fruit classification and dispersal modes

|  |  |  |
| --- | --- | --- |
| **Name of fruit** | **Fruit classification** | **Probable dispersal method** |
| **Lemon** | **Hespiriduim** (leathery/glandular exocarp, partitions visible in cross section, many seeds) |  |
| **Zuchinni Squash**  **Pumpkin Cucumber** | **Pepo** (no partitions, leathery exocarp, many seeds) |  |
| **Peach**  **Cherry**  **Pistachio**  **Coconut** | **Drupe** (fleshy mesocarp, stony endocarp, usually one seed) |  |
| **Snow peas**  **Green beans**  **Sand spur**  **Peanut** | **Legume** (splits along two seams, many seeds) |  |
| **Maple** | **Samara** (winglike outgrowth, dry fruit [i.e., “winged achene”], one seed) |  |
| **Acorn**  **Walnut** | **Nut** (hard exocarp, single seed, dry fruit) |  |
| **Tomato**  **Green pepper**  **Grapes**  **Banana** | **Berry** (fleshy, produced from one ovary, many seeds) |  |
| **Sunflower**  **Dandelion**  **Grains** | **Achene** (one seed that is attached to pericarp at only one point) |  |
| **Strawberries**  **Blackberries** | **Aggregate** (fruit made of many seeds produced in more than one ovary but all from one flower) |  |
| **Apple**  **Pear** | **Pome** (have a core with several small seeds inside, surrounded by a tough membrane; fleshy, edible fruit outside of this membrane) |  |