

## Sex in the Garden Update

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### The Unanswered Question That Has No Doubt Bothered You for the Last Month!

#### Are flowering plants male or female?

- The majority of flowering plants are hermaphroditic, developing flowers that contain both pistils and stamens. Hermaphroditic flowers produce both male and female gametes, but there is no actual genetic difference, i.e., X or Y, between these gametes.
- However, except in self-fertilizing flowers, the pollen gametes come from another individual, so all pollen gametes are referred to as “sperm”, and the gamete in the embryo sac is an “egg”.
- The dioecious system, with separate male and female individuals, is of course the rule in animals, but is found in only 4% of flowering plant species.
- In some monoecious species (both “sexes” present in the same plant) such as corn, individuals possess separate staminate and pistillate flowers and produce gametes of both sexes in physically separate parts of the plant.
- In most monoecious plants, both pollen and eggs are produced in the same flower.

#### Pollen Tube Growth

- In flowering plants, pollen tube growth is very rapid and typically is completed within a day. This allows seeds to be produced quickly, which is why there are annual flowers.
- This does not occur in conifers, and full pollen tube growth in some conifers can take over a year to be completed. Seeds are thus not produced quickly in the same year that the conifer flowers, as in flowering plants, which is why there are no annual conifer species.

#### “X and Y” VS “Z and W” Gametes

- In mammals, the female is XX and produces X gametes, while the male is XY and produces both X and Y gametes, so it is the male’s gamete that determines the progeny’s sex.
- In many other animals (e.g., bird; some fish, reptiles, insects and crustaceans, etc.), the opposite occurs, and the ovum (egg) determines the sex of progeny. Males are ZZ and females are ZW, and the gamete terms Z and W used to distinguish this difference from X and Y sex-determination systems.