



## Creating a Self-Sustaining Tomato Garden

### Entry Document

The annual Salsa Festival is coming to town and tomatoes are in high demand! Recently, your community has been chosen as the site of a local tomato farm to help meet local demands for tomatoes. As you know, plants and animals that are used for food often come with many different characteristics, such as color and taste. In your town, there are two popular types of garden tomatoes – red tomatoes, which are often used in cooking due to their tangy flavor, and yellow tomatoes, which are prized for their generally sweet taste.



We at the **Tomatoes Are Us Farmers Co.** understand the importance of meeting customers' demand. Previous research of the tomato market has shown that while both red and yellow tomatoes are exceedingly popular, red tomatoes have always been at least twice as popular as yellow tomatoes, and we project the upcoming years to follow the same pattern.

We are asking your team to use the Engineering Design Process to develop a method for producing tomatoes to meet the customer demand for both red and yellow tomatoes over the next five years. Your plan must show how we can use asexual or sexual reproduction to meet the local demands for both kinds of tomatoes.

For your 3-minute presentation, you must include up to three graphic organizers that show how your method will produce both yellow and red tomatoes as well as any pros and cons of your chosen method. Finally, the farm should be self sustaining, which means that the only seeds that will be provided are for the first bunch of tomatoes. All tomatoes from that point forward must be pollinated, produced, and grown at the farm.

Extra consideration will be given to plans that include ideas for either increasing yellow tomatoes or decreasing the amount of red tomatoes, should the market change in the future.

The representative from the Tomatoes Are Us Farming Co. will have questions for you. Please be sure to rehearse your presentation well and be ready to answer the questions from him and the audience. Be enthusiastic so you can sway the representative to select your proposal. If your plan is chosen, there may be opportunities for an expanded contract in the frozen food science industry.

As you watch the video about Genetic Variation in Organisms, I hope you gain some ideas about the importance of this field of study to the world's organisms.

The Tomatoes Are Us Farming Co.



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### Entry Document, continued

#### Expert Roles for the Design Team

##### Team Leader

As the Team Leader Expert, you are responsible for seeing the project through to completion. You will need to constantly assess where team members need help and assist them. You will need to keep the product rubric in hand and constantly refer back to it to make sure that your team is meeting the criteria. You will be the lead presenter and making sure that your team is mindful of your audience and the way you plan the presentation. You will work with the team to develop and present the ideas of the group.

##### Genetic Specialist

As the Genetic Specialist, you apply knowledge of biology and reproduction to select useful traits from parent species and develop those traits in their offspring. You will learn about the models, such as Punnett Squares, that are used to describe the inheritance of traits. You will be responsible for demonstrating how to best maintain the consistent traits in your tomato supply on the farm to meet customer demands.

##### Horticulturalist

As the Horticulturalist, your primary knowledge is about the growth, harvest, and storage of crops. You provide information to your team about tomatoes including their traits and their best growing environments. You will become a specialist in the advantages and disadvantages of sexual and asexual reproduction to the long-term success of producing red and yellow tomatoes.

##### Public Relations Expert

Public relations (PR) is about managing reputation. As the PR specialist, you aim to gain understanding and support for clients as well as to influence opinion and behavior. PR officers use all forms of media and communication to build, maintain, and manage the reputation of their clients. These range from public bodies or services to businesses and voluntary organizations. They communicate key messages, often using third-party endorsements, to defined target audiences in order to establish and maintain goodwill and understanding between an organization and its public.