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Studies on Strawberry Cultivation

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Strawberries (*Fragaria ananassa*) are a type of fruit native to Europe and North America, but they can be found around the world. The fruits have been enjoyed by humans for thousands of years, with records showing that ancient Greeks used them in recipes as far back 3000 BC. These days strawberries are famous for their bright red colour and sweet flavour, which makes them perfect for snacking. Strawberries contain high levels of Vitamin C, folic acid, fiber, iron and potassium; all important elements for human health. They also contain antioxidants which help protect cells against free radical damage caused by exposure to environmental pollutants such as smoke and smog. When buying fresh strawberries look out for plump berries with firm skin that has a vibrant shade of red – avoid any puny or mushy looking ones! For maximum flavour pick up your produce from local farmers markets rather than supermarkets who stock plastic punnets filled with rock hard specimen months old picked green! Once at home store your basket in the fridge where it will last 4-5days maximum before going bad...and don't forget to enjoy some fresh strawberry compote on crackers or toast – delicious. In 2019, world production of strawberries was nine million tons, led by China with 40% of the total.

Botanical Description

The botanical description of strawberry (fragaria ananassa) is as follows: Strawberry is a perennial herbaceous plant belonging to the genus Fragaria and family Rosaceae. It grows up to 10-12" in height, with glossy green trifoliate leaves measuring 3–5 cm long. The white five-petalled flowers measure 1–2 cm across and produce small fruits that ripen to red or yellowish colors when ripe. Its thin-skinned fruit has numerous tiny seeds scattered on its surface – these are called "achenes". A single flower yields 0-14 drupelets, which develop into individual strawberries surrounding the ovary wall. Each cultivate variety produces slightly different sizes and shapes of strawberries depending on their environment conditions during growth season and cultivar.

Origin

The origin of strawberry (Fragaria ananassa) is believed to be in the Andes mountains, between Chile and Peru. It was first cultivated by the Incas around 600-700 CE and it was then introduced to Europe in the 17th century by Spanish explorers. It has since become very popular all over the world due to its sweet flavour and bright red colour. Strawberries are now grown commercially on every continent except Antarctica, with U.S., Mexico, Spain, Poland and Egypt being some of the largest producers in 2020.

Economic Significance

Strawberries are produced commercially in 76 countries. China is the largest producer and the top five producing nations also include USA, Mexico, Turkey and Spain. Production continues to increase, particularly in Asia, North and Central America, and North Africa with a matching increase in demand in many parts of the world. The development of the strawberry industry in California in the twentieth century was followed by rapid expansion of local industries in many other parts of the world including the Mediterranean region, Central and South America, Australia and China. In all of these regions, it was possible to identify the areas where a combination of short days with warm or mild temperatures made it possible to produce high yields over a long season. Plant breeding has had a very significant role in increasing the geographical adaptation of strawberries. The most notable achievement has been to transform the crop from a plant with a short season of production and a modest yield of small, soft berries to a highly productive plant capable of cropping over a long period with large, firm berries suitable for shipping over long distances.

Major Species

In addition to the dominant commercial variety (*Fragaria ×ananassa*), the musk, or hautbois, strawberry (*F. moschata*) is also cultivated in some areas for its unique musky aroma and flavour. Wild strawberries grow in a variety of habitats, ranging from open woodlands and meadows to sand dunes and beaches. The woodland, or alpine, strawberry (*F. vesca*) can be found throughout much of the Northern Hemisphere and bears small intensely flavourful fruits. Common North American species include the Virginia wild strawberry (*F. virginiana*) and the beach, or coastal strawberry (*F. chiloensis).*

Post Harvest Treatment

Post-harvest treatment of strawberries is essential in order to maintain their quality and extend their shelf life. This can be done through a variety of methods, including the following:

1. Washing: Strawberries should be washed with cool running water before they are stored or consumed. This will help remove dirt and bacteria that could damage the fruit's delicate skin.

2. Cooling: After washing, the berries should be cooled as quickly as possible in cold storage facilities or containers filled with ice packs so that they maintain high levels of freshness and flavor for longer periods of time. 3. Packaging: Once cooled, strawberries should then be packaged properly using airtight packaging materials such as breathable paper bags or plastic wraps so as to keep out moisture and prevent premature spoilage due to mould growth or dehydration during long-term storage at room temperature conditions.

Pathology and Control of Diseases

Grey mould: It is a fungal disease causes Botrytis fruit rot, also known as gray mold, is widespread in the environment. It can infect strawberry flowers when spores landing on them and are exposed to free water during cool weather.

Infections first appear as small brown lesions, often under the calyx. Lesions begin to sporulate within a day after resumption of growth, and sporulation appears under the calyx as a gray velvety mold. Lesion size increases rapidly. Both green and red berries are susceptible. Infected berries maintain their original shape and take on a velvety, gray-brown coat of spores. Initially, rotted areas are soft and mushy, becoming leathery and dry in the absence of high humidity. Millions of spores are produced on each berry and become airborne at the slightest touch or breeze.

Management: Presently, control of Botrytis fruit rot ranges from repetitive fungicide treatments with no cultural control to intensive cultural methods with no fungicide applications. Environmental conditions in various microclimates play an important role in determining control strategies. Planting in areas where wind can rapidly dry out the plants and interrupt disease progress helps to reduce disease incidence.

References

1. Aaby, K., and Remberg, S. F. (2015). "Strawberry phenolics and impact of ripening," in
2. Processing and Impact on Active Components in Food, ed. V. R. Preedy (Cambridge, MA: Academic Press).
3. Bianco, L., Lopez, L., Scalone, A. G., Di Carli, M., Desiderio, A., Benvenuto, E., et al. (2009). Strawberry proteome characterization and its regulation during fruit ripening and in different genotypes. J. Proteomics 72, 586–607. doi: 10. 1016/j.jprot.2008.11.019
4. https://en.wikipedia.org/wiki/Strawberry
5. https://www.britannica.com/plant/strawberry
6. https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/strawberries
7. Organic Strawberry Production Manual Paperback – March 1, 2000 by Steven T. Koike.
8. Integrated Pest Management for Strawberries, 2nd Edition Paperback – July 21, 2008 by Larry Strand.
9. Strawberries (Crop Production Science in Horticulture) 2nd Editionby James F. Hancock PhD.