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Citrus Cultivation in Rajasthan

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Citrus cultivation in Rajasthan, a state in north-western India, faces several challenges due to the region's arid climate and extreme temperature variations. However, citrus farming has been successfully established in parts of the state, primarily in the southern and eastern regions where the climate is relatively milder.

Citrus cultivation in Rajasthan:

- Varieties of Citrus:** Citrus fruits grown in Rajasthan include oranges, sweet lime, and lemons. Among these, sweet lime (known locally as "musambi") is one of the most widely grown varieties.
- Climatic Conditions:** Rajasthan experiences a predominantly arid climate with hot summers and cold winters. The extreme temperature variations can be challenging for citrus trees. Citrus cultivation is primarily concentrated in the hilly and semi-arid regions, where temperatures are comparatively moderate.
- Soil Requirements:** Citrus trees prefer well-drained soil with a slightly acidic to neutral pH. In Rajasthan, farmers often use techniques like soil amendments and mulching to improve the soil quality and water retention capacity.
- Irrigation:** Due to the arid climate, irrigation is crucial for citrus cultivation in Rajasthan. Drip irrigation and sprinkler systems are commonly used to efficiently provide water to the citrus orchards.
- Protection from Extreme Temperatures:** Citrus trees are susceptible to frost and extreme cold. Farmers in Rajasthan may employ techniques such as using frost protection covers or creating microclimates to shield their orchards during the winter.
- Pest and Disease Management:** Citrus trees can be vulnerable to various pests and diseases. Integrated pest management strategies are used to minimize the use of pesticides and ensure healthy fruit production.
- Citrus Orchard Management:** Pruning, fertilization, and regular maintenance are essential for the health and productivity of citrus trees in Rajasthan.
- Harvesting and Marketing:** Citrus fruits are typically harvested from November to March. The fruits are then sorted and packaged for local and regional markets.
- Government Support:** The government of Rajasthan provides support to citrus farmers through various agricultural schemes and initiatives aimed at improving citrus cultivation practices and increasing farmers' income.
- Challenges:** The major challenges for citrus cultivation in Rajasthan are the extreme climate conditions, water scarcity, and the risk of crop diseases. The need for efficient irrigation and sustainable farming practices is essential for successful citrus cultivation. Despite the challenges, citrus cultivation in Rajasthan has the potential to be a profitable venture for farmers, especially in regions with suitable microclimates and access to

irrigation. Successful citrus cultivation can contribute to the state's agricultural economy and provide employment opportunities for rural communities.

Citrus farming:

1. Select Suitable Citrus Varieties:

- Choose citrus varieties that are well-suited to your climate and local growing conditions. Factors such as temperature, humidity, and soil type can influence the success of your citrus farm.

2. Site Selection:

- Ensure your orchard site has good drainage to prevent waterlogging, which can be detrimental to citrus trees.
- Consider wind protection, as strong winds can damage citrus trees and fruits.
- Adequate sunlight is crucial for citrus fruit development, so choose a location with full or partial sun exposure.

3. Soil Preparation:

- Test your soil to determine its pH and nutrient content. Citrus trees prefer well-drained soil with a slightly acidic to neutral pH.
- Improve soil fertility with organic matter like compost or well-rotted manure.
- Ensure proper aeration by loosening compacted soil.

4. Irrigation:

- Citrus trees need consistent and adequate moisture. Use drip irrigation or soaker hoses to deliver water directly to the root zone.
- Be mindful not to overwater, as excessive moisture can lead to root rot.

5. Fertilization:

- Use a balanced, slow-release citrus fertilizer to provide essential nutrients to your trees.
- Fertilize in late winter or early spring before the growing season begins, and avoid excessive nitrogen, which can lead to excessive vegetative growth at the expense of fruit production.

6. Pruning and Training:

- Prune your citrus trees to remove dead or diseased branches and improve air circulation within the canopy.
- Train young trees to have a strong, open canopy structure.

7. Pest and Disease Management:

- Monitor your orchard for common citrus pests like aphids, scale insects, and mites. Consider implementing integrated pest management strategies to minimize pesticide use.
- Practice good sanitation by removing fallen leaves and fruit to reduce disease pressure.

8. Frost Protection:

- Protect your citrus trees from frost and cold temperatures by using frost cloth or providing supplementary heat during cold snaps.

9. Mulching:

- Apply a layer of organic mulch around the base of the trees to conserve soil moisture, suppress weeds, and regulate soil temperature.

10. Harvesting:

- Harvest citrus fruits when they are fully ripe. Citrus fruits do not ripen well after picking.
- Use pruning shears or clippers to avoid damaging the tree when picking fruit.

11. Marketing and Sales:

- Develop a marketing strategy for your citrus products. This may include selling at local markets, to wholesalers, or through online channels.

- Consider value-added products like citrus preserves or freshly squeezed juice to expand your market.
- 12. Continuous Learning:**
- Stay informed about the latest research and best practices in citrus farming. Join local agricultural organizations and attend workshops or seminars.
- 13. Keep Records:**
- Maintain detailed records of your orchard's activities, including planting dates, fertilization schedules, and pest and disease management. This can help you make informed decisions and improve your farming practices. Remember that citrus farming requires patience and careful attention to detail. By following these tips and adapting your practices to your specific growing conditions, you can increase the chances of a successful citrus harvest.

Best time to prune citrus trees?

The best time to prune citrus trees depends on your specific goals and the local climate, but there are some general guidelines to consider:

- 1. Late Winter to Early Spring (February to March):** This is the most common time for pruning citrus trees. Pruning during late winter to early spring has several advantages:
 - **Dormant Period:** Citrus trees are typically in a semi-dormant state during this time, which means they are less actively growing. This reduces the stress on the tree caused by pruning.
 - **Prepares for New Growth:** Pruning in late winter stimulates new growth when the tree comes out of dormancy in spring.
 - **Easier Disease Control:** Pruning during this period allows for better visibility of the tree's structure and facilitates the removal of dead or diseased branches.
 - **Less Risk of Cold Damage:** By pruning before the last frost, you can reduce the risk of cold damage to new growth.
- 2. Post-Harvest Pruning:** If you've just harvested your citrus crop and your trees need pruning, you can also prune immediately after the harvest (usually late winter to early spring). This timing allows you to manage the tree's shape and remove any dead or unproductive branches before the new growth begins.
- 3. Maintenance Pruning:** Minor pruning, such as removing water sprouts or small branches that interfere with fruit production, can be done at any time of the year. However, major pruning should be avoided during the hottest parts of summer or the coldest parts of winter to minimize stress on the tree. Keep in mind that over-pruning can stress the tree and reduce fruit production, so it's essential to be judicious in your pruning practices. When pruning citrus trees, follow these general principles:
 - Remove dead, damaged, or diseased branches.
 - Thin out overcrowded branches to improve air circulation and sunlight penetration.
 - Maintain an open canopy to facilitate fruit development and harvesting.
 - Avoid heavy pruning during the hottest parts of summer or the coldest parts of winter.
 - Make clean cuts to minimize the risk of disease entry.

Pruning practices may vary depending on the specific citrus variety, so it's a good idea to consult local horticultural experts or agricultural extension services for region-specific guidance on pruning your citrus trees.

Citrus diseases

Citrus trees can be susceptible to various diseases, and it's crucial for citrus growers to be aware of these diseases and their symptoms to implement effective disease management strategies. Here are some common citrus diseases:

1. Citrus Canker:

- **Cause:** Citrus canker is caused by the bacterium *Xanthomonas citri* subsp. *citri*.
- **Symptoms:** Citrus canker appears as raised, corky lesions on leaves, fruit, and stems. These lesions may be surrounded by a water-soaked margin. Infected fruit often become blemished and may drop prematurely.
- **Management:** Management strategies include removing and destroying infected plant material, applying copper-based sprays, and maintaining good sanitation practices to prevent disease spread.

2. Citrus Huanglongbing (HLB), or Citrus Greening:

- **Cause:** HLB is caused by a bacterium called *Candidatus Liberibacter asiaticus*.
- **Symptoms:** HLB is a severe disease that affects the entire citrus tree. Symptoms include mottled and yellowed leaves, misshapen and small fruit, and a general decline in tree health. There is no cure for HLB, and infected trees typically die within a few years.
- **Management:** Management efforts primarily focus on controlling the insect vectors (citrus psyllids) that spread the disease, removing and destroying infected trees, and using disease-tolerant rootstocks.

3. Citrus Tristeza Virus (CTV):

- **Cause:** CTV is caused by a virus transmitted primarily by aphids.
- **Symptoms:** Symptoms of CTV infection can vary but may include yellowing of leaves, stunted growth, and dieback of branches. Some citrus varieties are highly susceptible, while others may show mild symptoms.
- **Management:** The best approach is to use CTV-tolerant rootstocks and control aphid populations through insecticide applications.

4. Citrus Black Spot (CBS):

- **Cause:** CBS is a fungal disease caused by the pathogen *Phyllosticta citricarpa*.
- **Symptoms:** CBS results in the development of dark, raised lesions on the fruit. Infected fruit is unsightly and can be unmarketable.
- **Management:** CBS management involves applying fungicides, removing and destroying infected fruit, and maintaining good orchard hygiene.

5. Melanose:

- **Cause:** Melanose is caused by the fungus *Diaporthe citri*.
- **Symptoms:** Melanose appears as raised, dark, pimple-like lesions on the fruit, leaves, and branches. Severe infections can affect fruit quality.
- **Management:** Management includes pruning to improve air circulation, applying copper-based sprays during the dormant season, and maintaining orchard cleanliness.

6. Alternaria Brown Spot:

- **Cause:** This fungal disease is caused by *Alternaria alternata*.
- **Symptoms:** Symptoms include brown lesions on fruit, leaves, and stems. Fruit quality and marketability can be reduced.
- **Management:** Management strategies involve applying fungicides, improving tree spacing, and practicing good orchard hygiene.

Effective disease management in citrus orchards often involves a combination of cultural practices, chemical controls, and early detection. Regular scouting for symptoms, maintaining good orchard hygiene, and selecting disease-resistant citrus varieties and rootstocks can go a long way in preventing and managing citrus diseases. Local agricultural extension services and experts can provide specific guidance on disease management in your region.