🍎 Apple

Soil Requirement

- Type: Deep, well-drained loamy soil rich in organic matter.
- Depth: Minimum 1.5 m to allow strong root development.
- pH: 6.0–6.8 is ideal.
- Drainage: Free-draining to prevent root rot.
- Avoid: Heavy clay or waterlogged soils; leads to collar rot and reduced oxygen.

Best Practices

Site & Climate Selection

- Altitude: 1,500–2,700 m.
- Temperature: 1,000–1,500 chilling hours below 7 °C essential.
- Rainfall: 100–125 cm well-distributed.
- Sunlight: 8+ hours/day.
- Frost: Avoid frost pockets; choose slopes with air drainage.

Land Preparation

- Deep summer ploughing to expose pests.
- Incorporate 40–50 t FYM/ha.
- Use contour terraces on steep slopes.

Pit Preparation & Planting

- Pit: 1 m × 1 m × 1 m, filled with topsoil + 20 kg FYM + 1 kg superphosphate + 250 g MOP.
- Spacing: 6×6 m (seedling), 4.5×4.5 m (dwarfing).
- Orientation: North–south rows.

Nutrition & Fertilization

- Year 1: 70 g N, 35 g P, 70 g K split (Feb & May).
- Mature: 500 g N, 250 g P, 500 g K + FYM.
- Foliar: 0.5% urea pre-bloom & fruit set.

Irrigation

- Critical during flowering, fruit set, 20 days pre-harvest.
- Drip: 30–40 L/tree/day.

Pruning & Training

- Modified central leader system; prune dormant season (Jan–Feb).

Pollination Management

- 30% pollinizers (e.g., Golden Delicious for Red Delicious).
- 4–5 bee hives/ha during bloom.

Intercropping

- First 4 years: Peas, beans, clover.

Pest/Disease Preventive Care

- Apple scab: Dormant copper + pre-bloom fungicide.
- San Jose scale: Dormant oil.
- Regular leaf/fruit sanitation.

✅ Do’s

1. Use certified, virus-free saplings.
2. Whitewash trunks to prevent sunscald & borers.
3. Mulch to conserve moisture.
4. Thin fruits to 1 per cluster.

5. Train shoots to 60° for strong crotch formation.
6. Use pheromone traps for codling moth.
7. Harvest at starch conversion stage.
8. Store at 0–2 °C, 90% RH.

❌ **Don’ts**

1. Avoid waterlogged basins.
2. Don’t apply excess nitrogen late.
3. Don’t prune during sap flow.
4. Don’t leave fallen/mummified fruit.
5. Avoid monoculture of a single cultivar.
6. Don’t irrigate heavily before harvest.
7. Avoid south-facing steep slopes without contouring.
8. Don’t use untested chemical mixes.

🍌 Banana

Soil Requirement

- Type: Deep, fertile loamy soil with good organic matter.
- Depth: 60–90 cm minimum.
- pH: 5.5–7.0.
- Drainage: Well-drained; avoid waterlogged soils.

Best Practices

Site & Climate Selection

- Altitude: Up to 1,500 m.
- Temperature: 26–30°C optimum.
- Rainfall: 1,500–2,500 mm.
- Sunlight: Full sun; frost-sensitive.

Land Preparation

- Plough and level.
- Add compost/FYM 30–40 t/ha.

Pit Preparation & Planting

- Pit: 60×60×60 cm, filled with FYM + topsoil.
- Spacing: 2–3 m.

Nutrition & Fertilization

- NPK 300:150:300 kg/ha/year, split doses.
- Foliar micronutrients as needed.

Irrigation

- Critical: vegetative, flowering, fruit filling.
- Method: Drip or basin.

Pruning & Training

- Remove dead leaves, control suckers.

Pollination Management

- Usually parthenocarpic; bees not required unless using seeded varieties.

Intercropping

- Legumes (beans) in early growth years.

Pest/Disease Preventive Care

- Panama disease: resistant varieties + drainage.
- Sigatoka: fungicide sprays.

✅ **Do's**

1. Use tissue-cultured planting material.
2. Mulch to retain moisture.
3. Control suckers to maintain one main pseudostem.
4. Apply fertilizers in split doses.
5. Monitor for leaf spot diseases.
6. Ensure proper drainage.
7. Stake plants in windy areas.
8. Harvest at proper maturity stage.

❌ **Don'ts**

1. Avoid waterlogging.
2. Don't overcrowd plants.
3. Don't ignore sucker management.
4. Avoid late fertilizer application.
5. Don't plant in shaded areas.
6. Don't ignore pest/disease monitoring.
7. Avoid heavy winds without staking.
8. Don't harvest immature fruits.

🌱 **Blackgram**

Soil Requirement

- Type: Well-drained loamy soil, sandy loam preferred.
- pH: 6–7.
- Fertility: Moderate; benefits from added organic matter.
- Avoid waterlogged or heavy clay soils.

Best Practices

Site & Climate Selection

- Altitude: Up to 1,000 m.
- Rainfall: 600–900 mm, well distributed.
- Temperature: 25–35°C optimum.
- Sunlight: Full sun.

Land Preparation

- Shallow ploughing; incorporate 10–15 t FYM/ha.

Pit Preparation & Planting

- Sowing: 30–45 cm row spacing; 10–15 cm plant spacing.
- Seed rate: 20–25 kg/ha.

Nutrition & Fertilization

- 20–30 kg N, 40–50 kg P_2O_5, 20–30 kg K_2O/ha.
- Split doses: basal + flowering stage.

Irrigation

- Critical: flowering and pod filling.
- Method: sprinkler or drip.

Pruning & Training

- Not required; upright plant habit.

Pollination Management

- Self-pollinated; no pollinizers required.

Intercropping

- Maize, sorghum, or vegetables.

Pest/Disease Preventive Care

- Yellow mosaic virus: resistant varieties.
- Cercospora leaf spot: fungicide spray.

✅ Do's

1. Use certified seeds.
2. Maintain weed-free fields.
3. Apply phosphorus-rich fertilizer at sowing.
4. Irrigate at flowering and pod filling.
5. Harvest promptly at maturity.
6. Monitor for viral diseases.
7. Rotate crops to prevent soil-borne diseases.
8. Use integrated pest management.

❌ Don'ts

1. Don't sow in waterlogged soils.
2. Avoid excess nitrogen early.
3. Don't ignore pests.
4. Avoid planting too close.
5. Don't delay harvesting.
6. Avoid monocropping continuously.
7. Don't ignore crop rotation.
8. Don't let weeds compete with seedlings.

🌾 Chickpea

Soil Requirement

- Type: Well-drained loam, sandy loam preferred.
- pH: 6.0–7.5.
- Fertility: Moderate; benefits from added organic matter.
- Avoid acidic, waterlogged soils.

Best Practices

Site & Climate Selection

- Altitude: Up to 1,200 m.
- Rainfall: 500–700 mm, light showers preferred.
- Temperature: 20–30°C optimum.

Land Preparation

- Deep ploughing; incorporate 15–20 t FYM/ha.

Pit Preparation & Planting

- Row spacing: 30–45 cm, seed spacing: 10 cm.
- Seed rate: 60–80 kg/ha.

Nutrition & Fertilization

- 20–30 kg N, 60–80 kg P_2O_5 per ha.

- Apply K if deficient.

Irrigation

- Critical: flowering and pod filling.
- Avoid waterlogging.

Pollination

- Self-pollinated; no pollinizers needed.

Intercropping

- Wheat or mustard in rotation.

Pest/Disease Preventive Care

- Ascochyta blight: seed treatment + fungicide spray.
- Pod borer: pheromone traps + timely spraying.

✅ **Do’s**

1. Use certified seeds.
2. Treat seeds with fungicide before sowing.
3. Maintain weed-free fields.
4. Irrigate at critical stages only.
5. Rotate crops to reduce disease.
6. Use resistant varieties.
7. Harvest at maturity.
8. Monitor pests regularly.

❌ **Don’ts**

1. Don’t sow in waterlogged soil.
2. Avoid dense sowing.
3. Don’t over-irrigate.
4. Avoid planting after chickpea continuously.
5. Don’t ignore seed treatment.
6. Don’t leave crop residues infected.
7. Avoid late fungicide application.
8. Don’t ignore pest monitoring.

🌴 Coconut

Soil Requirement

- Type: Sandy loam, well-drained with high organic matter.
- pH: 5.0–8.0.
- Depth: >1.5 m.
- Avoid waterlogged, heavy clay soils.

Best Practices

Site & Climate Selection

- Altitude: Coastal plains up to 1000 m.
- Temperature: 27–32°C.
- Rainfall: 1500–2500 mm well distributed.
- Sunlight: Full sun; frost-sensitive.

Land Preparation

- Level land; incorporate 25–30 t FYM/ha.
- Dig pits 1 m^3 for planting.

Pit Preparation & Planting

- Fill pits with topsoil + FYM + rock phosphate + MOP.
- Spacing: 7–9 m between palms.

Nutrition & Fertilization

- NPK 400:100:200 g/palm/year in split doses.
- Foliar sprays with micronutrients as needed.

Irrigation

- Critical: dry months; 40–50 L/palm/day.

Pruning & Training

- Remove dead fronds and senescent flowers.

Pollination Management

- Mostly cross-pollinated; male flowers from neighboring palms help.

Intercropping

- Banana, black pepper, pineapple in early years.

Pest/Disease Preventive Care

- Red palm weevil: pheromone traps + regular inspection.
- Bud rot: copper fungicide drenching.

✅ Do's

1. Use certified seedlings.
2. Maintain clean base and pits.
3. Apply fertilizers in split doses.
4. Mulch to retain moisture.
5. Stake young palms in windy areas.
6. Monitor for pests regularly.
7. Irrigate adequately in dry spells.
8. Intercrop in early years for income.

❌ Don'ts

1. Avoid waterlogging.
2. Don't overcrowd palms.
3. Don't ignore pest signs.
4. Avoid monoculture for many years.
5. Don't skip pruning.
6. Avoid applying all fertilizers at once.
7. Don't plant in saline or heavy clay soils.
8. Don't neglect irrigation in dry months.

☕ Coffee

Soil Requirement

- Type: Deep, well-drained loamy soil with rich organic matter.
- Depth: >1 m for strong root growth.
- pH: 5.5–6.5 optimal.
- Avoid: Waterlogged, saline, or heavy clay soils—prone to root rot.

Best Practices

Site & Climate Selection

- Altitude: 600–1,800 m.
- Temperature: 18–28°C; young plants sensitive to frost.

- Rainfall: 1,200–2,500 mm, well distributed.
- Sunlight: Partial shade; 50–70% filtered sunlight.

Land Preparation

- Clear land of weeds and stumps.
- Plough 30–45 cm deep; add 20–30 t FYM/ha.
- Create bunds on slopes for erosion control.

Pit Preparation & Planting

- Pit: 60×60×60 cm, filled with topsoil + FYM + 500 g neem cake.
- Spacing: 2.5–3 m.
- Orientation: Rows along contour lines on slopes.

Nutrition & Fertilization

- Annual dose per mature bush: N 200 g, P 60 g, K 150 g.
- Apply in 2–3 split doses; add micronutrients foliar as needed.

Irrigation

- Critical: flowering and berry development.
- Drip or basin irrigation; 10–15 L/plant/day during dry spells.

Pruning & Training

- Maintain open bush canopy; remove weak, dead, or diseased branches after harvest.

Pollination Management

- Mostly self-pollinated; bees improve fruit set.
- Maintain 2–3 beehives/ha for optimal berry formation.

Intercropping

- Shade trees: banana, leguminous trees, or other coffee-friendly intercrops.

Pest/Disease Preventive Care

- Coffee leaf rust: spray copper fungicide every 3–4 weeks.
- Coffee berry borer: pheromone traps + timely harvest.
- Sanitation: remove fallen berries/leaves.

✅ Do's

1. Use disease-free seedlings.
2. Provide partial shade to young plants.
3. Mulch to conserve moisture.
4. Prune to maintain airflow.
5. Split fertilizers for better uptake.
6. Monitor pests regularly.
7. Harvest ripe berries on time.
8. Maintain clean farm surroundings.

❌ Don'ts

1. Don't plant in waterlogged areas.
2. Avoid monoculture without shade.
3. Don't ignore pruning.
4. Avoid late pest intervention.
5. Don't over-fertilize at once.
6. Don't neglect irrigation in dry months.
7. Avoid dense planting.
8. Don't leave old berries on plants.

🌾 Cotton

Soil Requirement

- Type: Deep loamy to clay loam soil.
- pH: 6.0–7.5.
- Fertility: Moderate; add organic matter.
- Avoid poorly drained heavy clays or sandy soils prone to drought.

Best Practices

Site & Climate Selection

- Altitude: 0–600 m.
- Temperature: 21–30°C.
- Rainfall: 600–1,200 mm; light rainfall during boll formation.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; incorporate 20 t FYM/ha.
- Level fields for irrigation and drainage.

Pit Preparation & Planting

- Sowing: 60×30 cm spacing; seed rate 20–25 kg/ha.
- Seed treatment: fungicide + bio-inoculant for early growth.

Nutrition & Fertilization

- NPK 120:60:60 kg/ha split; first at 30–40 DAS, second at 60–70 DAS.
- Micronutrients: Zn, B foliar as needed.

Irrigation

- Critical: flowering and boll development.
- Method: furrow or drip irrigation.

Pruning & Training

- Not required; maintain main stem integrity.

Pollination Management

- Mostly self-pollinated; honeybees can improve yield.

Intercropping

- Maize, sorghum, legumes early in season.

Pest/Disease Preventive Care

- Bollworm: pheromone traps + bio-pesticides.
- Leaf curl virus: resistant varieties + rogue infected plants.
- Regular scouting and sanitation.

✅ Do’s

1. Use certified seeds.
2. Maintain weed-free fields.
3. Apply fertilizers in splits.
4. Monitor pests regularly.
5. Timely irrigation at flowering/boll formation.
6. Rotate crops to reduce diseases.
7. Harvest at optimum boll maturity.
8. Follow integrated pest management.

❌ Don’ts

1. Don’t sow in waterlogged fields.
2. Avoid dense planting.
3. Don’t ignore pest monitoring.
4. Avoid late fertilizer application.
5. Don’t leave plant residues untreated.
6. Don’t over-irrigate.
7. Avoid continuous monoculture.
8. Don’t ignore scouting during boll formation.

🍇 Grapes

Soil Requirement

- Type: Well-drained loamy soil; sandy loam preferred.
- pH: 6.0–7.0.
- Avoid heavy clay or saline soils.

Best Practices

Site & Climate Selection

- Altitude: 500–1,500 m.
- Temperature: 20–30°C.
- Rainfall: 600–800 mm; dry climate reduces fungal diseases.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; incorporate FYM 20–25 t/ha.
- Create trellis lines for vine support.

Pit Preparation & Planting

- Pit: 50×50×50 cm, filled with FYM + soil + phosphorus.
- Spacing: 3×2 m (trellised).
- Orientation: Rows north–south.

Nutrition & Fertilization

- NPK: 200:100:100 kg/ha/year; split doses.
- Foliar micronutrients (Zn, B) during flowering and berry formation.

Irrigation

- Critical: fruit set, berry development.
- Method: drip recommended; 20–25 L/vine/day.

Pruning & Training

- Spur or cane pruning system; winter pruning to maintain vine shape.

Pollination Management

- Self-pollinated; bees improve fruit set.

Intercropping

- Legumes or vegetables in early years.

Pest/Disease Preventive Care

- Powdery mildew: sulfur sprays.
- Mealybugs: neem oil or insecticidal soap.
- Sanitation and removal of infected plant parts.

✅ Do’s

1. Use certified cuttings.

2. Mulch around base.
3. Maintain proper trellis structure.
4. Monitor pests weekly.
5. Irrigate during fruit set and berry growth.
6. Prune annually.
7. Harvest at optimum sugar content.
8. Apply foliar micronutrients as needed.

✕ Don’ts

1. Don’t plant in poorly drained soils.
2. Avoid shaded planting.
3. Don’t ignore pruning.
4. Avoid over-irrigation.
5. Don’t leave infected leaves or berries.
6. Avoid planting in high humidity areas without control.
7. Don’t over-fertilize nitrogen late season.
8. Don’t ignore trellis maintenance.

🌾 Jute

Soil Requirement

- Type: Alluvial, fertile loam; well-drained.
- pH: 5.5–6.8.
- Avoid saline or waterlogged soils.

Best Practices

Site & Climate Selection

- Altitude: Lowlands 0–500 m.
- Temperature: 24–37°C.
- Rainfall: 1,500–2,500 mm.
- Sunlight: Full sun.

Land Preparation

- Plough 2–3 times; level for uniform water.
- Incorporate 15–20 t FYM/ha.

Pit Preparation & Planting

- Row spacing: 30–40 cm; thin to 10–15 cm.
- Seed rate: 4–5 kg/ha.

Nutrition & Fertilization

- NPK: 60:30:30 kg/ha; split doses.
- Top-dress nitrogen at 20–25 DAS.

Irrigation

- Maintain moist soil until crop maturity.
- Avoid waterlogging.

Pruning & Training

- Not required; tall fibrous crop.

Pollination Management

- Self-pollinated; no pollinators needed.

Intercropping

- Short-duration pulses.

Pest/Disease Preventive Care

- Stem rot & root rot: avoid waterlogging, apply fungicide if needed.
- Jute hairy caterpillar: biological control or light pesticide sprays.

✅ Do's

1. Use certified seeds.
2. Maintain proper spacing.
3. Apply fertilizers in splits.
4. Keep field weed-free.
5. Irrigate regularly, avoid flooding.
6. Monitor pests early.
7. Harvest at proper maturity.
8. Dry fibers properly post-harvest.

❌ Don'ts

1. Don't plant in saline or heavy clay soils.
2. Avoid waterlogged conditions.
3. Don't overcrowd plants.
4. Don't ignore fertilization schedule.
5. Avoid late irrigation.
6. Don't delay harvesting.

□ Kidney Beans

Soil Requirement

- Type: Well-drained loamy soil, high organic matter.
- pH: 6.0–7.0.
- Avoid waterlogged or heavy clay soils which cause root rot.

Best Practices

Site & Climate Selection

- Altitude: Up to 1,200 m.
- Temperature: 20–30°C optimum.
- Rainfall: 600–800 mm; avoid heavy rains during flowering.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing and harrowing.
- Incorporate 15–20 t FYM/ha.

Pit Preparation & Planting

- Row spacing: 45–60 cm; plant spacing: 10–15 cm.
- Seed rate: 60–80 kg/ha.

Nutrition & Fertilization

- NPK: 20–30:60–80:20–30 kg/ha; split application.

Irrigation

- Critical: flowering and pod filling.
- Method: drip or sprinkler; avoid overwatering.

Pruning & Training

- Bush type—no pruning required.

Pollination Management

- Self-pollinated; bees help increase yield.

Intercropping

- Maize, sorghum, or cereals.

Pest/Disease Preventive Care

- Anthracnose: seed treatment + foliar fungicide.
- Pod borers: pheromone traps, timely spraying.

✅ Do's

1. Use certified seeds.
2. Maintain weed-free fields.
3. Irrigate at flowering & pod filling.
4. Monitor pests regularly.
5. Apply phosphorus-rich fertilizer at sowing.
6. Harvest at proper maturity.
7. Rotate crops to reduce soil-borne diseases.
8. Use integrated pest management.

❌ Don'ts

1. Don't sow in waterlogged soil.
2. Avoid dense planting.
3. Don't over-irrigate.
4. Don't ignore pest monitoring.
5. Avoid continuous monocropping.
6. Don't leave crop residues infected.
7. Don't delay harvesting.
8. Avoid ignoring soil fertility management.

🌿 Lentil

Soil Requirement

- Type: Loamy to sandy loam, well-drained.
- pH: 6.0–7.5.
- Avoid acidic or waterlogged soils.

Best Practices

Site & Climate Selection

- Altitude: Up to 1,200 m.
- Temperature: 18–25°C.
- Rainfall: 500–700 mm, light showers preferred.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; add 10–15 t FYM/ha.

Pit Preparation & Planting

- Row spacing: 20–30 cm; plant spacing: 5–10 cm.
- Seed rate: 40–50 kg/ha.

Nutrition & Fertilization

- NPK: 20–30:60–80:20–30 kg/ha.
- Apply phosphorus at sowing; nitrogen minimal.

Irrigation

- Critical: flowering & pod filling.
- Avoid waterlogging.

Pruning & Training

- Not needed; low bush habit.

Pollination Management

- Self-pollinated; no intervention needed.

Intercropping

- Wheat or mustard in rotation.

Pest/Disease Preventive Care

- Rust & blight: resistant varieties + fungicide.
- Pod borer: pheromone traps or timely sprays.

✅ **Do's**

1. Use certified seeds.
2. Maintain weed-free fields.
3. Irrigate carefully at critical stages.
4. Rotate crops.
5. Harvest promptly at maturity.
6. Monitor pests regularly.
7. Apply phosphorus-rich fertilizer at sowing.
8. Use integrated pest management.

❌ **Don'ts**

1. Don't sow in waterlogged soils.
2. Avoid dense planting.
3. Don't over-irrigate.
4. Don't ignore pests.
5. Avoid continuous monocropping.
6. Don't leave crop residues untreated.
7. Don't delay harvesting.
8. Don't ignore soil fertility management.

🌽 **Maize**

Soil Requirement

- Type: Deep, well-drained loamy soil.
- pH: 6.0–7.5.
- Avoid waterlogging; heavy clay soils reduce root development.

Best Practices

Site & Climate Selection

- Altitude: 0–1,200 m.
- Temperature: 20–30°C.
- Rainfall: 500–800 mm; evenly distributed.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing + leveling; incorporate 20 t FYM/ha.

Pit Preparation & Planting

- Row spacing: 60–75 cm; plant spacing: 20–30 cm.

- Seed rate: 20–25 kg/ha.

Nutrition & Fertilization

- NPK: 120:60:60 kg/ha split doses.
- Foliar spray of micronutrients if needed.

Irrigation

- Critical: flowering & silking stages.
- Method: furrow, sprinkler, or drip.

Pruning & Training

- Not required.

Pollination Management

- Wind-pollinated; proper spacing ensures good fertilization.

Intercropping

- Legumes like beans or cowpea.

Pest/Disease Preventive Care

- Stem borer: pheromone traps + biopesticides.
- Leaf blight: fungicide application.

✅ Do's

1. Use certified seeds.
2. Maintain proper spacing.
3. Apply fertilizers in split doses.
4. Irrigate during flowering/silking.
5. Monitor pests regularly.
6. Rotate crops to maintain soil fertility.
7. Harvest at maturity for maximum yield.
8. Remove crop residues to prevent pest buildup.

❌ Don'ts

1. Don't sow in waterlogged areas.
2. Avoid dense planting.
3. Don't skip fertilization schedule.
4. Don't ignore irrigation at critical stages.
5. Avoid monocropping continuously.
6. Don't leave crop residues untreated.
7. Don't ignore pest scouting.
8. Don't over-irrigate during early vegetative stage.

□ Mango

Soil Requirement

- Type: Well-drained sandy loam or loamy soil.
- Depth: >1.5 m.
- pH: 5.5–7.5.
- Avoid waterlogged, heavy clay soils.

Best Practices

Site & Climate Selection

- Altitude: 0–500 m.
- Temperature: 24–30°C.

- Rainfall: 750–2,500 mm; dry spell during flowering improves fruit set.
- Sunlight: Full sun.

Land Preparation

- Plough 2–3 times; incorporate 20–25 t FYM/ha.

Pit Preparation & Planting

- Pit: 1×1×1 m; FYM + topsoil + rock phosphate.
- Spacing: 8×8 m.

Nutrition & Fertilization

- NPK: 500:250:500 g/tree/year; split doses.
- Micronutrients: Zn, B foliar sprays during flowering & fruit set.

Irrigation

- Critical: flowering, fruit set, early fruit growth.
- Method: drip or basin irrigation.

Pruning & Training

- Remove dead/weak branches; maintain open canopy.

Pollination Management

- Cross-pollination improves fruit set; maintain bee hives (3–4/ha).

Intercropping

- Legumes or vegetables during first 3–4 years.

Pest/Disease Preventive Care

- Mango hoppers: insecticidal sprays.
- Anthracnose: copper fungicide pre- and post-monsoon.

✅ Do's

1. Use certified grafts.
2. Mulch to conserve moisture.
3. Prune annually.
4. Maintain bee hives.
5. Fertilize in split doses.
6. Monitor pests regularly.
7. Harvest at physiological maturity.
8. Irrigate properly during dry spells.

❌ Don'ts

1. Don't plant in waterlogged soils.
2. Avoid excess nitrogen near flowering.
3. Don't ignore pruning.
4. Avoid monoculture without pollinizers.
5. Don't over-irrigate at fruit maturity.
6. Don't skip pest monitoring.
7. Avoid overcrowding trees.
8. Don't harvest immature fruits.

🌱 Moth Beans

Soil Requirement

- Type: Light sandy loam; drought-tolerant.
- pH: 6–7.

- Avoid waterlogged or heavy clay soils.

Best Practices

Site & Climate Selection

- Altitude: 0–800 m.
- Temperature: 25–35°C.
- Rainfall: 400–600 mm.
- Sunlight: Full sun.

Land Preparation

- Shallow ploughing; incorporate 10–15 t FYM/ha.

Pit Preparation & Planting

- Row spacing: 30–45 cm; seed spacing: 10 cm.
- Seed rate: 20–25 kg/ha.

Nutrition & Fertilization

- NPK: 20–30:40–50:20–30 kg/ha; apply phosphorus at sowing.

Irrigation

- Critical: flowering and pod filling.
- Drip irrigation preferred in dry areas.

Pollination Management

- Self-pollinated.

Intercropping

- Maize or sorghum.

Pest/Disease Preventive Care

- Yellow mosaic virus: resistant varieties + rogue infected plants.
- Pod borer: pheromone traps or biopesticides.

✅ Do's

1. Use certified seeds.
2. Maintain weed-free field.
3. Irrigate at flowering and pod filling.
4. Harvest at proper maturity.
5. Rotate crops to reduce disease.
6. Apply phosphorus at sowing.
7. Monitor pests regularly.
8. Use integrated pest management.

❌ Don'ts

1. Don't sow in waterlogged soil.
2. Avoid dense planting.
3. Don't over-irrigate.
4. Don't ignore pests.
5. Avoid continuous monocropping.
6. Don't leave crop residues untreated.
7. Don't delay harvesting.
8. Don't ignore soil fertility.

🌱 Mung Bean

Soil Requirement

- Type: Well-drained sandy loam or loam.
- pH: 6–7.
- Avoid waterlogged soils.

Best Practices

Site & Climate Selection

- Altitude: 0–1,000 m.
- Temperature: 25–35°C.
- Rainfall: 500–800 mm.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; 10–15 t FYM/ha.

Pit Preparation & Planting

- Row spacing: 30–45 cm; seed spacing: 10–15 cm.
- Seed rate: 20–25 kg/ha.

Nutrition & Fertilization

- NPK: 20–30:40–50:20–30 kg/ha.
- Phosphorus at sowing.

Irrigation

- Critical: flowering & pod filling.
- Avoid waterlogging.

Pollination Management

- Self-pollinated.

Intercropping

- Maize or sorghum.

Pest/Disease Preventive Care

- Yellow mosaic virus: resistant varieties + rogue infected plants.
- Pod borer: timely spraying.

✅ **Do's**

1. Use certified seeds.
2. Weed-free fields.
3. Irrigate at flowering & pod filling.
4. Harvest at proper maturity.
5. Rotate crops.
6. Apply phosphorus at sowing.
7. Monitor pests.
8. Integrated pest management.

❌ **Don'ts**

1. Don't sow in waterlogged soils.
2. Avoid dense planting.
3. Don't over-irrigate.
4. Don't ignore pests.
5. Avoid continuous monocropping.
6. Don't leave infected residues.
7. Don't delay harvesting.
8. Don't ignore soil fertility.

🍈 Muskmelon

Soil Requirement

- Type: Well-drained sandy loam rich in organic matter.
- pH: 6–7.
- Avoid waterlogged soils.

Best Practices

Site & Climate Selection

- Altitude: 0–500 m.
- Temperature: 24–30°C.
- Rainfall: 400–600 mm; avoid heavy rainfall during fruiting.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; 10–15 t FYM/ha.
- Create raised beds for drainage.

Pit Preparation & Planting

- Pit: 50×50×50 cm; fill with topsoil + compost.
- Spacing: 1.2–1.5 m between hills; 2–3 seeds per hill.

Nutrition & Fertilization

- NPK: 60:40:60 kg/ha; apply in split doses.
- Foliar micronutrients if needed.

Irrigation

- Critical: flowering & fruit set.
- Drip or furrow irrigation; avoid waterlogging.

Pollination Management

- Cross-pollinated; maintain bee hives (2–3/ha).

Intercropping

- Short-duration legumes or vegetables.

Pest/Disease Preventive Care

- Powdery mildew: sulfur spray.
- Fruit fly: pheromone traps.
- Regular removal of diseased vines.

☑ Do’s

1. Use certified seeds or seedlings.
2. Maintain raised beds for drainage.
3. Mulch around plants.
4. Irrigate carefully during flowering & fruit set.
5. Maintain bee hives for pollination.
6. Monitor pests & diseases.
7. Harvest at physiological maturity.
8. Use split fertilizers for better growth.

✕ Don’ts

1. Don’t plant in waterlogged soil.
2. Avoid dense planting.
3. Don’t ignore pest/disease management.

4. Avoid late irrigation causing root rot.
5. Don’t over-fertilize nitrogen near fruiting.
6. Don’t leave old vines in field.
7. Avoid planting in shaded areas.
8. Don’t harvest immature fruits

🍊 Orange

Soil Requirement

- Type: Deep, well-drained sandy loam or loamy soil.
- Depth: >1.5 m for root development.
- pH: 5.5–6.5.
- Avoid waterlogged or poorly drained clay soils.

Best Practices

Site & Climate Selection

- Altitude: 0–1,000 m.
- Temperature: 15–35°C; young trees sensitive to frost.
- Rainfall: 1,000–1,500 mm, evenly distributed.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; incorporate 20–25 t FYM/ha.
- Prepare mounds or raised beds for drainage.

Pit Preparation & Planting

- Pit: 1×1×1 m; mix soil + FYM + rock phosphate.
- Spacing: 6–7 m.
- Orientation: North–south rows for sunlight.

Nutrition & Fertilization

- NPK: 400:200:400 g/tree/year; split into 3–4 doses.
- Foliar Zn & B during flowering & fruit set.

Irrigation

- Critical: flowering, fruit set, summer months.
- Method: drip or basin; 30–40 L/tree/day.

Pruning & Training

- Open center or modified central leader; remove weak branches.

Pollination Management

- Mostly self-pollinated; bees improve fruit size & yield.

Intercropping

- Legumes or short-duration vegetables in early years.

Pest/Disease Preventive Care

- Citrus psylla: neem oil or insecticide.
- Citrus canker: copper fungicide; avoid overhead irrigation.

✅ Do’s

1. Use certified budded seedlings.
2. Mulch base to conserve moisture.
3. Prune annually to maintain canopy.
4. Maintain proper irrigation.
5. Apply fertilizers in split doses.

6. Monitor pests regularly.
7. Harvest when rind color develops.
8. Rotate intercrops in early years.

❌ Don’ts

1. Don’t plant in waterlogged areas.
2. Avoid excess nitrogen near flowering.
3. Don’t ignore pruning.
4. Avoid planting too close together.
5. Don’t irrigate heavily near harvest.
6. Don’t leave infected leaves/fruit.
7. Avoid frost pockets.
8. Don’t over-fertilize at once.

🍈 Papaya

Soil Requirement

- Type: Sandy loam or well-drained loamy soil.
- pH: 6.0–7.0.
- Avoid waterlogged or heavy clay soils.

Best Practices

Site & Climate Selection

- Altitude: 0–1,000 m.
- Temperature: 21–33°C; frost-sensitive.
- Rainfall: 1,000–1,500 mm; avoid waterlogging.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; incorporate 20–25 t FYM/ha.
- Create raised beds for drainage.

Pit Preparation & Planting

- Pit: 50×50×50 cm; soil + FYM + phosphorus.
- Spacing: 2–3 m × 2–3 m.
- Use dioecious planting: 1 male for 8–10 females.

Nutrition & Fertilization

- NPK: 400:200:400 g/plant/year; split doses.
- Foliar Zn & B during flowering & fruit set.

Irrigation

- Critical: flowering & fruit growth.
- Method: drip or basin; avoid overwatering.

Pruning & Training

- Remove dead/diseased leaves; maintain single stem.

Pollination Management

- Manual or bee pollination for female flowers.

Intercropping

- Short-duration vegetables in early growth.

Pest/Disease Preventive Care

- Papaya ring spot virus: use resistant varieties.

- Fruit fly: traps + sanitation.

✅ Do's

1. Use disease-free seedlings.
2. Maintain raised beds.
3. Fertilize in split doses.
4. Mulch around plants.
5. Maintain bee hives for pollination.
6. Monitor pests regularly.
7. Harvest at physiological maturity.
8. Remove diseased leaves promptly.

❌ Don'ts

1. Don't plant in waterlogged areas.
2. Avoid dense planting.
3. Don't over-irrigate.
4. Avoid monoculture of same variety.
5. Don't ignore pest monitoring.
6. Don't leave old leaves on soil.
7. Don't harvest immature fruits.
8. Avoid shaded planting areas.

□ Pigeon Peas

Soil Requirement

- Type: Sandy loam or loamy soil.
- pH: 6–7.
- Avoid waterlogged soils.

Best Practices

Site & Climate Selection

- Altitude: 0–1,000 m.
- Temperature: 25–35°C.
- Rainfall: 600–800 mm.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; 10–15 t FYM/ha.
- Level field for uniform irrigation.

Pit Preparation & Planting

- Row spacing: 45–60 cm; plant spacing: 20–25 cm.
- Seed rate: 25–30 kg/ha.

Nutrition & Fertilization

- NPK: 20–30:40–50:20–30 kg/ha; phosphorus at sowing.

Irrigation

- Critical: flowering & pod filling.
- Avoid overwatering.

Pollination Management

- Self-pollinated; bees improve pod set.

Intercropping

- Maize, sorghum, or cotton.

Pest/Disease Preventive Care

- Fusarium wilt: resistant varieties.
- Pod borer: pheromone traps or insecticide.

✅ Do's

1. Use certified seeds.
2. Weed-free fields.
3. Irrigate at flowering & pod filling.
4. Harvest at proper maturity.
5. Rotate crops to reduce disease.
6. Apply phosphorus at sowing.
7. Monitor pests.
8. Use integrated pest management.

❌ Don'ts

1. Don't sow in waterlogged soil.
2. Avoid dense planting.
3. Don't over-irrigate.
4. Don't ignore pests.
5. Avoid continuous monocropping.
6. Don't leave residues untreated.
7. Don't delay harvesting.
8. Don't ignore soil fertility.

🍎 Pomegranate

Soil Requirement

- Type: Loamy to sandy loam.
- pH: 5.5–7.2.
- Avoid waterlogged clay soils.

Best Practices

Site & Climate Selection

- Altitude: 0–1,000 m.
- Temperature: 25–35°C.
- Rainfall: 500–1,000 mm.
- Sunlight: Full sun.

Land Preparation

- Deep ploughing; incorporate 15–20 t FYM/ha.
- Level land for irrigation.

Pit Preparation & Planting

- Pit: 50×50×50 cm; fill with soil + FYM + phosphorus.
- Spacing: 5×5 m.

Nutrition & Fertilization

- NPK: 500:250:500 g/tree/year; split doses.
- Foliar Zn & B at flowering & fruit set.

Irrigation

- Critical: flowering, fruit set, early fruit growth.

- Drip or basin; avoid overwatering.

Pruning & Training

- Remove dead/diseased wood; maintain open canopy.

Pollination Management

- Mostly self-pollinated; bees improve yield.

Intercropping

- Short-duration vegetables in early years.

Pest/Disease Preventive Care

- Fruit borer: pheromone traps + insecticide.
- Alternaria leaf spot: copper fungicide.

✅ Do's

1. Use certified grafts.
2. Mulch base to conserve moisture.
3. Prune annually.
4. Maintain irrigation during dry months.
5. Fertilize in split doses.
6. Monitor pests regularly.
7. Harvest at physiological maturity.
8. Rotate intercrops in early years.

❌ Don'ts

1. Don't plant in waterlogged soils.
2. Avoid excess nitrogen near flowering.
3. Don't ignore pruning.
4. Avoid overcrowding trees.
5. Don't over-irrigate near harvest.
6. Don't leave infected leaves or fruit.
7. Avoid planting in frost pockets.
8. Don't over-fertilize at once.

🌾 Rice

Soil Requirement

- Type: Clay loam or silty clay loam; retains water.
- pH: 5.5–7.0.
- Avoid highly acidic or saline soils.

Best Practices

Site & Climate Selection

- Altitude: 0–1,000 m.
- Temperature: 25–32°C.
- Rainfall: 1,200–2,500 mm; well distributed.
- Sunlight: Full sun.

Land Preparation

- Level the field; puddle and incorporate FYM 15–20 t/ha.

Pit Preparation & Planting

- Seedling transplanting: 25×15 cm spacing.
- Seed rate: 25–30 kg/ha.

Nutrition & Fertilization

- NPK: 120:60:60 kg/ha; split applications.
- Zinc foliar at tillering if deficient.

Irrigation

- Maintain 5–10 cm water in field until grain filling; drain 10–15 days before harvest.

Pruning & Training

- Not required.

Pollination Management

- Self-pollinated.

Intercropping

- Short-duration legumes during fallow.

Pest/Disease Preventive Care

- Brown planthopper: timely insecticide application.
- Blast disease: resistant varieties + fungicide.

✅ Do's

1. Use certified seeds.
2. Level fields to retain water.
3. Transplant seedlings at 25–30 days old.
4. Maintain proper water level.
5. Apply fertilizers in split doses.
6. Monitor pests & diseases.
7. Harvest at maturity.
8. Rotate crops.

❌ Don'ts

1. Don't sow in poorly leveled fields.
2. Avoid dense planting.
3. Don't over-irrigate after tillering.
4. Don't ignore pest scouting.
5. Avoid late fertilizer application.
6. Don't leave standing water post-harvest.
7. Don't use infected seeds.
8. Avoid monocropping continuously.

🍉 Watermelon

Soil Requirement

- Type: Sandy loam; loose and well-draining for good root and fruit development.
- pH: 6.0–7.0.
- Fertility: Moderate; high organic matter improves yield and sweetness.
- Avoid: Heavy clay or waterlogged soils, which cause root rot and poor fruit quality.

Best Practices

Site & Climate Selection

- Altitude: 0–500 m.
- Temperature: 24–32°C optimum; sensitive to frost.
- Rainfall: 400–600 mm; excessive rainfall during fruiting can lead to fruit cracking and fungal infections.
- Sunlight: Full sun, minimum 6–8 hours/day.

Land Preparation

- Deep ploughing (25–30 cm) to loosen soil.
- Incorporate 15–20 t/ha of well-decomposed FYM or compost.
- Form raised beds (30–40 cm height) with 1.5–2 m spacing to improve drainage.

Pit Preparation & Planting

- Pit size: 50×50×50 cm.
- Fill with topsoil mixed with FYM + 500 g rock phosphate + 250 g potassium fertilizer per pit.
- Spacing: 2–3 m between rows; 1–1.5 m between plants.
- Sow 2–3 seeds per hill; thin to 1–2 vigorous seedlings per hill after 10–15 days.

Nutrition & Fertilization

- Basal application: 60–80 kg N, 40–50 kg P_2O_5, 60–70 kg K_2O/ha.
- Split N into 2–3 doses: at planting, flowering, and fruit set.
- Foliar sprays: Zn 0.5% at flowering and fruit set.

Irrigation

- Critical stages: germination, flowering, fruit set, and early fruit development.
- Method: drip or furrow; 15–20 L/plant every 2–3 days during dry periods.
- Avoid waterlogging; excess water reduces sweetness and encourages disease.

Pruning & Training

- Not usually required; train runners along beds to maximize sunlight and airflow.
- Remove weak or diseased vines during growth.

Pollination Management

- Cross-pollinated; bees significantly improve fruit set.
- Maintain 2–3 beehives per hectare during flowering.

Intercropping

- Early stage: short-duration legumes (e.g., cowpea) or radish between rows.
- Avoid heavy feeders in same bed to prevent nutrient competition.

Pest/Disease Preventive Care

- Fruit fly: pheromone traps + protective nets.
- Powdery mildew: sulfur-based fungicides weekly if conditions favor infection.
- Anthracnose: remove infected leaves; fungicide sprays if outbreak occurs.
- Sanitation: remove old vines and fallen fruits to reduce inoculum.

✅ Do’s

1. Use certified, disease-free seeds for better germination.
2. Mulch with straw to retain soil moisture and reduce weeds.
3. Thin seedlings to 1–2 per hill to ensure strong growth.
4. Irrigate regularly at critical stages, avoiding excess water.
5. Place bee hives for effective pollination.
6. Monitor pests weekly and act early to prevent losses.
7. Harvest fruits when tendrils near fruit start drying and skin color is mature.
8. Apply fertilizers in split doses to avoid nutrient burn.
9. Keep field clean from old vines and debris to reduce disease.

❌ Don’ts

1. Don’t plant in heavy clay or waterlogged soils—leads to root rot and poor fruit.

2. Avoid over-fertilization with nitrogen late in season—it produces vegetative growth instead of fruits.
3. Don’t ignore pest infestations; fruit fly can ruin entire harvest.
4. Avoid dense planting—reduces airflow and increases disease pressure.
5. Don’t irrigate heavily at fruit maturity—fruits may crack or lose sweetness.
6. Avoid shaded areas; watermelons need full sun for sugar accumulation.
7. Don’t leave old or diseased vines—harbor pests and fungi.
8. Don’t delay harvest; overripe fruits can split or rot