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Seed Production in Papaya: a Profitable Practice for Budding Entrepreneurs

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Papaya (*Carica papaya L.*) is one of India's most loved tropical fruits juicy, nutritious, and available almost year-round. But behind every sweet papaya fruit is a carefully cultivated seed, and producing high-quality seeds is a vital process for both commercial growers and home gardeners. If you are a farmer or grower looking to diversify your income or a hobbyist interested in learning how seeds are made, this article explains the how and why of papaya seed production in simple terms.

Why Seed Quality Matters?

Good seeds are the backbone of a successful papaya crop. Unlike many other fruits, papaya is highly sensitive to seed quality. Seeds affect:

- Germination rate
- Plant vigor
- Fruit size and sweetness
- Resistance to diseases like papaya ring spot virus

Therefore, selecting and producing good seed isn't just important it's essential.

Understanding Papaya's Biology

Papaya plants can be:

- **Staminate** (only produce male flowers pollen),
- **Pistillate** (produce only female flowers. It will borne fruits when pollinated), and
- **Hermaphrodite** (produce both pollen and fruit ideal for cultivation).

For seed production, hermaphrodite plants are preferred because they are self-pollinating and produce uniform, market-friendly fruits.

Steps in Papaya Seed Production

1. Selection of Parent Plants

Choose healthy, high-yielding hermaphrodite plants with desirable traits such as:

- Early bearing
- Uniform fruit shape and size
- Resistance to pests/diseases viz., *Papaya Ring Spot Virus*
- High total soluble solids (TSS)
- High papain activity

2. Controlled Pollination

Although papaya can self-pollinate, for seed production:

- Controlled pollination ensures purity.
- Rogue out any off-types (male/female plants) before flowering.

3. Fruit Harvesting for Seeds

- Select fully ripe fruits (yellow/orange skin).
- Harvest during the dry part of the day.

4. Seed Extraction and Processing

- Scoop seeds, wash off the gelatinous layer with water or fermentation (24–48 hours).
- Dry seeds in shade (not direct sun) to preserve viability.
- Store seeds in airtight containers at cool temperatures (below 10°C is best for long-term storage).

5. Seed Viability & Germination Testing

- A good batch should show **80% or higher germination**.
- Seeds remain viable for 6–9 months under proper storage.

Popular Varieties for Seed Production in India

Variety	Region	Traits
Pusa Delicious	North India	High yield and good TSS
CO-2	Tamil Nadu	Excellent fruit quality
Red Lady 786	Nationwide	Hybrid, early bearing, popular hybrid with tolerance to PRSV
Arka Prabhath	South India	Tolerant to papaya ring spot virus

Economics of Seed Production

- **Per acre yield of seeds:** ~20–25 kg
- **Selling price:** Rs. 800 – Rs.1,200 per kg (varies by hybrid and purity)
- **Profit potential:** High, especially for certified or hybrid seed production

Farmers often collaborate with seed companies or government horticulture departments for contract seed production.

Challenges in Papaya Seed Production

- Highly cross pollinated fruit crop
- Genetic segregation (offspring may not be true-to-type)
- High care needed to avoid male/female off-types
- Vulnerability to viral diseases and nematodes
- Limited seed viability under poor storage conditions

Use of tissue culture or F_1 hybrid seeds is becoming popular to overcome some of these issues, although seed production of F_1 hybrids is more complex.

Tips

- Always use seeds from known, disease-free sources.
- Monitor for diseases regularly.
- Label seed lots and test germination before selling or sowing.

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