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PQNK The Pristine Organic Production System for Onion and Garlic Cultivation

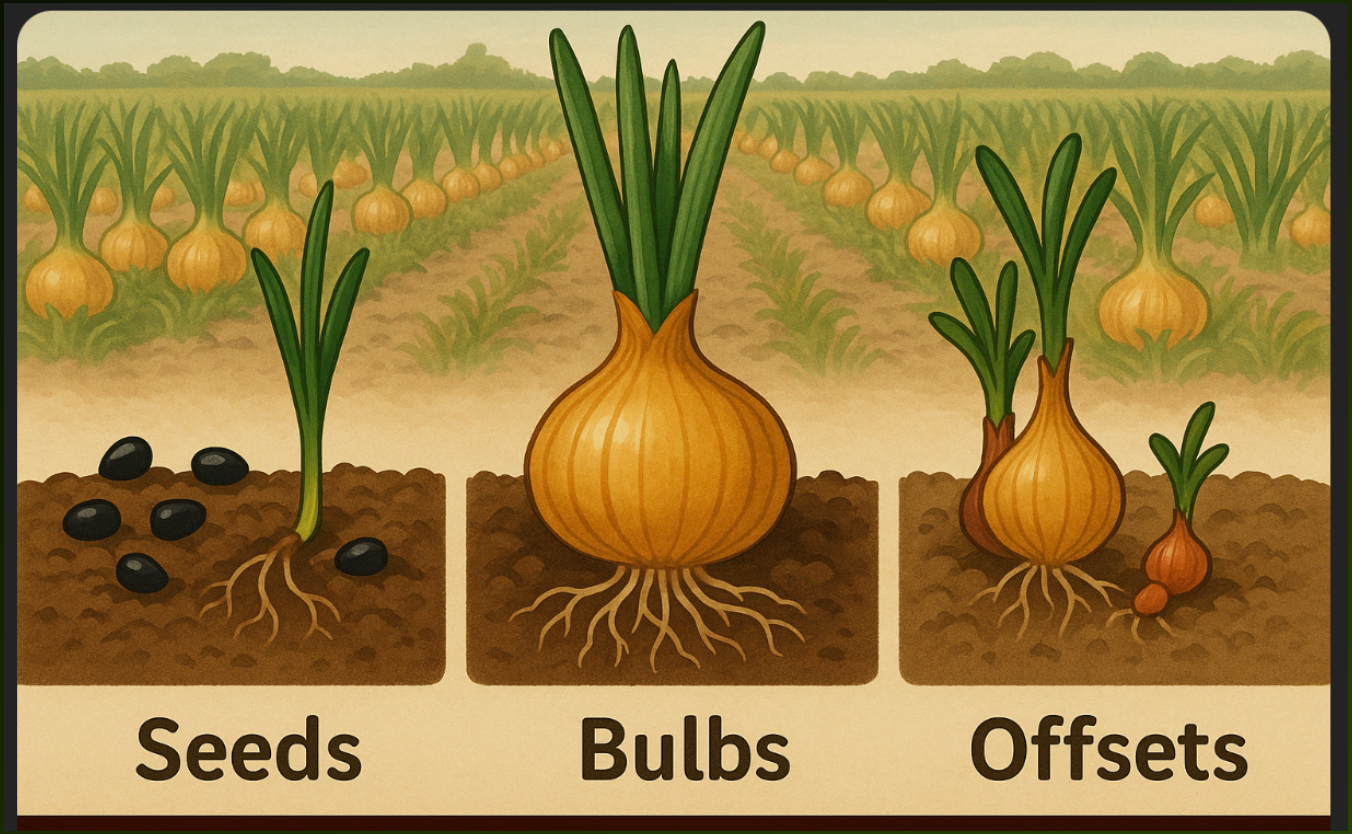


Seeds, Bulbs and Offsets

PQNK: Cultivating Sustainable Tomorrow Through Regenerative Agriculture

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Onion Propagation Methods... Understanding Onion Propagation Methods



Welcome to this presentation on sustainable approaches to onion and garlic cultivation. We'll explore various propagation methods and PQNK the Pristine Organic farming system that optimize production of these important allium crops while enhancing soil health and sustainability.

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Overview Of Planting Materials
Types Of Planting Materials For Alliums





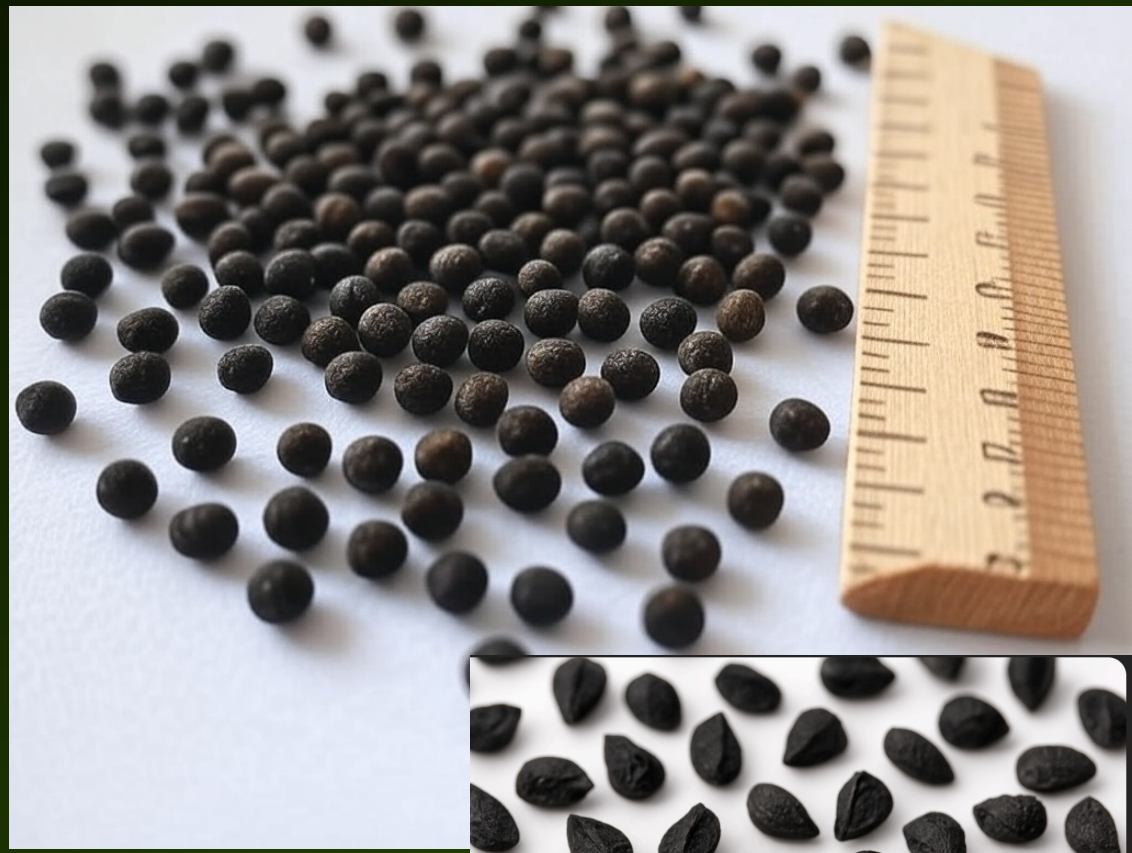
Both onions and garlic can be propagated using several main types of planting materials. Each has distinct characteristics that make them suitable for different growing situations.

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Seeds

Seeds:

- Tiny, elongated, dark-colored
- Used primarily for large-scale commercial cultivation
- Allow selection for specific traits (disease resistance, size, shape)
- Broader genetic base improves adaptability
- Take longer to grow and may produce variable bulb sizes
- Growth period: 4-6 months





First, let's look at seeds. These tiny, dark-colored propagules are the foundation of large-scale commercial onion cultivation. They offer genetic diversity, allowing growers to select for desirable traits like disease resistance and bulb characteristics. While seeds take longer to mature—typically 4 to 6 months—they provide greater adaptability to changing conditions, though with some variability in the final product.

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Bulbs (Main Or Storage Bulbs)



Bulbs (Main or Storage Bulbs):

- Mature, enlarged underground parts for consumption or planting
- Can be planted directly as "sets" for new plants
- Advantages: quick establishment and uniformity
- May carry diseases if not properly selected or stored
- Growth period: 2-3 months

Next are mature bulbs, which serve dual purposes as both food and planting material. When planted as "sets," these bulbs establish quickly and produce uniform crops in just 2 to 3 months—significantly faster than seeds. However, careful selection and storage are essential, as these bulbs can potentially carry diseases from one generation to the next.



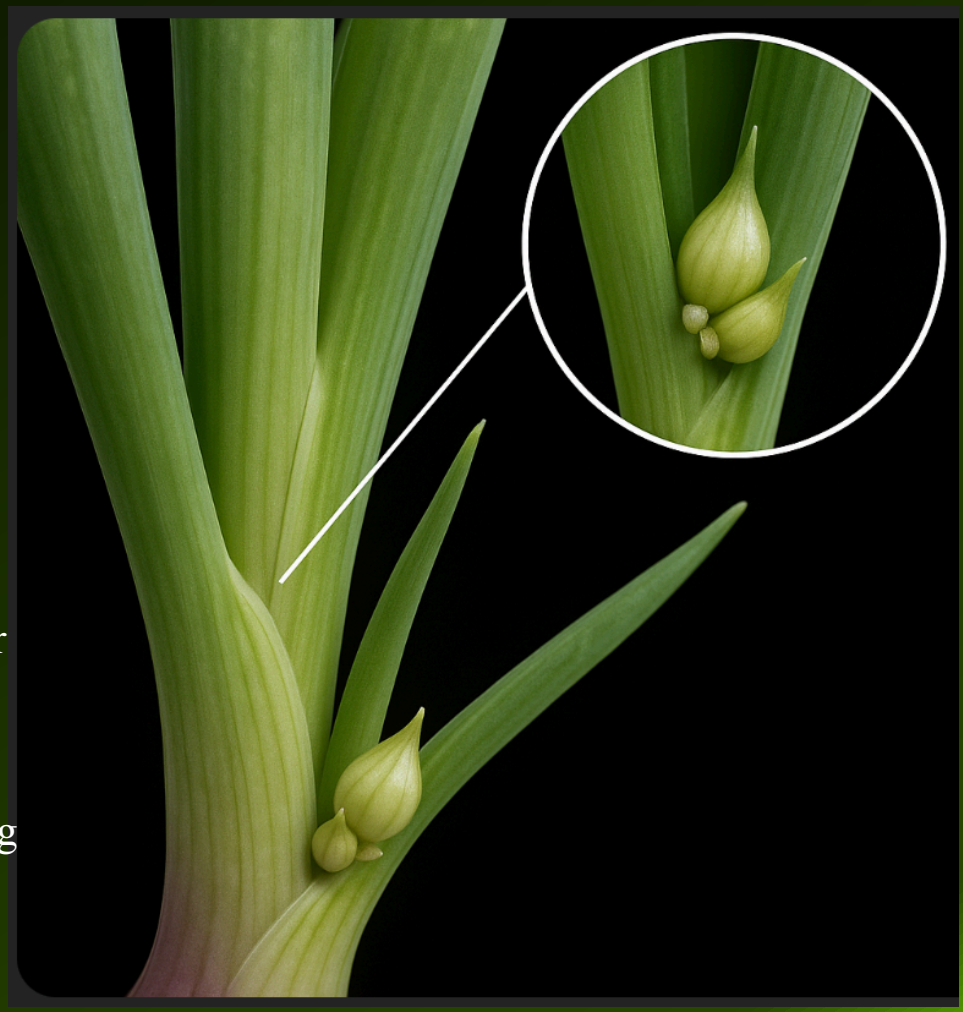
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Small Bulbs (Offsets Or Bulbils)

Small Bulbs (Offsets or Bulbils)

- Tiny bulbs formed in the leaf axils
- Used for vegetative propagation true to parent type
- Faster than seed propagation with high uniformity
- Popular for home gardening and rapid multiplication

Small bulbs, also called offsets or bulbils, are miniature versions of the main bulb that form in the leaf axils. These are particularly valuable for vegetative propagation because they remain genetically identical to the parent plant. Offsets combine the speed advantages of bulb propagation with exceptional uniformity, making them ideal for both home gardeners and commercial growers seeking consistent results.



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Flower Heads

Flower Heads:

- Flowering parts that produce seeds after pollination
- Used for seed production and breeding
- Often removed in cultivation to encourage bulb growth

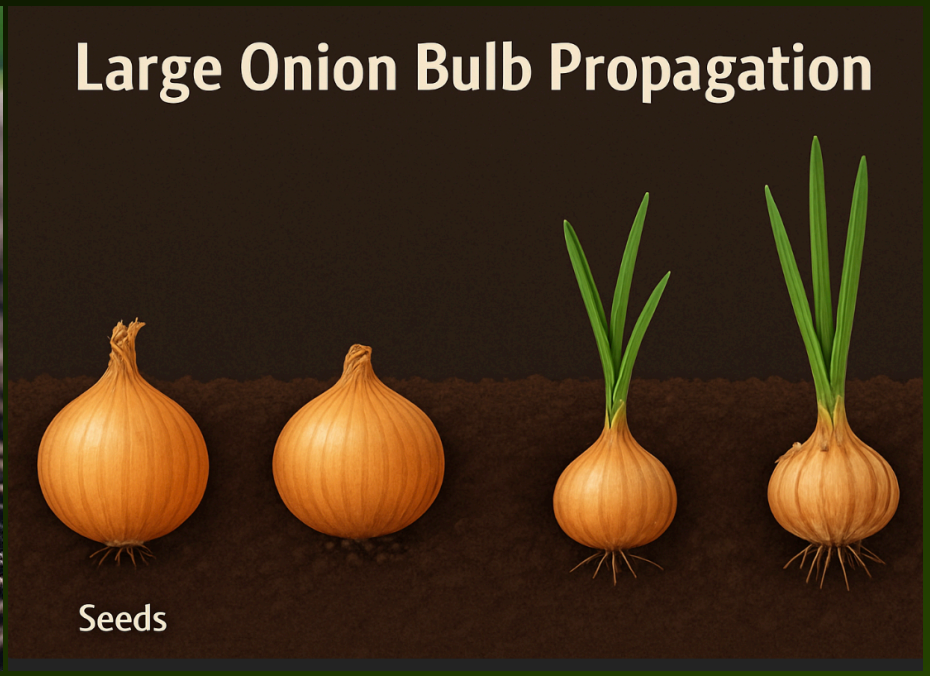
Finally, flower heads represent the reproductive stage of the onion plant. While essential for seed production and breeding programs, they're frequently removed in commercial cultivation to redirect the plant's energy toward bulb development. Understanding when to allow flowering versus when to prevent it is a key management decision for onion growers.



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Large Bulb Propagation





Using Large Bulbs for Propagation

Let's examine how large bulbs can be used for propagation, which is a common practice in many growing regions.

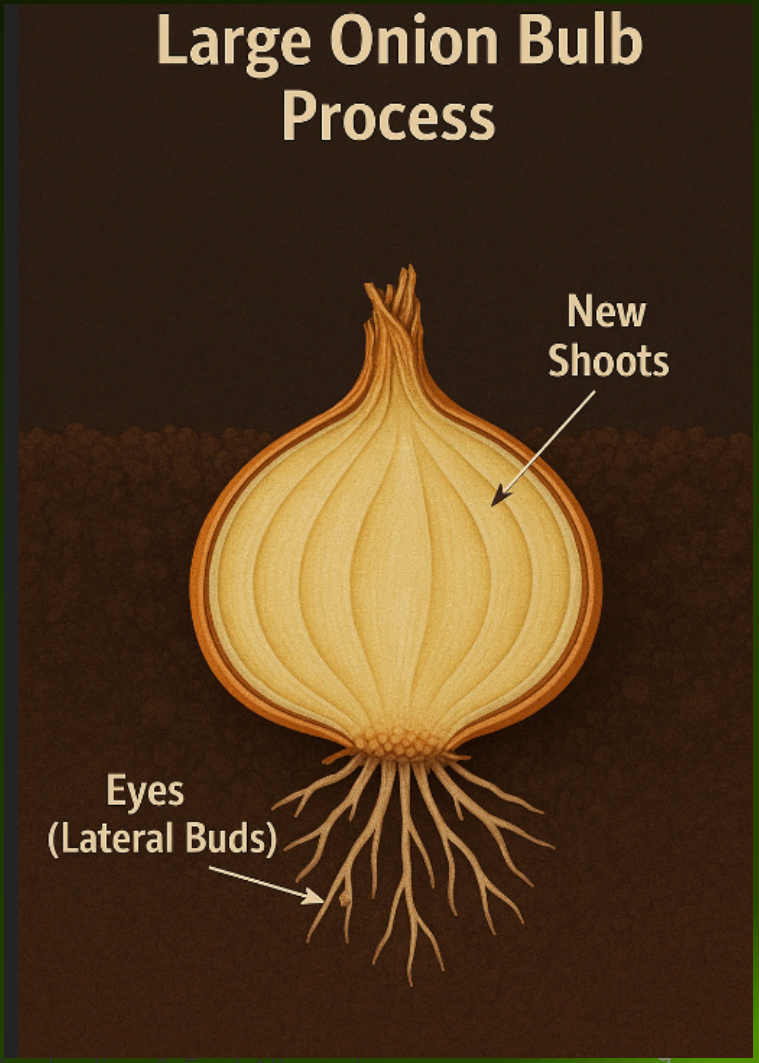
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Large Bulb Process

Large Bulb Process:

- Large bulbs have lateral buds or "eyes" that grow into new shoots
- Shoots develop into new plants with their own root systems
- Original bulb acts as a starter for the new plant

The large bulb contains lateral buds or "eyes" that sprout into new shoots when planted. These shoots quickly develop their own root systems, with the original bulb serving essentially as a nutrient reserve to jump-start growth—like a built-in starter package for the new plant.



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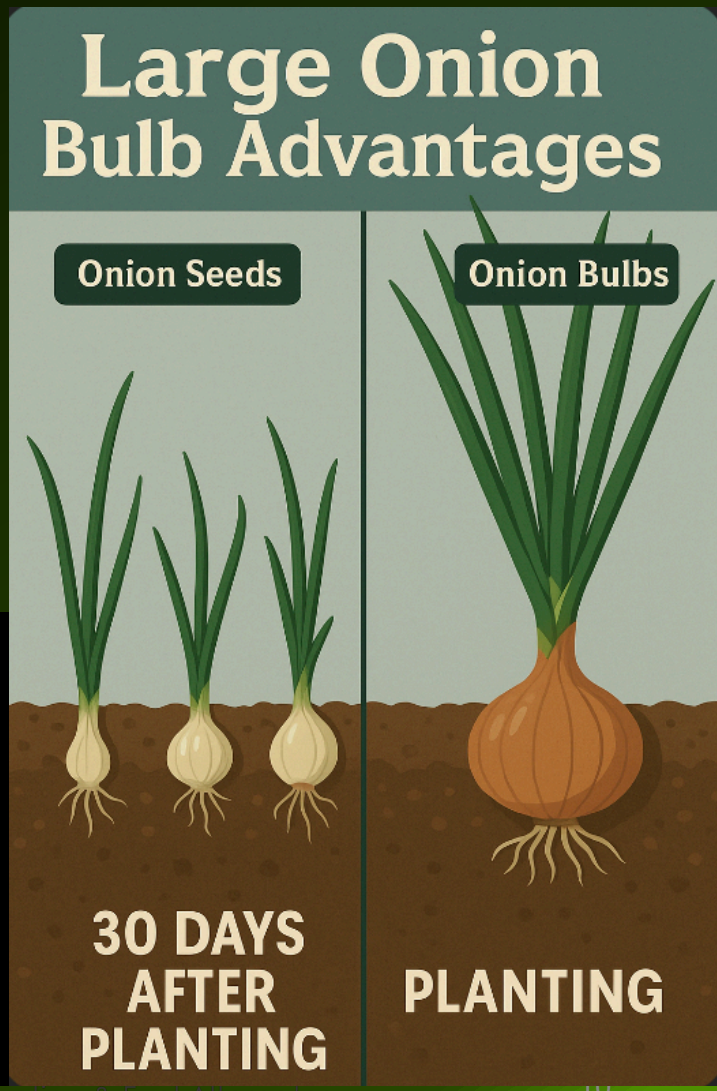
Large Bulb Advantages



Large Bulb Advantages:

- Faster establishment with more uniform crops
- Quicker harvest time compared to seed propagation
- More predictable bulb sizes
- Higher total productivity per season due to shorter growth cycle

Plants established from bulbs develop more rapidly and uniformly than those grown from seed. The predictable bulb sizes and shorter growth cycle translate directly to higher seasonal productivity, making this method particularly attractive for commercial operations with time constraints or multiple cropping seasons.



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Offset Production





Offset Production: Using Small Bulbs (Offsets) for Commercial Production
Now let's focus on what many consider the optimal propagation method for commercial production: using small bulbs or offsets.

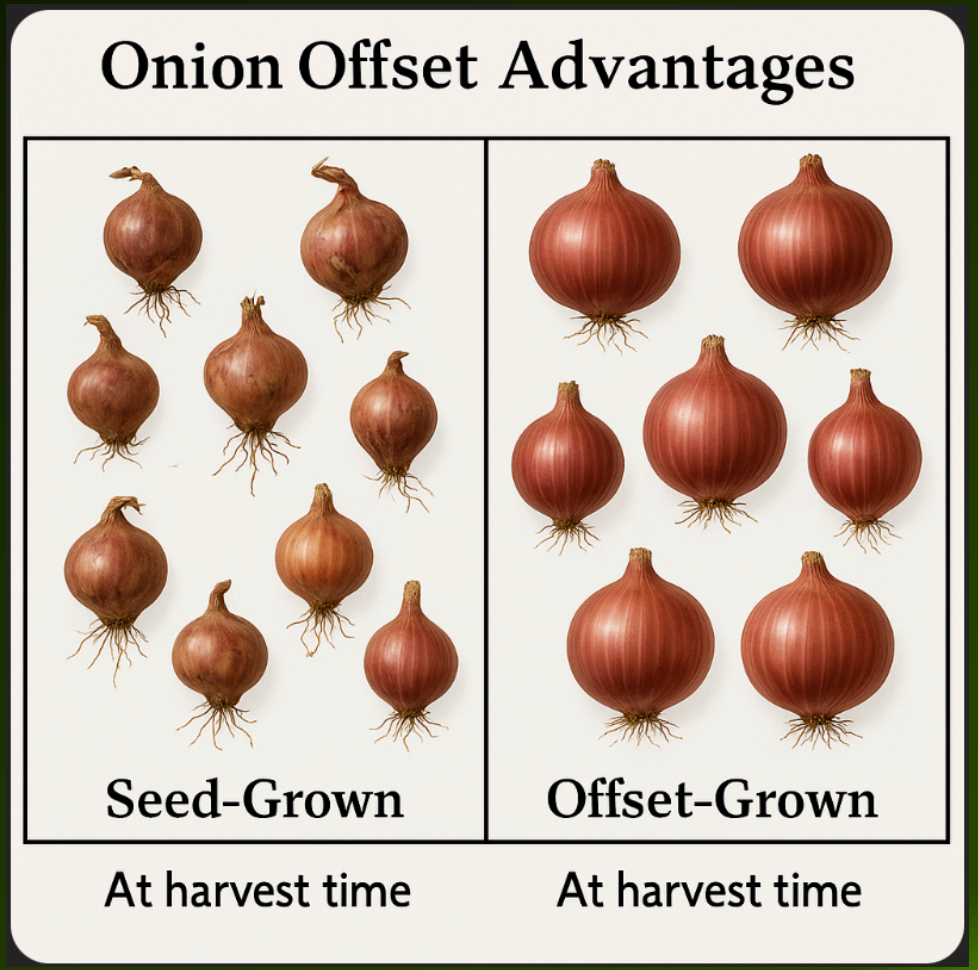
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Offset Advantages

Offset Advantages:

- Genetically identical to parent plant ensuring uniform crops
- Cost-effective compared to large bulbs or seeds
- Rapid multiplication capability
- Reliable with less variability for easier crop management

As clones of the parent plant, offsets produce exceptionally uniform crops with predictable characteristics. They're more cost-effective than both seeds and large bulbs, while offering rapid multiplication potential. The reliability and reduced variability simplify crop management decisions, reducing risk and labor costs.



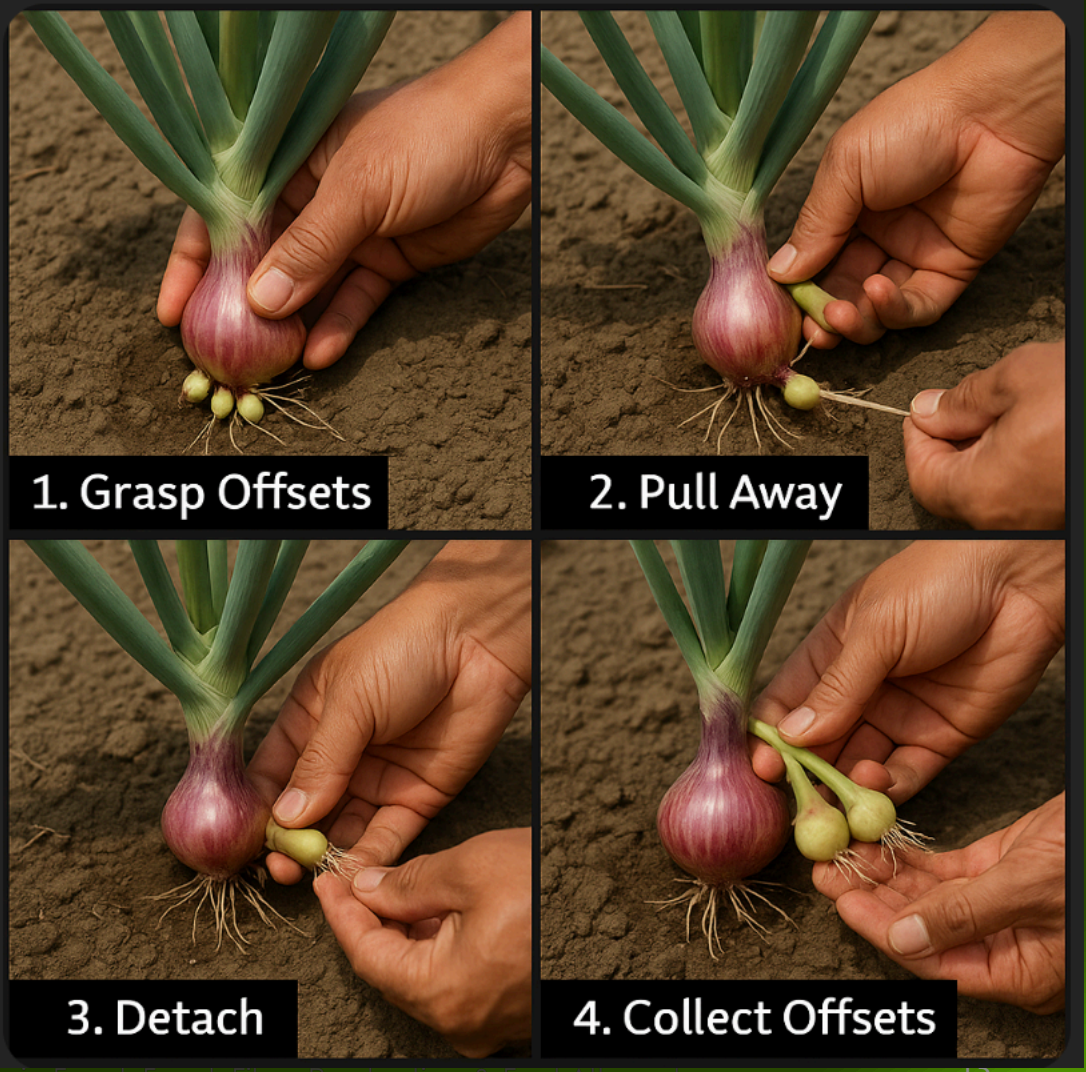
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Offset Collection Process

Offset Collection Process

1. Collect after main crop matures and begins to die back
2. Carefully dig around main bulb
3. Gently separate offsets using clean tools
4. Remove soil and debris; trim roots if necessary

Timing is crucial—harvest offsets when the main crop has matured and begun to die back. Use careful digging techniques to avoid damage, and gently separate the offsets with clean tools to prevent disease transmission. Final preparation involves cleaning away soil and debris, with minimal root trimming if necessary.



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Offset Storage

Offset Storage

1. Air-dry for a few days in a cool, ventilated place
2. Store at 4-10°C (39-50°F) in mesh bags or containers with good airflow
3. Best planted soon after harvesting for maximum viability

After collection, allow offsets to air-dry for several days in a cool, well-ventilated environment to reduce moisture content and prevent rot. For longer storage, maintain temperatures between 4 and 10 degrees Celsius in breathable containers to ensure proper airflow. However, for best results, plant offsets as soon as possible after harvesting and processing.



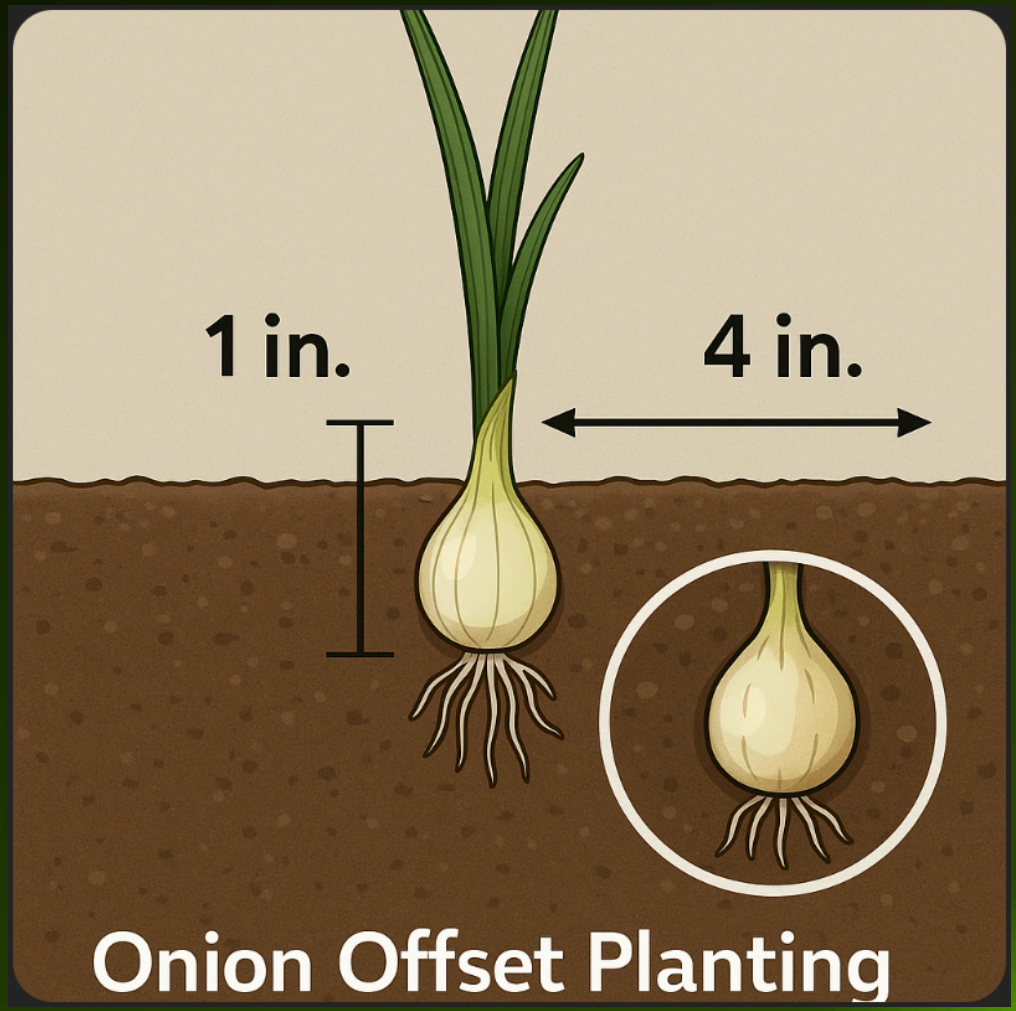
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Offset Planting Guidelines

Offset Planting Guidelines:

1. Timing: Early spring or late fall depending on climate.
2. Soil: Loose, fertile soil with organic matter.
3. Depth: 1 inch deep, pointed end up.
4. Spacing: 4 inches apart rows and plant to plant in rows.
5. Maintenance: Consistent low moisture managed by mulching.

Planting should be timed according to your local climate—typically early spring or late fall. Prepare loose, fertile soil enhanced with organic matter. Plant offsets at a depth of 1 inch with the pointed end facing upward. Maintain proper spacing of 4 inches between plants in rows that are 4 inches apart. After planting, ensure consistent moisture, diligent weed control by maintaining organic mulch to conserve water and suppress weed growth.

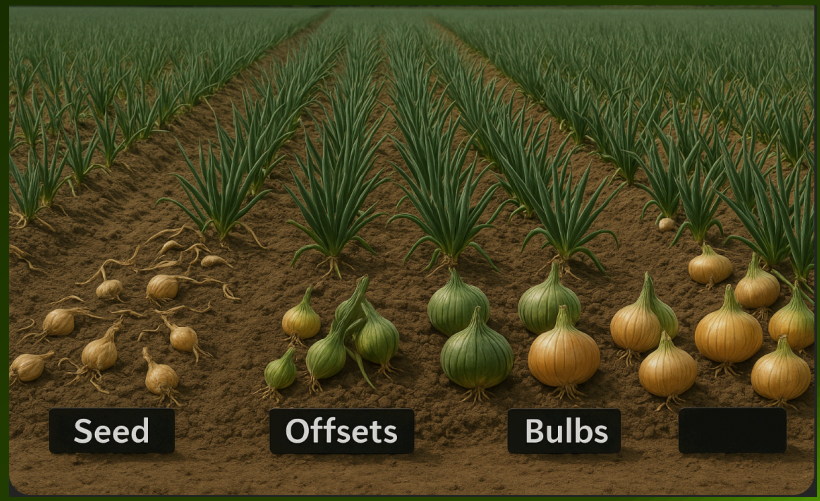


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Comparison Propagation Method

Feature	Seeds	Large Bulbs (Sets)	Small Bulbs (Offsets)
Growth Time	4-6 months	2-3 months	2-3 months
Uniformity	Variable	Good	Excellent
Genetic Diversity	High	Low	None (clone)
Cost	Higher initial seed cost	Moderate	Low
Best Use	Breeding, new varieties	Quick commercial crop	Uniform production
Yield Timeline	Longer term	Medium term	Short term

As we can see in this comparison, each propagation method offers distinct advantages. Seeds provide genetic diversity ideal for breeding programs but require longer growing periods. Large bulbs offer a good balance of speed and uniformity for commercial production. Small bulbs or offsets excel in producing highly uniform crops at the lowest cost, though without genetic diversity. The choice ultimately depends on your specific growing objectives, timeline constraints, and available resources.



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PQNK System for Allium Production

PQNK System for Allium Production

Applying PQNK System in Onion and Garlic Production

Steps for Conventional to PQNK Transition:

1. Create laser-levelled plots in flatland areas for efficient machinery operation
2. Break the hardpan (compacted soil layer 8-22" deep) to improve water/air infiltration
3. Flood irrigate to leach salts/chemicals and reconnect soil layers for expanded root networks
4. Make 42" wide raised beds with 18" furrows (for 60" tractor tracks) for controlled traffic
5. Plant cover crops to improve soil porosity, temperature regulation, and microbial activity
6. Mulch mature cover crops without disturbing soil and root systems
7. Plant onion/garlic propagules at 4" spacing (row-to-row and within rows) yielding 235,224 bulbs/acre
8. Eliminate fertilizers, pesticides, and herbicides—no purchased inputs required
9. Minimal irrigation needed with proper mulch; maintain only 35% water-filled soil pores
10. Harvest when 60% of plant leaves turn yellow



Note: This system works identically for both onion and garlic cultivation, making it versatile for all allium crops.

This slide introduces the PQNK Pristine Organic farming system for onion and garlic production. Both crops respond exceptionally well to this identical approach. This regenerative system begins with laser-levelling and breaking the hardpan—that compacted layer restricting water and air movement. After flood irrigating to leach unwanted chemicals, raised beds are created with specific dimensions to accommodate machinery while minimizing soil compaction. Cover crops play a crucial role in improving soil structure before being mulched in place. Allium crops are then planted at precise spacings to maximize yield without overcrowding. One of the most remarkable aspects of this system is the elimination of purchased inputs like fertilizers and pesticides. With proper mulching, irrigation requirements are dramatically reduced, and harvest timing is guided by observing the natural yellowing of plant leaves. This system represents a complete paradigm shift from conventional cultivation to regenerative practices for all allium family crops.

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Conclusion

Thank you for joining this presentation on PQNK, the Pristine Organic to onion and garlic cultivation. Understanding these different propagation methods allows growers to select the most appropriate technique for their specific circumstances, whether prioritizing genetic diversity, speed to harvest, or uniformity of production. By applying these principles alongside the PQNK farming system, both commercial and home growers can optimize their allium cultivation for improved yields, sustainability, and soil health. This integrated approach to allium production represents farming that works with nature rather than against it—benefiting both growers and the environment.



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