REGENERATIVE AGRICULTURE

PQNK

FARMING IN PRACTICE

Site-Specific Solutions for Sustainable Agriculture

Practical Answers to Farmer Questions • Based on Paedar Qudratti Nizam Kashtqari Principles • Regenerative & Organic Farming System

Abundance of nutritious food
PQNK®
The science of natural farming

Subject: Detailed Answers to Your Questions on PQNK Farming Practices

Dear Usman,

Thank you for your thoughtful and detailed questions. Your commitment to learning and implementing the Paedar Qudratti Nizam Kashtqari (PQNK) system is truly commendable. Below, I address each of your queries in light of PQNK principles, focusing on regenerative, sustainable, and pristine organic farming.

Before doing so, I would like to explain that most of your questions are site-specific. Appropriate answers to take steps in specific situations are, many times, not practical because answers are in general form.

To successfully undertake such projects, we first finalize the objectives—meaning what our production would be, what we wish to grow in terms of orchards, field crops, and timber plantations. Once the production plan is final, we check and list our resources: land, water, financial, human, and the level of knowledge and training our human resource has.

Based on this input, a blueprint is developed in which each step complements the other. Application methods are optimal and cost-effective.

Topography survey, climate data to select the most suitable plantation options, yearly rainfall—and the periods of most rain and the period of drought—conventional crops grown in the area, and the availability of machinery that has proper after-sales service arrangements: this is the foundational data on which the project is shaped.

The following are generalized answers:

1. Raised Beds: Orientation (Horizontal vs. Perpendicular)

In PQNK, raised beds are designed to optimize natural gradients, water flow, and micro-climate management. The orientation depends on:

- **Slope and drainage:** Beds perpendicular to the slope reduce erosion and enhance water infiltration.
- **Sunlight and wind patterns:** Horizontal beds may be used in flatter terrains to maximize sun exposure and airflow.

- **Crop rotation plans:** Orientation may vary to facilitate crop sequencing and polyculture.
- **Machinery compatibility:** Bed profile is designed to match the machinery's working width, ensuring traffic passes through furrows without compacting the growing area.
- **Water management:** Bed width should correlate to soil infiltration capacity and crop canopy size. Furrow depth must prevent water from flowing over beds.

Key takeaway: Align bed direction with the land's natural topography to minimize disturbance and work with nature.

2. Irrigation: Lateral Pivot vs. Furrow for Large Fields

For a field measuring 600m+ in length and 200m in width:

- Lateral pivot systems can be efficient for uniform water distribution, especially in high-rainfall areas. However, PQNK emphasizes minimal water use and soil moisture conservation.
- Furrow irrigation, when combined with mulching and cover crops, reduces evaporation and enhances infiltration.

Recommendation: If using lateral pivots, ensure they are low-pressure and paired with soil health practices (e.g., organic mulches) to avoid compaction and runoff. PQNK generally favors furrow irrigation with tailored bed designs to mimic natural water movement. In most cases, under a well-managed PQNK system, irrigation may not be required at all once soil health and mulch systems are established.

3. Furrow Water Head Ditch Construction

Water head ditches should be designed to minimize erosion and distribute water evenly:

- **Construction:** Use shallow, broad ditches aligned with natural water flow. Water should move slowly, with a head of 8–12 inches to allow siphon tubes to function properly.
- **Placement:** Align ditches with natural contours to guide water without force.
- **Maintenance:** Integrate ditches into polyculture systems (e.g., planting water-tolerant species along edges). Depending on

operational scale, maintenance can be manual or mechanized. Tree plantation along banks helps stabilize soil.

4. Land Clearing and Reclamation

PQNK avoids slash-and-burn and bulldozing due to their destructive impacts.

- Forestry mulchers can be used but must be followed by immediate soil protection:
    - Manage organic mulch at a thickness that still allows planters to cut through and place seed in soil. In many cases, tree plantation is preferable to seasonal field crops initially.
    - Retain existing root systems to aid water infiltration and soil structure.
    - Use targeted manual removal of persistent stumps only if necessary for field crop establishment.
- **Root regrowth:** Manage through thick mulch layers and deep-rooted cover crops. Mechanical intervention may be needed in some cases.

PQNK principle: Retain the existing environment as much as possible. Wild growth mulch can suffice for soil coverage.

5. Alley Cropping vs. Agroforestry

- Alley cropping focuses on annual crops between tree rows for quick returns, commercial benefits and microclimate benefits.
- Agroforestry integrates trees, shrubs, and crops for long-term ecological balance.

PQNK Perspective: Both systems align with regenerative goals. Section fields strategically based on:

- **Soil type and slope:** Allocate sensitive areas to agroforestry.
- **Crop needs:** Group grains, oil seeds, tubers, and pastures where their requirements are met without disrupting the system.
- **Diversity:** Mix systems where possible to enhance resilience.

6. Machine Use and Template for 100-Acre PQNK Development

PQNK emphasizes minimal tillage and precision tools. A general template for 100 acres (assuming a 120 HP tractor in stable, clear soil):

- **Subsoiling:** 40 hours (once, to break hardpan without inversion).
- **Laser leveling:** 25 hours (gentle grading, preferably furrow leveling to ensure water movement without bed overflow).
- **Bed shaping:** 40 hours (using bed formers aligned with contours).
- **Primary sowing with Jantar:** 25 hours (integrated seeding and mulch application).

Note: Adjust based on soil conditions and prior land use. In wild-grown areas, clearing may not be necessary—always conduct a PQNK assessment first.

Following is the specimen (not updated) that should be based on the deployed machinery for cost estimation.

Unit Cost & Retailing Price Calculations

Description	Factors	Tractor 85 HP	Tractor 65 HP	Bulk Soil Shifter	Laser Leveller	Front blade	Sub-Soiler	Chisel Plow 7 tine	Ditcher to make water ways
Value		1,265,000	900,000	260,000	650,000	450,000	80,000	120,000	150,000
Interest	20%	253,000	180,000	52,000	130,000	90,000	16,000	24,000	30,000
Depreciation/Appreciation	20%	253,000	180,000	52,000	130,000	90,000	16,000	24,000	30,000
Insurance	4%	50,600	36,000	10,400	26,000	18,000	3,200	4,800	6,000
Cost of Ownership - 1 year		**1,821,600**	**1,296,000**	**374,400**	**936,000**	**648,000**	**115,200**	**172,800**	**216,000**
Fuel		637,500	510,000						
Repair & Maintenance	10%	63,750	51,000	7,488	18,720	12,960	2,304	3,456	4,320
Operator	10%	264,000	264,000						
Cost of operations		**965,250**	**825,000**	**7,488**	**18,720**	**12,960**	**2,304**	**3,456**	**4,320**
Annual Cost		**2,786,850**	**2,121,000**	**381,888**	**954,720**	**660,960**	**117,504**	**176,256**	**220,320**
Hourly Cost	1500	1,858	1,414	255	636	441	78	118	147
Mark-Up	50%	929	707	127	318	220	39	59	73
Retail Price Hourly		2,787	2,121	382	955	661	118	176	220
Hourly RP with Tractor				**3,169**	**3,076**	**2,782**	**2,239**	**2,297**	**2,341**
Acres per Hour						2.00	2.00	2.00	2.00
Cost per Acre						1,391	1,119	1,149	1,171

7. Mulches: Live vs. Dry Materials

- Dry mulches (straw, leaves) excel in moisture retention and temperature moderation during hot periods.

- Live mulches (cover crops) enhance soil structure, nutrient cycling, and soil pore formation.

PQNK Policy: Use both based on parameters:

- **Season and climate:** Dry mulches in high heat; live mulches in wetter seasons.
- **Crop stage:** Dry mulch for established plants; live mulch for fallow periods.
- **Soil needs:** Combine to balance carbon addition, nitrogen fixation, and improve aeration, water infiltration, and microbial activity.

8. Tuber Crops: Harvesting and Cassava Suitability

- **Potatoes under mulch:** Harvest can be manual or mechanical with care. Use modified diggers that lift tubers without disturbing the soil.
- **Cassava:** Thrives in PQNK systems when planted in well-mulched beds with stable soil temperature and moisture.
- **Soil disturbance:** Always minimize tillage during harvest. Use broadforks or shallow implements to preserve soil structure.

9. Ethanol Production: Crop Recommendations

PQNK prioritizes food-first approaches. If ethanol is pursued:

- **Recommended crops:** Sweet sorghum or cassava due to high biomass, low input needs, and regenerative compatibility.
- **Rice for ethanol:** PQNK systems use minimal water and avoid methane emissions, so rice can be suitable depending on local productivity and context. However, using rice residues for biogas is preferred over grain for ethanol.
- **Integration:** Grow ethanol crops in rotation with food crops to maintain soil health. Ensure crop combinations do not cause shading or operational inefficiencies.

Conclusion

Your questions reflect a deep engagement with sustainable farming. PQNK is about working with nature, not against it. Each decision—from bed orientation to crop choice—should enhance ecological balance, soil vitality, and long-term productivity.

May Allah bless your efforts and grant you abundant harvests and wisdom.

Warm regards,
Asif Sharif

For site-specific planning, consult PQNK blueprints and knowledge papers.

Footnote: *PQNK (pronounced 'picnic')—the regenerative & sustainable Pristine Organic Farming System—is grounded in Natural Ecosystem Science. This science employs perennial biodiversity, protects soil with organic mulch, and avoids practices like water inundation, tillage disturbance, and leaving soil bare.*

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