ACRONYMS AND ABBREVIATIONS

ACI Ancient Conventional Industrial agriculture, the conventional farming system built on tillage, synthetic mineral fertilizers, pesticides, and herbicides. ACI farming substitutes purchased chemistry for biological function, progressively depleting the soil community it depends upon.

BT Bacillus thuringiensis, a naturally occurring soil bacterium that produces proteins toxic to specific insect larvae. BT bacteria are present in biologically healthy PQNK soil and provide free, species-specific pest protection without the need for any spray application.

CO_2 Carbon dioxide, the primary carbon source for plant mass. About 95% of a plant's mass is carbon, hydrogen and oxygen from atmospheric CO_2 and water, through photosynthesis, and about 4% is nitrogen from the air, through soil bacteria; mineral elements from the soil are needed in small amounts.

HYV High-Yielding Variety, crop varieties selected in the Green Revolution (1960s and 1970s) for maximum grain yield under heavy synthetic fertilizer inputs. HYVs typically have shallow root systems, reduced mycorrhizal associations, and lower nutritional density than heritage varieties.

PQNK Paedar Qudratti Nizam Kashatqari, literally "Natural Ecosystem Science of Production Agriculture" in Urdu. The closed-loop biological production system developed by Asif Sharif over more than fifty years of field research, based on the principles of natural ecosystems.

SIPP Slit Insertion Precision Planter, the PQNK-designed no-till planting implement that inserts seed into the soil through an existing mulch layer at precise depth and spacing, without disturbing the soil surface or the biological community beneath.

SMM Soil Moisture Management, the PQNK water protocol that draws on four natural moisture sources (rain, dew, atmospheric humidity, capillary rise). Mature PQNK beds need no irrigation where rainfall is 400 mm (16 inches) or more; during transition, two or three furrow flows are given only when the ball test shows the soil is dry. Across the documented crop comparisons, SMM uses 77–92% less irrigation water than conventional flood irrigation.

SOC Soil Organic Carbon, the carbon fraction of soil organic matter. SOC is the primary food source for the soil biological community. PQNK management builds SOC season after season; ACI management depletes it: in Punjab, soil organic matter fell from 3–4% in the 1950s to below 1% (Chapter 3).

SRI System of Rice Intensification, a rice management methodology developed by Fr. Henri de Laulanié and documented by Prof. Norman Uphoff of Cornell University, which demonstrated that rice yields increase when flooding is reduced and plant spacing is wider. PQNK rice goes further: no inundation at all, permanent raised beds, permanent mulch, and a living soil.

t/ha Tonnes per hectare, the standard unit of crop yield. One tonne per hectare equals approximately 893 pounds per acre.

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VIPP Vertical Insertion Precision Planter, the PQNK implement variant designed for vertical seed insertion, used in specific bed configurations and for crops requiring deeper or more precise placement than the standard SIPP geometry provides.