The NEON "Managing a Crop Rotation System" Chart

A	**Identify Rotation Goals**	**A-1** Review overall farm & personal goals (e.g., long & short term, mission statement)	**A-2** Review overall farm operation (e.g., marketing strategies, profitability, farm family/team, production system [crop & livestock mix], length of season, equipment, raised beds or row crops, on-farm compost production)		**A-3** Identify problems that can be addressed through rotation
B	**Identify Resources & Constraints**	**B-1** Identify personal strengths, weaknesses, likes & dislikes	**B-2** Determine available land (e.g., quantity, suitability)	**B-3** Determine irrigation potential for each field (e.g., equipment, water availability)	**B-4** Identify markets for cash crops
		B-10 Inventory labor availability	**B-11** Assess labor strengths, weaknesses, likes & dislikes	**B-12** Identify input suppliers (e.g., plants & seeds, amendments, manure/ compost, cropping materials, post-harvest packaging)	**B-13** Review regulations (e.g., organic certification, phosphorus regulations, other applicable relevant regulations)
C	**Gather Data**	**C-1** Walk fields regularly to observe crop growth & field conditions	**C-2** Create field maps including acreage, land, soils (including NRCS soil map data), physical characteristics, frost pockets, air drainage, microclimates; plot areas with known problems on map		**C-3** Test soils (e.g., N, P, K, secondary- & micronutrients, pH, cation exchange capacity, organic matter)
		C-8 Consult sales data & market trends	**C- 9** Categorize crops (see sidebar 2.9, page 15)	**C-10** Categorize fields (see sidebar 2.9, page 15)	**C-11** Maintain records (e.g., up-to-date maps, information on crops & fields, etc.)
D	**Analyze Data**	**D-1** Assess weather probabilities	**D-2** Assess soil conditions on a bed or field basis (e.g., residue, moisture, temperature, compaction, last year's mulch; see sidebar 2.12, page 18)		**D-3** Compare crop cultural needs to field characteristics (e.g., soil test results, crop residues)
E	**Plan Crop Rotation**	**E-1** Review recent cropping history (e.g., 3 or more years; field or bed basis; by crop & sequence of botanical families, performance, production, logistical issues)		**E-2** Consider field needs & conditions (e.g., disease, fertility)	**E-3** Group crops according to maturity dates (e.g., for simultaneous or sequential harvesting)
		E-10 Schedule succession plantings of cash crops	**E-11** Determine cover crop types, field locations, & quantities	**E-12** Integrate cash & cover crops (e.g., simultaneous [overseed, interseed, undersow] or sequential [one follows another])	**E-13** Determine managed fallow field locations	**E-14** Plan crop/rotation experiments (e.g., new trials, new-to-this-farm rotations)
F	**Execute Rotation**	**F-1** Organize rotation planning & management tools (e.g., planting charts, equipment booklets, maps, reference materials)	**F-2** Review rotation & production plans	**F-3** Confirm markets for cash crops (change crops or quantities if price or demand requires)	**F-4** Implement production plan (e.g., secure labor & train labor, prepare equipment [including irrigation], order seeds & supplies)
		F-9 Prepare soils as soon as weather permits (using appropriate tillage, prepare fields when field conditions are right, avoiding compaction & allowing time for any cover crops or residue to adequately break down)		**F-10** Plant crops (follow plan & planting calendar as conditions permit; capture planting windows, "seize the moment"; adjust plan as needed based on contingency guidelines [see **E-16**])	
G	**Evaluate Rotation Execution**	**G-1** Assess soil quality (e.g., expected vs. actual)	**G-2** Assess yields (e.g., varieties, cover crops; expected vs. actual)	**G-3** Assess timing & sequencing (e.g., expected vs. actual)	**G-4** Assess costs of production (e.g., by crop, expected vs. actual)
		G-11 Determine if successes or failures were due to internal/on-farm or macro/ regional issues (e.g., consult other farmers, extension agents, others)		**G-12** Analyze success & failure of rotation plan (e.g., review goals, identify factors, consult external information sources, draw conclusions)	**G-13** Maintain records (e.g., production records, experiment results, successes & failures, speculations)
H	**Adjust Rotation Plan**	**H-1** Identify successful combinations & repeat (set successful rotations on "automatic pilot")		**H-2** Develop collaborations with researchers & farmers to create solutions to problems or verify successes (e.g., trials & experiments)	**H-3** Investigate new market opportunities ("smell the niche")

The NEON "Managing a Crop Rotation System" Chart (*continued*)

A-4 Set rotation goals (e.g., manage insects, disease, weeds, soil, field logistics; see sidebar 2.8, page 14, set custom goals)	**A-5** Review annual production plan (e.g., crop & cover crop species & varieties, desired quantities)	**A-6** Balance acreage, at whole farm level, between cash crops, cover crops, livestock, and "fallow" (e.g., bare soil, stale seed-bed, sod/hay, permanent pasture, or woodlot; consider role of livestock in fertility and weed control)	**A-7** Update records (e.g., whole farm plan & farm mission, record annual production plan)

B-5 Review projected annual cash flow	**B-6** Identify neighbor issues (e.g., compost pile location, spraying, chemical drift, pollination, genetic pollution)	**B-7** Inventory farm equipment & facilities (e.g., greenhouses, tractors, post-harvest handling areas)	**B-8** Assess crop cultural needs (e.g., spacing, trellising, crop height, microclimates, irrigation)	**B-9** Identify cultural constraints based on equipment (e.g., row width, irrigation)

B-14 Determine available rotation management time	**B-15** Establish and maintain relationships with off-farm experts (e.g., extension, scouts, land grants, others; talk to laborers)	

C-4 Network with farmers & others (e.g., helpers, extension, others; site-specific & practice-related)	**C-5** Study existing research data (e.g., cover crops, insects, diseases, fertility, weeds)	**C-6** Consult field records (e.g., what was planted where in previous years, successes & failures	**C-7** Consult meteorological data (e.g., frost free dates, rainfall)

D-4 Assess whether pest, disease, or weed pressures from previous season must be addressed	**D-5** Determine applicability of research data, advice, & other farmers' experience	**D-6** Assess crop mix for whole farm (e.g., market data, soil tests)	**D-7** Maintain records (e.g., record data analysis results & decisions made)

E-4 Consider harvest logistics (e.g., access to crops; field & row length, minimum walking & box-carrying distance, use of harvest equipment, plan for ease of loading onto trucks)	**E-5** Consider companion planting options	**E-6** Group crops according to botanical families	**E-7** Determine crop quantities & area (e.g., 500 row feet or 2 acres; add 10% for contingencies)	**E-8** Determine field locations of most profitable, beneficial, and "at-risk" crops	**E-9** Determine field locations of lower-priority crops

E-15 Draft annual plans (e.g., rotation plan, production plan, soil fertility plan)	**E-16** Develop guidelines for contingencies in case rotation does not go as planned (e.g., written or mental guidelines for improvisation: principles, priorities to use to make on-the-spot decisions)	**E-17** Use senses & imagination to review plan (e.g., field plans and logistics; walk fields and visualize rotation, "farm it in your head")	**E-18** Maintain records (e.g., write down plan, draw maps)

F-5 Monitor weather (e.g., short term [best day for planting]; long term [need to change plan due to drought])	**F-6** Monitor soil & crop conditions (e.g., field readiness for planting; cover crop maturity; residue incorporation)	**F-7** Monitor greenhouse conditions (e.g., observe condition of transplants relative to soil conditions; slow or accelerate growth if necessary to produce appropriate-sized transplants on-time)	**F-8** Prepare work schedule

F-11 Keep unused soil covered (e.g., cover crop, mulch, trap crops)	**F-12** Maintain crops (e.g., cultivate, spray, trellis, irrigate, harvest)	**F-13** Adjust actions according to field & crop conditions (e.g., weather, soils, weed pressure; assign crops to different fields or beds to adjust for wetness or other problems; replant if necessary, abandon crop or replace with a cover crop to cut losses)	**F-14** Maintain records (e.g., what was actually planted where, successes & failures, planting & harvest dates, compliance with regulations & organic certification)

G-5 Assess profitability on a whole farm & crop-by-crop basis (e.g., expected vs. actual)	**G-6** Assess disease control (e.g., expected vs. actual)	**G-7** Assess weed control (e.g., expected vs. actual)	**G-8** Assess insect & pest control (e.g., expected vs. actual)	**G-9** Interview work crew for suggestions; determine likes, dislikes	**G-10** Measure performance against rotation goals (positive or negative outcomes)

H-4 Tweak crop mix (e.g., based on market data & field performance; consider adding or abandoning crops or elements of rotation as necessary)	**H-5** Tweak field management (e.g., change planting or plowdown dates, crop locations; shift crop families to different fields; put poorly performing fields into hay ahead of schedule)	**H-6** Upgrade or improve equipment as necessary	**H-7** Start process over (return to A: Identify Rotation Goals)	**H-8** Maintain records (e.g., keep notes of actual changes implemented)