NRAES-204

# Crop Rotation on Organic Farms

## Crop Sequence Problems and Benefits

The table shows potential problems and benefits of following a crop shown on the left with a crop shown on the top. The letters in the body of the table indicate potential problems: D, disease; W, weeds; I, insects; N, nutrients; S, soil structure; C, other agronomic problems such as timing issues. A dash following a letter indicates there are beneficial management opportunities with this sequence. Please see the notes on the accompanying laminated sheets for more information on problems or benefits of a sequence. Since following a crop with itself is generally a bad practice, cells on the diagonal of the table are marked with a bullet. Crop sequences that involve two crops in the same plant family are shown by light green cells. Crops are listed in three groupings: vegetables and short lived fruit crops, field crops, and cover crops. These three groups of crops are marked to the left of the table by red lines. Within each of the three types of crops, crops are grouped by family.

Based on Appendix 2: Crop Sequence Problems and Opportunities, compiled by Charles L. Mohler, from *Crop Rotation on Organic Farms: A Planning Manual* (July 2009), edited by Charles L. Mohler & Sue Ellen Johnson. Crop family color-coding corresponds to colors in "Real Fields on Real Farms" sample rotations in Chapter 4. The book was made possible by funding from SARE, Sustainable Agriculture Research and Education.

**Legend**

- **C** = Crop management problems.
- **D** = Disease problems.
- **I** = Insect problems.
- \- = Management opportunity.
- **N** = Crop nutrition problems.
- **S** = Soil structure problems.
- **W** = Weed problems.
- • *Same crops. Do not plant.*
- (light green cell) *Crops are in the same family.*

Note: A dash following letters C, D, I, N, S, or W indicates there is a beneficial management opportunity with this sequence. For example, **D-** = Disease management opportunity for the selected crop sequence. *Please see the accompanying laminated sheets for more information on problems or benefits of a sequence.*

Following Crop (Column) — Vegetables and short lived fruit crops: B–AC; Field crops: AD–AL; Cover crops: AM–AZ

| Group | Family | Row | Preceding Crop | A General | B Onion | C Scallion | D Leek | E Garlic | F Bean, snap | G Pea | H Lettuce etc.[1] | I Potato | J Tomato | K Eggplant | L Pepper | M Carrot, parsnip | N Celery, herbs etc.[2] | O Celeriac |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | — | 1 | General | | W- | | | | | | | W- | | | | | | |
| Vegetables and short lived fruit crops | Lily | 2 | Onion | C | • | | D | D | | | | | | | | | | |
| | | 3 | Scallion | C | | • | | | | | | | | | | | | |
| | | 4 | Leek | C | D | | • | D S | | | | S | | | | S | | |
| | | 5 | Garlic | C | D | | D S | • | | | | S S- N- | | | | S | | |
| | Legume | 6 | Bean, snap | | | | | | • | | D | D | | | | | | |
| | | 7 | Pea | | | | | | | • | D C- | | | | | | | |
| | Lettuce | 8 | Lettuce etc.[1] | | W- | | W- | | D | D | • | D | D C- | C- | C- | W- | | |
| | Nightshade | 9 | Potato | W- | | | S | S C- | D | | D | • | D I | D I | | D S W- | D S- | D |
| | | 10 | Tomato | | | | | | D | | D | D I | • | D I | D | | | |
| | | 11 | Eggplant | | | | | | | | | D I | D I | • | D | | | |
| | | 12 | Pepper | | | | | | | | | D | D | D | • | | | |
| | Carrot | 13 | Carrot, parsnip | | W | | S | S | D | | D | D S | | | | • | D | D |
| | | 14 | Celery, herbs etc.[2] | | | | | | | | | D | | | | D | • | D |
| | | 15 | Celeriac | | | | | | | | | D | | | | D | D | • |
| | Mustard | 16 | Crucifer greens[3] | | | | | | | | | | D C- | C- | C- | | | |
| | | 17 | Broccoli, cauliflower | | | | | | D | | D | D | | | | | | |
| | | 18 | Cabbage, b. sprouts[4] | | | | | | D | D- | D | D | D | | | | | |
| | | 19 | Kale, collards | | | | | | D | D- | D | D | | | | | | |
| | | 20 | Radish | | | | | | | D- | | D | | | | | | |
| | | 21 | Turnip, rutabaga, daikon | | | | | | | D- | | D | | | | | | |
| | Cucurbit | 22 | Cucumber | W- | | | | | W- | | W | | | D | D | W | | |
| | | 23 | Melons[5] | W- | | | | | W- | | W | | | D | D | W | | |
| | | 24 | Pumpkin, winter squash | W- | | | | | W- | | W | | | D | D | W | | |
| | | 25 | Summer squash | W- | | | | | | | W | | | D | D | W | | |
| | Beet | 26 | Spinach, chard | | W- | | W- | | | | C- | | | | | W- | | |
| | | 27 | Beet | | | | | | | | | D | | | | | | |
| | Grass | 28 | Sweet corn | | | | | | D- | | | C- | | | | | | |
| | Rose | 29 | Strawberry | | | | | | | | | D | D | D | | | | |
| Field crops | Grass | 30 | Field corn | | | | | | D- | | | C- | | | | | | |
| | | 31 | Oat | D- W | W I | W I | W I | | D- | | D- | D- I | | | | W I | W | |
| | | 32 | Spring barley | D- W | W I | W I | W I | | D- | D- | D- | D- I | | | | W I | W | |
| | | 33 | Winter wheat, spelt | D- | W I | W I | W I | | D- | | D- | D- I | | | | W I | W | |
| | | 34 | Rye | D- | W I | W I | W I | | D- | | D- | D- I | | | | W I | W | |
| | Legume | 35 | Soybean | | | | | | D | | | D- | | | | | | |
| | | 36 | Dry bean | | | | | | D | | D | D | | | | | | |
| | | 37 | Alfalfa hay | | | | | | | | | D- | | | | D | | |
| | Grass-legume | 38 | Grass & grass-legume hay | | I | I | I | | | | | D- | | | | W I | | |
| Cover crops | Grass | 39 | Winter grain, cc[6] | W- I- N S C C- | I | I | I | | D- | D- | C | D- | | | | C | C | |
| | | 40 | Spring grain, cc[7] | D- I- N S C- | I | I | I | | D- | | | D- | | | | | | |
| | | 41 | Annual ryegrass | N S | I | I | I | | | | | D- | | | | | | |
| | | 42 | Sorghum-sudangrass | D- | I | I | I | | | | | D- | | | | | | |
| | Buckwheat | 43 | Buckwheat | | | | | | | | | D- S- | | | | | | |
| | Legume | 44 | White clover | I N- | | | | | | | I | | | | | | | |
| | | 45 | Clovers, hardy[8] | I N- | | | | | | D | D I | | | | | | | |
| | | 46 | Clovers, not hardy[9] | N- | | | | | | | I | | | | | | | |
| | | 47 | Sweet clover | N- | | | | | D | | | D | | | | | | |
| | | 48 | Hairy vetch | D N- C- | | | | | | D | | | | | | | | |
| | | 49 | Field pea | N- C- | | | | | | D | D | | | | | | | |
| | | 50 | Bell bean | N- | | | | | | D | D | | | | | | | |
| | Mustard | 51 | Rape, canola | D- | | | | | | | | D- | | | | | | |
| | | 52 | Oilseed radish | D- | | | | | | | | D- | | | | | | |

| Row | Preceding Crop | P Crucifer greens[3] | Q Broccoli, cauliflower | R Cabbage, b. sprouts[4] | S Kale, collards | T Radish | U Turnip, rutabaga, daikon | V Cucumber | W Melons[5] | X Pumpkin, winter squash | Y Summer squash | Z Spinach, chard | AA Beet | AB Sweet corn | AC Strawberry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | General | | | | | | | | | | | | | | |
| 2 | Onion | | | | | | | | | | | | | | |
| 3 | Scallion | | | | | | | | | | | | | | |
| 4 | Leek | | | | | | S | | | | | | | | |
| 5 | Garlic | | | | | | S | | | | | | | | |
| 6 | Bean, snap | | D- | D- | D- | D- | D- | | | | | | | | |
| 7 | Pea | C- | | | | C- | | | | | | C- | | | |
| 8 | Lettuce etc.[1] | | | | | | | C- | C- | C- | C- | | | | |
| 9 | Potato | S- | | | | | S | | | | | | D | | D |
| 10 | Tomato | | D- | D- | D- | D- | D- | D | D | D | D | | | | D |
| 11 | Eggplant | | | | | | | D | D | D | D | | | | |
| 12 | Pepper | | | | | | | D | D | D | D | | | | |
| 13 | Carrot, parsnip | | | | | | S | D | | | | | | | |
| 14 | Celery, herbs etc.[2] | | | | | | | | | | | | | | |
| 15 | Celeriac | | | | | | | | | | | | | | |
| 16 | Crucifer greens[3] | • | D | D | D | D | D | N- C- | N- C- | N- C- | N- C- | | | | |
| 17 | Broccoli, cauliflower | D | • | D | D | D | D | N- | N- | N- | N- C- | | | | D- |
| 18 | Cabbage, b. sprouts[4] | D | D | • | D | D | D | N- | N- | N- | N- | | D | | |
| 19 | Kale, collards | D | D | D | • | D | D | N- | N- | N- | N- | | | | |
| 20 | Radish | D | D | D | D | • | D | N- | N- | N- | N- | | | | |
| 21 | Turnip, rutabaga, daikon | D | D | D | D | D | • | D N- | N- | N- | N- | | | | |
| 22 | Cucumber | W N- | D- N- | D- N- | D- N- | D- | D- | • | D | D | D | | | I | |
| 23 | Melons[5] | W N- | N- | N- | N- | | | D | • | D | D | | | I | |
| 24 | Pumpkin, winter squash | W N- | N- | N- | N- | | | D | D | • | D | | | I | |
| 25 | Summer squash | W N- | N- | N- | N- | | | D | D | D | • | | | I | |
| 26 | Spinach, chard | | | | | C- | | | | | | • | | | |
| 27 | Beet | | D | D | D | | | | | | | | • | | |
| 28 | Sweet corn | | D- | D- | D- | | | | | D | | | D- | • | |
| 29 | Strawberry | | | | | | | | | | | | | | • |
| 30 | Field corn | | D- | D- | D- | | | | | D | | | D- | I | |
| 31 | Oat | | D- | D- | D- | | | I | I | | | | D- I | I | |
| 32 | Spring barley | | D- | D- | D- | | | I | I | | | | D- I | I | |
| 33 | Winter wheat, spelt | | D- | D- | D- | | | I | I | | | | D- I | I | |
| 34 | Rye | | D- | D- | D- | | | I | I | | | | D- I | I | |
| 35 | Soybean | | | | | | | | | | | | | | |
| 36 | Dry bean | | | | | | | | | | | | | | |
| 37 | Alfalfa hay | | | | | | | | | | | | | | |
| 38 | Grass & grass-legume hay | | | | | | | I | I | | | | I | D- I N- | I |
| 39 | Winter grain, cc[6] | C | D- | D- | D- | | | | | | | | D- | | |
| 40 | Spring grain, cc[7] | | D- W- S- | D- W- S- | D- W- S- | | | | | | | | D- | | |
| 41 | Annual ryegrass | D- | D- | D- | D- | D- | D- | | | | | | | | |
| 42 | Sorghum-sudangrass | | | | | | | | | | | | | | |
| 43 | Buckwheat | | D- | D- | D- | D- | D- | | | | | | | | |
| 44 | White clover | | | | | | | | | | | | | | |
| 45 | Clovers, hardy[8] | C- | C- | | C- | | | | | | | | | | |
| 46 | Clovers, not hardy[9] | | | | | | | | | | | | | | |
| 47 | Sweet clover | | | | | | | | | | | | | | |
| 48 | Hairy vetch | | | | | | | N- | D- N- | N- | N- | | | | |
| 49 | Field pea | | N- W- | N- W- | N- W- | | | | | | | | | | |
| 50 | Bell bean | N- | N- | N- | N- | N- | N- | | | | | | | | |
| 51 | Rape, canola | D | D | D | D | D | D | | | | | | | | |
| 52 | Oilseed radish | D | D | D | D | D | D | | | | | | | | |

| Row | Preceding Crop | AD Field corn | AE Oat | AF Winter wheat, spelt | AG Spring barley | AH Rye | AI Soybean | AJ Dry bean | AK Alfalfa hay | AL Grass & grass-legume hay | AM Winter grain, cc[6] | AN Spring grain, cc[7] | AO Annual ryegrass | AP Sorghum-sudangrass | AQ Buckwheat |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | General | | | | | | | | | | | | | | |
| 2 | Onion | | | | | | | | | | | | | | |
| 3 | Scallion | | | | | | | | | | | | | | |
| 4 | Leek | | | | | | | | | | | | | | |
| 5 | Garlic | | | | | | | | | | | | | | |
| 6 | Bean, snap | | | | | | D | D | | | | | | | |
| 7 | Pea | | | | | | | | | | | | | | |
| 8 | Lettuce etc.[1] | | | | | | | | | | | | | | |
| 9 | Potato | | | | | | | | | | | | | | |
| 10 | Tomato | | | | | | | | | | | | | | |
| 11 | Eggplant | | | | | | | | | | | | | | |
| 12 | Pepper | | | | | | | | | | | | | | |
| 13 | Carrot, parsnip | | | | | | | | | | | W- S- | | | |
| 14 | Celery, herbs etc.[2] | | | | | | | | | | | | | | |
| 15 | Celeriac | | | | | | | | | | | | | | |
| 16 | Crucifer greens[3] | | | | | | | | | | | | | | |
| 17 | Broccoli, cauliflower | | | | | | | | | | | | | | |
| 18 | Cabbage, b. sprouts[4] | | | | | | | | | | | | | | |
| 19 | Kale, collards | | | | | | | | | | | | | | |
| 20 | Radish | | | | | | | | | | | | | | |
| 21 | Turnip, rutabaga, daikon | | | | | | | | | | | | | | |
| 22 | Cucumber | I | | | | | | W- | | | | | | | |
| 23 | Melons[5] | I | | | | | | W- | | | | | | | |
| 24 | Pumpkin, winter squash | I | | | | | | W- | | | | | | | |
| 25 | Summer squash | I | | | | | | | | | | | | | |
| 26 | Spinach, chard | | | | | | | | | | | | | | |
| 27 | Beet | | | | | | | | | | | | | | |
| 28 | Sweet corn | I | D | | D | | | D- | | | | | | | |
| 29 | Strawberry | | | | | | | | | | | | | | |
| 30 | Field corn | • | D | D | D D- | | | D- | | | | | | | |
| 31 | Oat | I | • | | D D- I | I | | D- | | | | | | | |
| 32 | Spring barley | I | | • | D I | D I | | D- | | | | | | | |
| 33 | Winter wheat, spelt | D I | I | D | • | D I | | D- | | | | | | | |
| 34 | Rye | I | I | | | • | | D- | | D | | | | | |
| 35 | Soybean | D- | | | | | • | D | | | | | | | |
| 36 | Dry bean | | | | D- | | D | • | | | | | | | |
| 37 | Alfalfa hay | | | | | | | N- S- | • | | | | | | |
| 38 | Grass & grass-legume hay | D- I N- | D I | | D I | D I | | N- S- | | • | C- | | | | |
| 39 | Winter grain, cc[6] | | | D | | | | D- | | | • | | | | |
| 40 | Spring grain, cc[7] | | | | | | | D- | | | | • | | | |
| 41 | Annual ryegrass | | | | | | | | | | | | • | | |
| 42 | Sorghum-sudangrass | | | | | | | | | | | | | • | |
| 43 | Buckwheat | | | | | | | | | | | | | | • |
| 44 | White clover | | | | | | | | | | | | | | |
| 45 | Clovers, hardy[8] | | | | | | D | D | | | | | | | |
| 46 | Clovers, not hardy[9] | | | | | | | | | | | | | | |
| 47 | Sweet clover | | | | | | D | | | | C- | | | | |
| 48 | Hairy vetch | | | | | | | | | | W | | | | |
| 49 | Field pea | | | | | | | | | | | | | | |
| 50 | Bell bean | | | | | | | | | | | | | | |
| 51 | Rape, canola | | | | | | | | | | | | | | |
| 52 | Oilseed radish | | | | | | D- | | | | | | | | |

| Row | Preceding Crop | AR White clover | AS Clover, hardy[8] | AT Clover, not hardy[9] | AU Sweet clover | AV Hairy vetch | AW Field pea | AX Bell bean | AY Rape, canola | AZ Oilseed radish |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | General | | | | | | | | | |
| 2 | Onion | | | | | | | | | |
| 3 | Scallion | | | | | | | | | |
| 4 | Leek | | | | | | | | | |
| 5 | Garlic | | | | | | | | | |
| 6 | Bean, snap | | | | | | D | D | | |
| 7 | Pea | | D | | | | D | D | | |
| 8 | Lettuce etc.[1] | | D | | | | D | D | | |
| 9 | Potato | | | | | | | | | |
| 10 | Tomato | | | | | | | | | |
| 11 | Eggplant | | | | | | | | | |
| 12 | Pepper | | | | | | | | | |
| 13 | Carrot, parsnip | | | | | | W- N- | | | |
| 14 | Celery, herbs etc.[2] | | | | | | | | | |
| 15 | Celeriac | | | | | | | | | |
| 16 | Crucifer greens[3] | | | | | | | | D | D |
| 17 | Broccoli, cauliflower | | | | | | | | D | D |
| 18 | Cabbage, b. sprouts[4] | | | | | | | | D | D |
| 19 | Kale, collards | | | | | | | | D | D |
| 20 | Radish | | | | | | | | D | D |
| 21 | Turnip, rutabaga, daikon | | | | | | | | D | D |
| 22 | Cucumber | | | | | | | | | |
| 23 | Melons[5] | | | | | | | | | |
| 24 | Pumpkin, winter squash | | | | | C- | | | | |
| 25 | Summer squash | | | | | | | | | |
| 26 | Spinach, chard | | | | | | | | | |
| 27 | Beet | | | | | | | | | |
| 28 | Sweet corn | | | | | | | | | |
| 29 | Strawberry | | | | | | | | | |
| 30 | Field corn | | | | | | | | | |
| 31 | Oat | | | | | | | | | |
| 32 | Spring barley | | | | | | | | | |
| 33 | Winter wheat, spelt | | | | | | | | | |
| 34 | Rye | | | | | | | | | |
| 35 | Soybean | | | | | | | | D | |
| 36 | Dry bean | | | | | | D | D | | |
| 37 | Alfalfa hay | | | | | | D | D | | |
| 38 | Grass & grass-legume hay | | | | | C- | | | | |
| 39 | Winter grain, cc[6] | | | | | | | | | |
| 40 | Spring grain, cc[7] | | | | | | | | | |
| 41 | Annual ryegrass | | | | | | | | | |
| 42 | Sorghum-sudangrass | | | | | | | | | |
| 43 | Buckwheat | | | | | | | | | |
| 44 | White clover | • | | | | | | | | |
| 45 | Clovers, hardy[8] | | • | | | | D | D | | |
| 46 | Clovers, not hardy[9] | | | • | | | | | | |
| 47 | Sweet clover | | D | | • | | | D | | |
| 48 | Hairy vetch | | | | | • | | | | |
| 49 | Field pea | | D | | | | • | D | | |
| 50 | Bell bean | | D | | | | D | • | | |
| 51 | Rape, canola | | | | | | | | • | D |
| 52 | Oilseed radish | | | | | | | | D | • |

**Footnotes**

1. Includes lettuce, chicory, endive, and escarole.
2. Includes celery, fennel, parsley, dill, and related herbs.
3. Includes mustard greens, Asian greens, napa cabbage, arugula, and cress.
4. Includes cabbage, Brussels sprouts, and kohlrabi.
5. Includes cantaloupe and watermelon.
6. Includes winter wheat, spelt, and rye.
7. Includes barley, oat, and spring wheat.
8. Includes red clover, alsike clover, and crimson clover in the south.
9. Includes berseem clover and crimson clover in the north.

NRAES — Natural Resource, Agriculture, and Engineering Service (NRAES). For more information about this poster, *Crop Rotation on Organic Farms: A Planning Manual*, and other NRAES books, visit WWW.NRAES.ORG, email NRAES@CORNELL.EDU, or call (607) 255–7654.

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