

# CARBON IMPACT OF CONSERVATION PRACTICES: EXTENDED CROP ROTATION

Extended crop rotation, or conservation crop rotation, extends traditional crop rotation cycles by several more growing seasons. Common crop selections include legumes, small grains, forage crops, and grasses.<sup>1,2</sup>

## HOW IT WORKS

Expanding the rotation of crops beyond one or two species helps prevent soil depletion by incorporating plant diversity and balancing the resource needs of the crops planted. For example, corn requires a lot of nitrogen for healthy growth. To balance this, it is rotated with legumes, which fix nitrogen in the soil, and crops with a low demand for nitrogen. This makes the nutrient readily available for the corn when it is grown, while maintaining a productive field.

The same strategy can be used with plants that are more susceptible to weeds. By alternating them with plants that decrease the amount of weed seed available, the field is better able to produce the susceptible plant the next season. Changing the timing of cutting and harvesting by growing plants that mature at different times also helps cut back weed production. The practice breaks up weed growth cycles and greatly reduces weed pressure, minimizing the need for herbicides while producing healthy crops.<sup>3,4</sup>



## Benefits of extended crop rotation<sup>5,6,7</sup>



Breaks weed cycles and reduces weed pressure



Protects soil surface



Adds organic matter to the soil



Controls soil erosion



Improves resilience against pest pressure



Enhances biodiversity

## Sources

1 Bergman, Kayla. "Conservation Practice Impact on Carbon Sequestration." Center for Rural Affairs, March 2022, [cfra.org/publications/conservation-practice-impact-carbon-sequestration](https://www.cfra.org/publications/conservation-practice-impact-carbon-sequestration). Accessed April 2022.

2 "Informational Sheet: Soil Health & Conservation." Center for Rural Affairs, 2021, [cfra.org/publications/information-sheet-soil-health-conservation](https://www.cfra.org/publications/information-sheet-soil-health-conservation). Accessed March 2022.

3 Ibid.

4 "Crop Rotation." Center for Regenerative Agriculture and Resilient Systems, California State University, Chico, [csuchico.edu/regenerativeagriculture/ra101-section/crop-rotation.shtml](https://www.csuchico.edu/regenerativeagriculture/ra101-section/crop-rotation.shtml). Accessed June 2022.

5 "Informational Sheet: Soil Health & Conservation." Center for Rural Affairs, 2021, [cfra.org/publications/information-sheet-soil-health-conservation](https://www.cfra.org/publications/information-sheet-soil-health-conservation). Accessed March 2022.

6 "Crop Rotation." Center for Regenerative Agriculture and Resilient Systems, California State University, Chico, [csuchico.edu/regenerativeagriculture/ra101-section/crop-rotation.shtml](https://www.csuchico.edu/regenerativeagriculture/ra101-section/crop-rotation.shtml). Accessed June 2022.

7 "Conservation Choices: Crop Rotation." Natural Resources Conservation Service, U.S. Department of Agriculture, [nrcs.usda.gov/wps/portal/nrcs/detail/null/?cid=nrcseprd414440](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/null/?cid=nrcseprd414440). Accessed June 2022.



## CONSERVATION FACT



Conservation crop rotation can sequester up to **0.26 metric tons of carbon dioxide per acre per year, and up to 0.57 metric tons of carbon dioxide equivalent per acre per year.**<sup>8</sup>

## HOW TO MAKE IT WORK FOR YOU

The key to success is choosing the right plants for your rotation plan. Select only varieties that will grow well in your area and try to select crops with varying characteristics. For example, rotate between plants with high residues and low residues, or legumes (which fix nitrogen into the soil), and plants that have high nitrogen needs. These choices will help balance the needs of your crops and help reduce the need for pesticides and fertilizers.<sup>9,10</sup>

## SUPPORT FOR CONSERVATION CROP ROTATION

The Natural Resources Conservation Service (NRCS) supports conservation crop rotation through programs such as the Conservation Stewardship Program (CSP) and the Environmental Quality Incentives Program (EQIP). These programs provide producers with both technical and financial assistance to start new conservation crop rotation plans. Visit a local USDA Service Center to find out more. Find local offices at [offices.sc.egov.usda.gov/locator/app](https://offices.sc.egov.usda.gov/locator/app).

## CONSERVATION FACT



**By adding biodiversity and reducing weed pressure, extended crop rotation leads to healthier crops and higher yields with fewer inputs. With proper planning, this method reaps many rewards.**<sup>11</sup>

## Sources

<sup>8</sup> Bergman, Kayla. "Conservation Practice Impact on Carbon Sequestration." Center for Rural Affairs, March 2022. [cfra.org/publications/conservation-practice-impact-carbon-sequestration](https://cfra.org/publications/conservation-practice-impact-carbon-sequestration). Accessed April 2022.

<sup>9</sup> "Crop Rotation." Center for Regenerative Agriculture and Resilient Systems, California State University, Chico, [csuchico.edu/regenerativeagriculture/ra101-section/crop-rotation.shtml](https://csuchico.edu/regenerativeagriculture/ra101-section/crop-rotation.shtml). Accessed June 2022.

<sup>10</sup> "Conservation Choices: Crop Rotation." Natural Resources Conservation Service, U.S. Department of Agriculture, [nrcs.usda.gov/wps/portal/nrcs/detail/null/?cid=nrcseprd414440](https://nrcs.usda.gov/wps/portal/nrcs/detail/null/?cid=nrcseprd414440). Accessed June 2022.

<sup>11</sup> "Crop Rotation." Center for Regenerative Agriculture and Resilient Systems, California State University, Chico, [csuchico.edu/regenerativeagriculture/ra101-section/crop-rotation.shtml](https://csuchico.edu/regenerativeagriculture/ra101-section/crop-rotation.shtml). Accessed June 2022.

