

1. Record Nr.	UNINA9910731600103321
Autore	Blanco Humberto
Titolo	Cover Crops and Soil Ecosystem Services
Pubbl/distr/stampa	John Wiley & Sons, Inc Newark : , : American Society of Agronomy, , 2023 ©2023
ISBN	9780891186427 9780891186397
Descrizione fisica	1 online resource (259 pages)
Collana	ASA, CSSA, and SSSA Bks.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Cover -- Title Page -- Copyright Page -- Contents -- Preface -- Chapter 1 Cover Crops and Soil Ecosystem Services -- 1.1 Cover Crops -- 1.2 Soil Ecosystem Services -- 1.3 Cover Crops and Soil Ecosystem Services -- 1.4 Summary -- References -- Chapter 2 Cover Crop Biomass Production -- 2.1 Cover Crops and Biomass -- 2.2 Aboveground Biomass Production -- 2.2.1 Temperate Regions -- 2.2.2 Semiarid Temperate Regions -- 2.2.3 Tropical and Subtropical Regions -- 2.3 Belowground Biomass Production -- 2.4 Threshold Level of Biomass Production -- 2.5 Management Practices that Affect Biomass Production -- 2.5.1 Planting Early -- 2.5.1.1 Interseeding -- 2.5.1.2 Planting after Summer Crop Harvest -- 2.5.1.3 Planting after Corn Silage or Short-Growing Season Crop Harvest -- 2.5.2 Terminating Late -- 2.5.3 Cover Crop Mixes -- 2.5.4 Seeding Rate -- 2.5.5 Planting Method -- 2.5.6 Tillage and Cropping Systems -- 2.5.7 Soil Texture and Number of Years in Cover Crops -- 2.5.8 Irrigation and Fertilization -- 2.6 Summary -- References -- Chapter 3 Soil Health -- 3.1 Soil Health -- 3.2 Cover Crops and Soil Health -- 3.2.1 Soil Physical Properties -- 3.2.1.1 Soil Compaction -- 3.2.1.2 Soil Structure -- 3.2.1.3 Water Infiltration -- 3.2.1.4 Temperature -- 3.2.2 Soil Chemical Properties -- 3.2.3 Soil Biological Properties -- 3.2.3.1 Microorganisms -- 3.2.3.2 Macroorganisms -- 3.3 Interconnectedness of Soil Health

Parameters -- 3.4 Managing Soil Health -- 3.4.1 Biomass Production -- 3.4.2 Time after Cover Crop Introduction -- 3.4.3 Cover Crop Species and Mixes -- 3.4.4 Tillage System -- 3.4.5 Initial Soil Condition -- 3.5 Summary -- References -- Chapter 4 Water Erosion -- 4.1 Overview -- 4.2 Runoff -- 4.3 Sediment Loss -- 4.4 Nutrient Loss -- 4.5 Soil Carbon Loss -- 4.6 A Leading Factor of Water Erosion: Biomass Production -- 4.7 Cover Crops and Erosion-Prone Systems.

4.7.1 Low-Biomass Producing Cropping Systems -- 4.7.2 Corn Silage and Seed Corn -- 4.7.3 Crop Residue Removal -- 4.7.4 Orchard Crops -- 4.8 Summary -- References -- Chapter 5 Wind Erosion -- 5.1 Extent of Wind Erosion -- 5.2 Soil Loss -- 5.3 Soil Erodibility -- 5.4 Managing Wind Erosion -- 5.4.1 Biomass Production -- 5.4.2 Cover Crop Species -- 5.4.3 Growth Stage and Seeding Rate -- 5.4.4 Crop and Tillage Systems -- 5.4.5 Climate -- 5.5 Summary -- References -- Chapter 6 Nutrient Losses -- 6.1 Implications of Nutrient Losses -- 6.2 Nutrient Leaching -- 6.3 Dissolved Nutrients in Runoff -- 6.4 Nutrient Release from Cover Crops -- 6.5 Management Implications -- 6.6 Nutrient Stratification -- 6.7 Summary -- References -- Chapter 7 Soil Gas Emissions -- 7.1 Carbon and Nitrogen Emissions -- 7.2 Carbon Dioxide -- 7.3 Nitrous Oxide -- 7.4 Methane -- 7.5 Factors Affecting Soil Gas Emissions -- 7.5.1 Cover Crop Species -- 7.5.2 Biomass Production -- 7.5.3 Nitrogen Fertilization -- 7.5.4 Tillage and Cropping System -- 7.5.5 Measurement Time -- 7.5.6 Soil Texture and Climate -- 7.6 Summary -- References -- Chapter 8 Carbon Sequestration -- 8.1 The Need for Carbon Sequestration -- 8.2 Rates of Carbon Sequestration -- 8.3 Topsoil Versus Subsoil Carbon Sequestration -- 8.4 Managing Carbon Sequestration -- 8.4.1 Biomass Production -- 8.4.2 Cover Crop Species and Mixes -- 8.4.3 Years after Cover Crop Adoption -- 8.4.4 Initial Soil Carbon Level -- 8.4.5 Tillage Systems -- 8.4.6 Soil Texture -- 8.4.7 Topographic Characteristics -- 8.4.8 Climate -- 8.5 Cropping System Carbon Footprint -- 8.6 Strategies to Enhance Cover Crop Potential to Sequester Carbon -- 8.7 Summary -- References -- Chapter 9 Soil Water -- 9.1 Soil Water Management -- 9.2 High Precipitation Regions -- 9.3 Low Precipitation Regions -- 9.4 Mechanisms of Soil Water Storage with Cover Crops.

9.5 Water Management -- 9.5.1 Biomass Production -- 9.5.2 Timing of Cover Crop Termination -- 9.5.3 Tillage System -- 9.5.4 Soil Texture -- 9.6 Summary -- References -- Chapter 10 Weed Management -- 10.1 Cover Crops and Weeds -- 10.2 Weed Suppression -- 10.3 Managing Weeds -- 10.3.1 Biomass Production and Surface Cover -- 10.3.2 Cover Crop Species and Mixes -- 10.3.3 Tillage System -- 10.3.4 Climate -- 10.4 Summary -- References -- Chapter 11 Soil Fertility -- 11.1 Soil Fertility Management -- 11.2 Organic Matter -- 11.2.1 Nitrogen -- 11.2.2 Nitrogen Scavenging -- 11.2.3 Reduction of Nitrogen Losses -- 11.2.4 Nitrogen Fixation -- 11.3 Phosphorus -- 11.4 Other Nutrients -- 11.5 Soil pH -- 11.6 Cation Exchange Capacity -- 11.7 Carbon to Nitrogen Ratio -- 11.8 Summary -- References -- Chapter 12 Crop Yields -- 12.1 Multi-functionality of Cover Crops -- 12.2 Crop Yields -- 12.3 Climate -- 12.3.1 Cool and Warm Climates -- 12.3.2 Water-Limited Regions -- 12.4 Factors Affecting Crop Production -- 12.4.1 Cover Crop Species -- 12.4.2 Nitrogen Fertilization -- 12.4.3 Biomass Production -- 12.4.4 Planting Time and Method -- 12.4.5 Termination Timing -- 12.4.6 Cover Crop Mixes -- 12.4.7 Years after Cover Crop Adoption -- 12.4.8 Tillage Systems -- 12.4.9 Soil Texture -- 12.5 Summary -- References -- Chapter 13 Grazing and Harvesting -- 13.1 Cover Crop Biomass Removal -- 13.2 Grazing -- 13.2.1 Soil Compaction -- 13.2.2 Water Infiltration -- 13.2.3 Soil Carbon Dynamics and Sequestration -- 13.2.4 Crop Yields

-- 13.3 Minimizing Potential Grazing Impacts -- 13.3.1 Amount of Biomass Removal -- 13.3.2 Stocking Rate -- 13.3.3 Years under Grazing -- 13.3.4 Tillage -- 13.3.5 Soil Water Content -- 13.4 Harvesting -- 13.5 Grazing and Harvesting: An Added Benefit from Cover Crops? -- 13.6 Summary -- References -- Chapter 14 Economics -- 14.1 Cover Crops and Farm Profits.
14.2 Economic Analysis -- 14.2.1 Grazing and Harvesting -- 14.2.2 Weed Suppression -- 14.2.3 Nitrogen Credit -- 14.2.4 Soil Carbon Credit -- 14.2.5 Crop Residue Harvesting -- 14.2.6 Valuation of Other Ecosystem Services -- 14.3 Site-Specificity of Economic Benefits -- 14.4 Summary -- References -- Chapter 15 Adaptation to Extreme Weather -- 15.1 Extreme Weather Events -- 15.2 Droughts -- 15.3 Floods -- 15.4 Precipitation Extremes -- 15.5 Dust Storms -- 15.6 Temperature Extremes -- 15.7 Soil Resilience -- 15.8 Summary -- References -- Chapter 16 Opportunities, Challenges, and Future of Cover Crops -- 16.1 Opportunities -- 16.1.1 Ecosystem Services -- 16.1.2 Biomass Production -- 16.1.3 Economics -- 16.1.4 Fluctuating Climates -- 16.2 Challenges -- 16.2.1 Ecosystem Services -- 16.2.1.1 Biomass Production -- 16.2.1.2 Soil Properties -- 16.2.1.3 Carbon Sequestration -- 16.2.1.4 Dissolved Nutrients -- 16.2.1.5 Crop Yields -- 16.2.1.6 Economics -- 16.2.1.7 Fluctuating Climates -- 16.3 Remaining Questions -- 16.4 The Future of Cover Crops -- 16.5 Summary -- References -- Appendix I: Common and Scientific Names Used in the Book -- EULA.
