Practice Definitions

Regen Ag Practice Definitions (All Crops)

Cover Cropping

Cover cropping involves planting grasses, legumes, or other plants during off-season periods between cash crops to maintain vegetative cover. This practice helps prevent soil erosion, enhance soil fertility, suppress weeds, and manage pests. By adding biomass and returning nutrients to the soil, cover crops boosts soil organic carbon levels, reduces reliance on synthetic fertilizers, and supports biodiversity.

Crop Rotation

Crop rotation involves planting a series of different types of crops in the same field across successive years, enhancing soil health, crop yields, and pest and disease resistance by alternating crops with varying nutrient needs. This practice reduces reliance on synthetic inputs, disrupts pest cycles, and maintains soil fertility. It also mitigates water quality degradation from excess nutrients, provides habitat for wildlife, and reduces greenhouse gas impacts through increased soil carbon stocks and reduced fertilizer applications. This practice applies to all cropland with at least one annually planted crop in the rotation.

Tillage

Tillage is the preparation of soil in preparation for planting crops and the cultivation of soil after planting. Tillage is performed by mechanical means and is undergone to break up the soil to improve seed germination, reduce weed pressure, and reduce soil compaction.

Conservation Tillage

Conservation tillage minimizes soil disturbance through practices like strip-till, ridge-till, mulch-till, and shallow-till. By retaining crop residue year-round, it enhances soil organic carbon, supports biodiversity, improves water retention, and reduces erosion and nutrient runoff. Additional benefits include lower energy use, increased plant-available moisture, and improved wildlife habitat.

No-Till

No-till eliminates full-width soil disturbance, maximizing conservation tillage benefits. By keeping all crop residue on the surface, it further enhances carbon sequestration, water retention, and soil health while reducing erosion and runoff. No-till also lowers energy use, improves biodiversity, and boosts nutrient availability, leading to higher biomass production and greater long-term soil carbon storage.

Integrated Disease Management

Integrated Disease Management (IDM) involves the application of improved agricultural practices alongside biological and chemical methods to control major plant diseases. This decision-based process coordinates multiple tactics to optimize disease control, enhancing plant health and supporting sustainable farming practices.

Integrated Pest Management

Integrated Pest Management (IPM) is a science-based approach to manage pests and pathogens using a combination of biological, cultural, physical, and chemical controls. Through careful monitoring and informed decision-making, IPM approaches minimize pest damage, reduce risks to human health and the environment and seek to control the development of pest resistance.

Integrated Weed Management

Integrated Weed Management (IWM) is a sustainable strategy that combines various methods to control weeds effectively. By integrating mechanical, biological, and chemical practices, IWM aims to minimize weed competition while reducing reliance on herbicides. This holistic approach promotes long-term crop health and environmental sustainability in agricultural systems.

Harvest Management

Harvest management involves the timing and methods of crop harvesting practices to maximize quality and yield. This includes strategies to determine the ideal harvest time, minimize crop loss, and maintain quality through proper handling and processing.

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Nutrient Management Plan (NMP)

An NMP optimizes fertilizer use by considering type, application method, timing, and amount to enhance soil health and reduce environmental impacts. It incorporates nutrients from various sources like manure, compost, and commercial fertilizers, using soil data and field characteristics to minimize pollution and GHG emissions.

Nitrogen Inhibitors / Slow Release

Nitrogen inhibitors are substances added to fertilizers to slow the conversion of ammonium to nitrate, making more nitrogen available for plant uptake and reducing losses to the environment. They also help minimize ammonia volatilization, improving nutrient use efficiency and reducing the environmental impact of nitrogen fertilizers.

Split Applications

Split Applications involve dividing fertilizer treatments into multiple smaller doses throughout the crop's growth stages. This approach aligns nutrient availability with crop needs while reducing inputs, enhancing efficiency, and reducing leaching or runoff to minimize nutrient loss and pollution.

Variable Rate Technology (VRT)

VRT allows for customized fertilizer application rates based on field conditions, improving efficiency and reducing overall usage. By tailoring applications to plant needs, VRT minimizes nutrient loss and runoff, potentially lowering costs and environmental impact.

Manure (Organic Fertilizer)

Use of manure (including animal manure, compost, and green manure) enhances soil fertility and health by adding organic matter and nutrients to the soil. Emission reductions are associated with soil carbon sequestration due to increased carbon inputs from manure or organic byproducts.

Soil Amendments

Soil amendments, such as lime, gypsum, manure, and biochar, are used to adjust soil chemistry, improve pH levels, increase water storage, and enhance nutrient availability. Adjustments can be organic or inorganic and help optimize soil conditions for better plant growth and productivity.

4R Nutrient Management

4R Nutrient Management principles represent a focus on the right source, right time, right rate, and right place in fertility management to maximize the benefits of nutrient use. It balances nutrient application based on crop needs, soil conditions, and weather to improve efficiency while minimizing environmental impacts, such as nutrient runoff and GHG emissions.

Waterway Management

Waterway management involves the stewardship of waterways—such as streams, rivers, lakes, and wetlands—adjacent to farming lands. Implementing best management practices to minimize nutrient, sediment, and pesticide runoff ensures that downstream ecosystems are not adversely impacted. Effective management supports flood control, enhances agricultural productivity, maintains healthy fisheries, and promotes biodiversity.

Irrigation Management

Irrigation management minimizes water evaporation and maximizes water impact on soil and crops through techniques like surface, sprinkler, drip, and subsurface irrigation. Controlling the timing, quantity, and frequency of water application improves water use efficiency. Technologies like soil moisture sensors and digital tools further enhance water conservation and crop yield.

Sustainable Intensification

Sustainable intensification focuses on increasing agricultural productivity while minimizing environmental, economic, and social impacts. By optimizing crop production per unit, sustainable intensification achieves higher yields using the same or fewer inputs without increasing the area needed for food production.

Stubble Management

Stubble management refers to the methods used to manage the decomposition or removal of leftover straw in rice fields after harvesting. The rate of decomposition can be aided or increased through practices such as harrowing, baling, or burning (referred to as "residue burning"). The chosen stubble management approach influences labor demand, fuel use, soil health, and GHG emissions.

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Water Management Practices (Rice Only)

Cascade Irrigation

Cascade irrigation is the predominant method of rice irrigation in the Lower Mississippi River Basin. This system is inherently water-intensive, as it requires overfilling rice paddies to allow irrigation water to flow from one paddy to the next. Water enters the field at the highest elevation and cascades downward through a series of levee gates, ensuring even distribution across the field.

Multiple Inlet Rice Irrigation (MIRI)

Multiple Inlet Rice Irrigation (MIRI), or side inlet irrigation, utilizes perforated pipes to enhance water distribution and control in rice fields. This method improves efficiency compared to traditional methods and can be used on various field types, optimizing water use and reducing labor.

Zero-Grade

Zero-grade fields are leveled to have no slope, creating a perfectly flat surface across the field. This allows for uniform flooding without the need for internal levees or side inlets. The method can significantly reduce water use and minimize tillage requirements.

Row Rice

Also known as furrow rice, this method involves planting rice in rows on a precision-leveled field, allowing water to be delivered down the rows instead of maintaining a standing flood. This method enhances the opportunity for AWD cycles, supports crop rotation, and can reduce water usage.

Alternate Wetting and Drying (AWD)

Alternate Wetting and Drying (AWD) is an irrigation practice for rice fields that alternates between flooded and dried conditions during the growing season. This method reduces methane emissions and water usage.

Winter Flooding

Winter flooding is the practice of closing drainage outlets to retain water on fields during the winter months, rather than draining them. In the Arkansas/Missouri region, rainfall is often sufficient to completely flood fields. These flooded areas provide habitat for waterfowl and other migratory birds.