

Spring Farm & Ranch



What Is Regenerative Agriculture?

Regenerative agriculture is an approach to farming and ranching that prioritizes soil health to restore ecosystems, fight climate change and improve the well-being of people and animals.

Rebuilding depleted soil can increase the amount of carbon drawn from the atmosphere, California State University Chico says, while improving soil fertility and the water cycle.

REGENERATIVE AGRICULTURE PRACTICES

Effective regenerative agriculture practices depend on the type of agriculture practiced, the surrounding community and environmental factors. Some regenerative agriculture methods include:

- **No-till or minimum tillage techniques:** No-till agriculture involves planting directly into the ground without any prior soil disturbance, such as plowing. Minimum till, which may also be called conservation or reduced-till, uses a slight amount of tilling to create a seedbed, often leaving a residue of the previous crops on the soil's surface to act as mulch. These practices protect the soil from erosion, improve soil structure and can reduce costs associated with fuel and labor.



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- **Cover crops:** Cover crops are grown to cover the soil rather than to harvest. This improves the soil's health and the environment. Cover crops such as clover, rye, oats and radishes are planted during fallow periods or between cash crops to suppress weeds and build organic matter. They can also enhance nutrient cycling.
- **Crop rotation:** Crop rotation means planting different crops in the same field to improve soil health and

optimize nutrients in the soil. Strategic planting can increase biodiversity and break pest and disease cycles.

- **Managed grazing:** This is a regenerative agriculture practice meant to mimic natural herbivore patterns where livestock are moved between smaller paddocks allowing pastureland to rest and recover. The farmer controls the timing and intensity of grazing to help improve soil health, improve the quality of available forage

and the environment.

Indigenous communities have used practices such as these since the beginning of time, but other producers are bringing these methods back to help achieve harmony with nature and improve relationships between humans and the environment.

TRANSITIONING TO REGENERATIVE AGRICULTURE

Regenerative agriculture

isn't just a set of methods, it's a whole philosophy. Think of the farm as integrating crops, grazing animals and wildlife with the goal of encouraging biological diversity and building back water and soil quality to create a sustainable food system.

It aims for equity in the farming system and in nature, with food sources living in harmony, not conflict, with the natural world and surrounding communities.

Caring for Ranch Horses

A ranch's horses are not just pets. They're valuable tools in the rancher's toolbox that makes ranching possible.

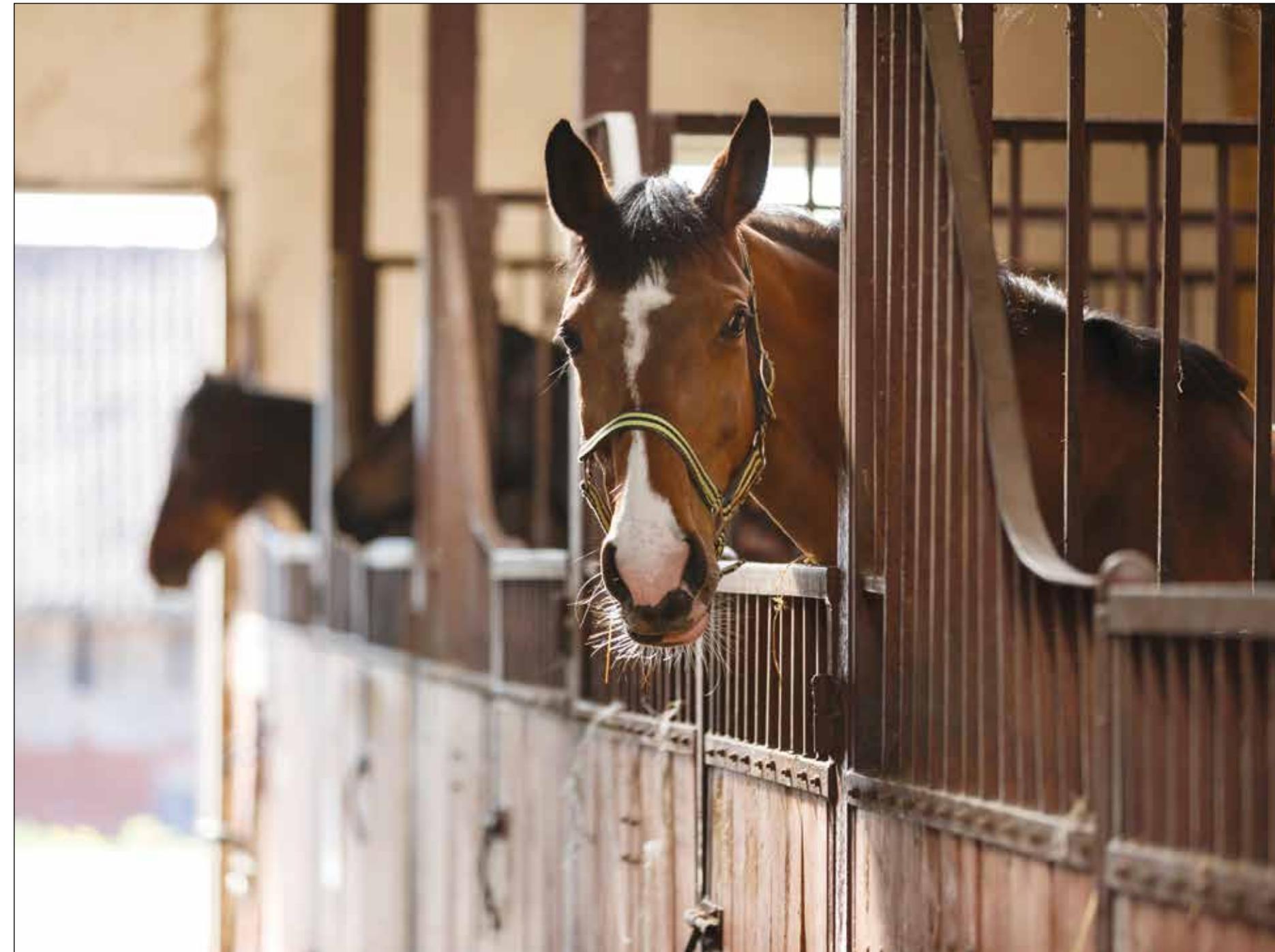
Ranchers take a holistic approach to caring for their horses, starting with proper food, veterinary care, hoof care and proper management of their workload.

FEED AND WATER

Horses were built to graze. They need a diet heavy in roughage, such as hay or a pasture with adequate grass coverage. Grain should be treated as a supplement to their diet. A healthy horse will drink 5 to 10 gallons of water every day and ranchers should ensure a constant supply of clean, fresh water. Horses may need supplements to their diet such as salt and mineral blocks or electrolytes in the water.

VETERINARY CARE

Horses are tended to by equine or large-animal vets. Just like cats and dogs, they need vaccinations and may get regular treatment to keep their joints and digestive systems working properly. Horses' teeth grow constantly, meaning they can wear unevenly and create sharp points. Veterinarians or equine dentists will make sure the horses have healthy teeth and file them down or float them to ensure



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even wear and a comfortable horse.

The veterinarian will recommend a regular parasite control regimen, including medications and manure and pasture management to reduce exposure. Injuries need to be tended to promptly and the animals given appropriate rest and recovery time.

HOOF CARE

A horse's hooves grow constantly and need regular care from a farrier, which can range from simple trims to more complicated shoeing. The frequency depends on the horse's age, activity and environment. Farriers work with veterinarians to manage foot conditions and diseases and

rehabilitate injured horses.

CARING FOR A HORSE'S TACK

Ranchers need to ensure horses have tack (saddles, bridles and bits) that fit properly and are adequate to the job at hand. Saddle brands often have saddle fitters that can come out and assess what tack is needed

and make sure it works properly. They can work with veterinarians to make sure it matches a horse's physiology.

Once good-fitting tack is found, it's important to keep it clean and in good repair. Clean bits after every use and clean and condition saddles and bridles to keep them supple and comfortable for the horse.

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Effective Livestock Biosecurity

Keeping farm animals safe is more than just watching for predators and regular vet visits.

Owners of farms and ranches must implement practices to keep illnesses from spreading through their herds and flocks. Write out biosecurity concerns as well as any plans for daily safety and safety during outbreaks for farm staff and visitors to consult.

QUARANTINE

Keep any new animals or animals returning to the farm from other

farms in isolation for at least four weeks to ensure they're not passing any diseases on. Watch quarantined animals closely for signs of illness. Any animals showing symptoms of disease should also be quarantined.

CONTROLLING TRAFFIC

Some diseases are spread through contact with people. During outbreaks, limit the number of visitors to the farm or restrict visitors to designated areas that are away from livestock. Don't share staff, vehicles or equipment between farm sites unless they've been properly cleaned and disinfected. During some outbreaks, this may mean changing clothes as well or

wearing personal protective equipment that gets changed between farm sites.

For service people that call on farms, such as veterinarians and farriers, ask them to practice good biosecurity with themselves, such as using boot covers and regularly washing hands, and their tools, including vehicles.

CLEANING AND DISINFECTING

Clean and disinfect animal stalls, barns, fields and other habitats regularly. Clean and disinfect tools and equipment that regularly comes into contact with animals. Don't forget vehicles, too. Provide animals with

clean food and water and ensure food storage areas are clean and free of pests. Dispose of animal waste properly away from the herds and flocks. Keep wild animals at a safe distance. Wild birds and rodents can spread diseases to your livestock and contaminate food and water sources.

Talk to your veterinarian about other practices to follow and about any disease outbreaks you should be aware of. Follow any state and local regulations regarding outbreaks to keep the spread to a minimum. Keep your livestock appropriately vaccinated. Keep careful records of when animals were vaccinated, when they were last ill and any medicines taken.

Heritage Breeds on the Farm

A heritage breed is a traditional, historic breed of livestock that was once common but is now endangered because of modern, industrial agriculture.

Over time, our ancestors chose these breeds for their ability to thrive without much human intervention. Today, these breeds are important for genetic diversity in the farm animal population and for maintaining a living link to agricultural history.

HERITAGE BREED CHICKENS

Chickens first came to the Americas with Spanish explorers and are raised for meat, eggs, or both, or as pets. A heritage chicken breed must be from parent and grandparent stock of breeds recognized by the American Poultry Association before 1950. They must be produced and genetically maintained through natural mating through parent and grandparent stock. These chickens must have the genetic ability to live a long, vigorous life in pasture-based, outdoor production systems. Breeding hens should be productive for 5 to 7 years and roosters for 3 to 5 years. They must grow slowly, reaching appropriate market weight in no less than 16 weeks. Examples: Holland, Cubalaya, Buckeye, Chantecleer,



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Dominique, Delaware and Jersey Giant.

HERITAGE CATTLE

Domestic cattle first arrived with the second Spanish voyage in 1493 and have provided milk, meat, leather, tallow, draft power and companionship. Heritage cattle breeds are a true, genetic breed of cattle that, when mated,

reproduces the breed type. It must be an endangered breed as defined by The Livestock Conservancy and have a long history in the U.S. They must be purebred and registered, or the immediate offspring of registered, purebred animals. Examples: American Yak, Texas Longhorn, Florida Cracker, Pineywoods, Corriente.

HERITAGE PIGS

New World colonists first brought pigs over for meat, lard, pest control and land improvement. Heritage breeds of swine must be a true genetic breed of pig, much like cattle, that can reproduce the breed type. They must be categorized as endangered and have a long history in the U.S., and they must be

purebred. Examples: Choctaw, Ossabaw Island, Guinea Hog, Red Wattle.

It's important to note the heritage label is not recognized by the United States Department of Agriculture, but producers have added the term to labeling and been approved by the USDA by using the published definition.

Indigenous Farming Methods

Long before European colonists landed in the Americas, Native American families were growing and producing their own food products using methods rooted in sustainability and resilience.

One of these methods, adapted to work across the continent was the Three Sisters method of farming.

WHAT ARE THE THREE SISTERS?

The Three Sisters are corn, beans and squash, grown together to protect and nourish each other. One description of the Iroquois method of planting, provided by the Carnegie Museum of Natural History, says women started by planting corn. As the plants grew, farmers mounded soil around the foot of the plants, creating a hill. Two or three weeks later, the women planted beans in the hill, allowing the bean plants to use the stalks as beanpoles. Between the rows, they planted low-growing squash plants, whose large leaves provided shade and protection for the other crops.

ADAPTATIONS

Tribes adapted the practice depending on the climate where they lived. The Hopi and Tewa tribes in the arid, dry Southwest often added a fourth sister to attract bees for pollination. In the Great Plains, tribes chose varieties suited to growing in the

more arid grasslands, including Turtle Mountain White Corn and Hidatsa Red Beans.

MANAGEMENT

Even though these three plants provide support for each other, a Three Sisters garden still needs vigilant pest management. Planting marigolds or nasturtiums nearby can help repel pests. Regular inspection and removal of diseased plants can help prevent its further spread. You can apply organic treatments such as neem oil or garlic sprays. Help the corn support the bean plants by staking it, if necessary, or adding additional mulch around the base of the plant.

Ensure the plants are evenly spaced and effectively pruned and thinned to maximize yield and reduce the risk of fungal diseases. Proper spacing helps with effective pollination. Signs of poor pollination include misshapen and underdeveloped produce. If you see these, consider planting flowering plants nearby to attract more pollinators to your garden. Avoid the use of chemical pesticides to keep them coming back and doing their work.



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The Rise of Smart Tractors

Technology is everywhere these days and farms are no exception.

Advances in tractor manufacture can increase productivity and reduce labor costs while performing even precise jobs such as tilling, spraying and mowing.

ELECTRIC TRACTORS

Tractors driven by an electric powertrain are quiet and are well-suited to jobs on a variety of farms and ranches. John Deere says its E-Power tractors offer the same workload and experience as the traditional diesel-powered tractor.

“The E-Power tractor can do the same work as a traditional diesel utility tractor,” says Derek Muller, business manager for battery electric vehicle systems. “Our goal with the E-Power tractor is to ensure it performs the same jobs as its diesel counterparts and works with the same implements, while unlocking incremental value.”

Other brands are concentrating solely on electric tractors. Monarch Tractor says its electric vehicles cut down on operational expenses and increase safety on the farm. Solectrac says its electric tractors require less maintenance than traditional diesel models.

AUTONOMOUS TRACTORS

Tractors equipped with



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autonomous technology can operate without a human driver and usually are controlled by a mobile app. Farmers can track the machinery and receive notifications, even adjusting tools on the fly.

These tractors use precise technology such as GPS,

onboard cameras and sensors, and AI, meaning they can operate for hours without breaks and optimize the use of things such as fuel and fertilizer. The sophisticated equipment delivers data directly to farmers to help them make better decisions about what's going on in the

field. These machines are safe, offering collision avoidance systems to protect people and crops.

While they make farming more efficient, these tractors are more expensive than traditional diesel models, but, depending on the application, can make sense in the long

run.

Smart tractor technology is evolving rapidly across the spectrum and becoming more cost effective with each new innovation, and even may be available as an upgrade to some existing equipment. This avoids the capital outlay for a whole new tractor.

What Is Aquaculture?

Aquaculture is the farming of aquatic species such as fish, shellfish and even plants.

It can take place in natural bodies of water or in ponds specifically made for the purpose, and in both fresh and saltwater. Aquaculture practices are used in growing food, ornamental fish, bait fish, and the cultivation of aquatic plants for food or biofuel.

AQUACULTURE AND FISH

Some commonly farmed species of fish include salmon, trout, tilapia and catfish. Fish farming originated more than 4,000 years ago in China and has spread all over the world. However, modern commercial farming practices have led to natural habitat destruction and the spread of invasive species. A frequent target of environmentalists' concerns are intense farming practices such as adding water purification systems and oxygenation and feeding protein-rich foods not found in the fish's natural environment.

AQUACULTURE AND CRUSTACEANS

Shrimp farming began in the 1970s and has mushroomed since. The practice is most common in South Asia, with two species, the Pacific white shrimp and the giant tiger prawn accounting for about 80% of farmed shrimp. Both fresh and saltwater species (such as the giant river prawn) can be farmed, as well

as crawfish and crabs.

Critics say crustacean farms are overly susceptible to disease that can harm both farmed and native stocks. They point to destruction of the natural environment and the spread of invasive species as problems with the practice.

AQUACULTURE AND SHELLFISH

Oysters, clams and mussels are some of the usual shellfish grown on farms. The estimated value of the farmed shellfish market in the U.S. is \$340 million. These farms can often improve the area around them because oysters and mussels filter the water as they feed. However, large farms can damage ecosystems when the land is cleared or because of wastewater or salinization practices.

AQUACULTURE AND PLANTS

Aquatic plants and algae can be farmed. These farms grow seaweed, phytoplankton, microphytes or planktonic algae or other aquatic plants. The largest seaweed-producing countries are in Asia — China, Indonesia, South Korea and the Philippines. Seaweed farms absorb carbon dioxide from the water, meaning it could be a powerful tool to fight climate change. The resulting seaweed can be used in human and animal foods, in biofuels and bioplastics, and in medications and cosmetics.



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