

What is Land Fallowing?

Fallow ground or fallow soil refers to land that has been left unplanted as a method of sustainable land management. Fields taken out of crop rotation remain fallow for one to five years and provide a number of benefits to the land owner and surrounding community.

Potential Water Benefit

Water Demand Reduction: Fallowing land with and without cover crops produces a resilient cropping system, helping farmers minimize drought-related yield losses. Cover crops create more vegetative biomass than volunteer plants; transpire water, increase water infiltration, and decrease surface runoff and runoff velocity. In dry years, fallowing land reduces ground water pumping demand, while planting a winter cover crop promotes moisture retention and soil health to be used during regular crop cycles with reduced needs for fertilizers and herbicides. In wet years, a fallowed field can be used as a shallow sinking basin, in some cases providing the grower with water credits, while in dry years savings is accomplished by reduced pumping or reallocation of surface water to higher yielding fields.



Benefits to the Grower/Landowner

Soil Restoration & Health: Provides opportunity for soil regeneration, allowing potassium and phosphorus from deep below to rise toward the soil surface for use by future crops, while increasing levels of carbon, nitrogen, and organic matter improves moisture holding capacity and increases beneficial microorganisms in the soil. Studies have shown that a field that has been allowed to lie fallow for just a year produces a higher crop yield when it is planted. Fallowing with nitrogen fixing cover crops converts molecular nitrogen into ammonia reducing the need for fertilizers, while even non-nitrogen fixing plants will help to ensure that many of the nutrients in the soil can be returned to the soil when plants are tilled under in the spring.

Biodiversity: Planting winter cover crops in almond orchards increases bee forage, improves soil health, and encourages resiliency along with increased water filtration. It was also found that cover cropping did not affect ambient air temperatures 3 and 5 feet above the ground, but worked as a buffer, keeping temperatures more stable than bare ground

Operation Benefits: Versatility and the ability to adapt practices based on soil, cost, and yield needs are great. For example, some farmers have gone back to adding a small grain into their rotation with corn and soybeans. If the small grain is winter wheat, it may be possible to either double crop beans or plant a cover crop “cocktail” mix after wheat harvest. Then the cover crop mix can be grazed in early fall and possibly again in late fall and/or spring, depending on the balance of warm season annuals and cool season annuals in the cover crop mix. Such a system may provide faster soil health benefits as well as a nice income from the grazing, but of course it depends on having access to grazing animals.

Reduce Costs: Cover crops help maintain and even improve the condition of your soil through weed reduction, erosion prevention, reduced soil compaction and helps beneficial organisms in the soil flourish. When cover crops are worked back into the soil, the organic material they provide increases how well the soil

can hold onto water and nutrients, reducing fertilization and irrigation costs. Developing a regular land fallowing cover cropping practice will provide sustainability for years to come.

Benefits to Other Stakeholders

Water Quality: Land Fallowing with cover crops and allowing them to grow between 12 to 24 inches during winter months increase uptake of nitrogen and phosphorus from soils leftover after growing season.

Groundwater Sustainability: Reduced groundwater pumping and the ability of the soil to retain more moisture over time means less demand on the local water table providing greater groundwater sustainability for local communities. Increased soil infiltration resulting from cover crops can also help increase the rate of recharge, which can have both water quantity and water quality benefits.

Air Quality: Land Fallowing with cover crops also provides environmental benefits related to reduced air pollution and erosion. Improving air quality by reducing dust, the need for fertilizers which contribute up to 41% of nitrogen oxides in the valley, while organic matter traps excess fertilizers not absorbed by the previous crops preventing them from entering the air. Fallow land can act as a carbon sink. Plants that grow naturally during fallow periods absorb carbon dioxide from the atmosphere, mitigating climate change

Things to Know

Cost Benefit Analysis: A one-year budget analysis of cover crops, one that just compares the cost of seed and seeding to the impact on the next crop yield, may indeed show a loss. It is the ongoing long-term experience that provides results. Adapting the management practices for cover crops in rotations decreases negative effects, particularly on water availability, which could increase withdrawals in an area that already has a water deficit. Rotation of cover cropped lands used in combination with grazing creates opportunities for cost recovery both in the short and long term. Leasing land for grazing can provide supplemental income, as well as add organic matter to the soil, reducing fertilizer costs.

Cover crops that provide multiple benefits (two or more) often pay off faster. The right combination of cover crop can result in increased profits. For example, while grazing a cover crop and also cutting back on use of fertilizer or getting an incentive payment while at the same time addressing a compaction issue. Thus, there is an opportunity to gain even more net profit by combining strategies or by addressing more than one yield-limiting factor in a field through use of cover crops. Again, this becomes especially true as soil health improves over time.

Each farmer's experience with cover crops will vary based on their particular situation. Readers are encouraged to substitute their own local conditions and numbers to evaluate the potential return from cover crops over time.

Resources

- <https://www.tuletrust.org/resources>
- <https://www.ltrid.org/wp-content/uploads/2023/09/ltrid-fallowed-ground-application-2024.pdf>
- <https://www.ltrid.org/wp-content/uploads/2023/09/pix-id-fallowed-ground-application-2024.pdf>
- <http://eastertulegsa.com/resources/>
- [10 Ways Cover Crops Enhance Soil Health - SARE](#)
- [Fallowing: Definition, Features, Advantages and Disadvantages - Agric4Profits](#)

Cost of seeding cover crops

ITEM	COST PER ACRE
Cover crop seed	\$10–\$59
Seeding the cover crops	\$5–\$18
Termination	\$0–\$10
Subtotal range	\$15–\$87
Median cost from survey	\$51

Impact of cover crops on costs, returns and net profit for corn following one, three and five years of cover crop use and with various management scenarios

BUDGET ITEM	YEARS OF COVER CROPPING		
	One	Three	Five
All figures are per acre			
Estimated input savings when using cover crops			
Fertilizer ¹	\$0	\$14.10	\$21.90
Weed control ²	\$0–\$15	\$10–\$25	\$10–\$25
Erosion repair ³	\$2–\$4	\$2–\$4	\$2–\$4
Subtotal	\$2–\$19	\$26.10–\$43.10	\$33.90–\$50.90
			0
a. Savings on inputs (the low end of the subtotal range from above)	\$2	\$26.10	\$33.90
b. Income from extra yield in normal weather year (survey data) ⁴	\$3.64	\$12.32	\$21
c. Cost of seed and seeding (survey data) ⁵	\$37	\$37	\$37
Net return in a normal weather year (a + b - c)	-\$31.36	\$1.42	\$17.90
Special situations where cover crops can pay off faster			
I. When facing severe herbicide-resistant weeds ⁶	\$27	\$27	\$27
Adjusted net return	-\$4.36	\$28.42	\$44.90
II. Potential grazing income ⁷	\$49.23	\$49.23	\$49.23
Adjusted net return	\$17.87	\$50.65	\$67.13
III. Compaction addressed by cover crops ⁸	\$15.30	\$15.30	\$15.30
Adjusted net return	-\$16.06	\$16.72	\$33.20
IV. Assisting the conversion to no-till from conventional ⁹	\$23.96	\$23.96	\$23.96
Adjusted net return	-\$7.40	\$25.38	\$41.86
V. Income from extra yield in a drought year (survey data) ¹⁰	\$58.70	\$75.73	\$92.55
Adjusted net return	\$27.34	\$77.15	\$110.45
VI. Extra fertilizer savings from improved fertility ¹¹	\$15.20	\$15.20	\$15.20
Adjusted net return	-\$16.16	\$16.62	\$33.10
VII. Federal or state incentive payments received ¹²	\$50	\$50	\$50
Adjusted net return	\$18.64	\$51.42	\$67.90

