



United States
Department of
Agriculture

Agricultural
Research
Service

National Soil
Dynamics
Laboratory

Conservation
Systems
Research

Conservation
Systems
Fact
Sheet
No. 10

January, 2011
rev. January, 2016

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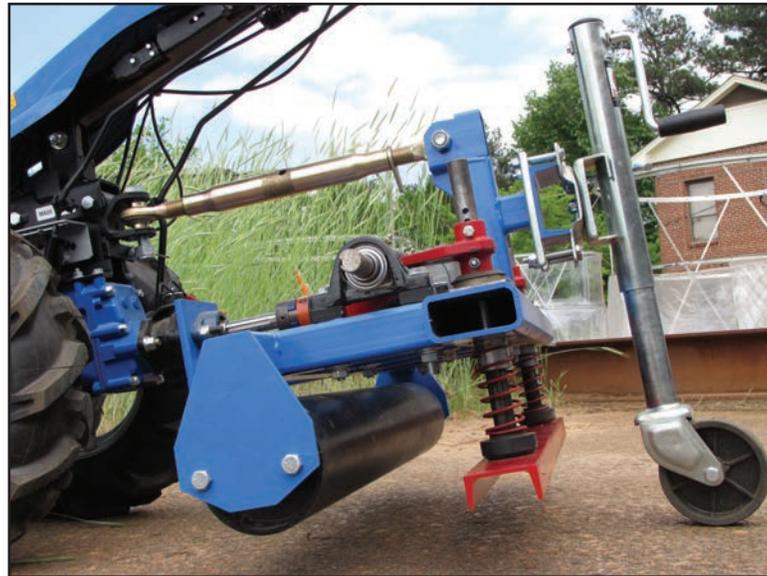
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Conservation Systems Research

A Roller/Crimper for Walk-Behind Tractors

CONSERVATION SYSTEMS FACT SHEET NO. 10



The roller/crimper has a smooth roller (black) to flatten the standing cover crop, and a single or double crimping bar (red) that stamps down onto the stalks to crimp and scarify them to promote desiccation.

A new roller/crimper designed for self-propelled, walk-behind tractors allows growers with small farms to successfully lay down and terminate cover crops as part of their conservation farming systems.

Roller/crimpers knock down and kill cover crops

Roller/crimpers are used in conservation farming systems to kill cover crops near maturity and lay them down as a mulch through which cash crops can be planted.

- A roller driven through a field flattens a living cover crop.
- A bar mounted on or behind the roller crimps the cover crop stems, scarifying them to promote desiccation.

When the cover crop has died and dried out, the residue forms a mulch that protects the soil from erosion, reduces weed germination and growth, and conserves water for the following cash crop.

A Roller/Crimper for Small Farms

On small farms, tractors are usually small and less powerful than those on large farms. Daily field operations are often limited in size. In organic vegetable production, for example, field operations may be done one bed at a time. Traditional roller/crimpers can be too heavy for the available equipment and too large for the narrow beds that are common in smaller vegetable systems.



The roller/crimper mounted onto a two-wheeled, walk-behind tractor.

This PTO-powered roller/crimper attaches to self-propelled, walk-behind tractors commonly used on small farms. It includes a smooth roller and a spring-loaded crimping bar. The roller lays the cover crop down onto the soil. The crimping bar moves up and down (due to releasing spring energy), crimping the stalks of the cover crop and scarifying them to promote desiccation.

Because the crimping bar's force comes from its springs, not from its weight, the machine is much lighter than traditional roller/crimpers. It requires less horsepower in the field and is much easier to handle and transport. The crimping frequency can be manipulated both through the engine RPM and the speed of the tractor.

Terminating Performance

Rolling and crimping a mature cover crop will kill and desiccate it more quickly, allowing the farmer to plant the next cash crop sooner.



Rolling a rye cover crop.

The roller/crimper's performance is equivalent to that of the larger, traditional machines.

Effect of Rolling/Crimping a Rye Cover Crop

Weeks After Rolling	0	1	2	3
	% of Cover Crop Dead			
Rolled/crimped	24	89	100	100
Untreated	24	41	43	77

Rolling and crimping a mature (late milk) rye cover crop killed it faster, allowing earlier planting of the following cash crop.

These results are similar to those found with traditional (larger & heavier) roller/crimpers.



Rolling a crimson clover cover crop.

Source:

Kornecki, 2012, U.S. Patent #8,176,991 B1