MAX EMERGENCE

Get better wheat populations
with reduced tillage, flat press wheels—
even after a rain.

Heavy rains that come right after
wheat planting can do more
harm than good. Ask anybody
who has watched wheat plants try to
struggle up through sediment-filled fur-
rows or who has seen a field crust over.

Now, research at the USDA’s Akron
research station shows that reduced
tillage combined with flat press wheels on
grain drills can help prevent damage
from heavy post-planting downpours or
from irrigating wheat up with sprinklers.

“Rains occurring right after winter
wheat planting can greatly reduce wheat
plant emergence. One inch of rain in 30
minutes can potentially reduce emergence
by as much as 50%,” says Steven
Hinkle, a researcher at the Central Great
Plains Station.

Grain drills that have hoe furrow
openers push or throw aside the dry sur-
face soil to form V-shaped furrows with
the winter wheat normally planted 1.5
inches below the bottom of the furrows.

Rain that occurs after winter wheat
planting can reduce emergence because
soil from the sides of the furrow slump
toward the furrow bottom. The problem
can be compounded if the soil forms a
surface seal or crust.

Hinkle, an agricultural engineer,
studied wheat plant emergence under
several tillage treatments during 1987
and 1988. His objective was to measure
any changes in winter wheat emergence
after 30 minutes of artificial rainfall was
applied within four days after planting.

Winter wheat was planted with hoe
furrow openers and either V-shaped or
three-inch-wide flat press wheels. Land
slope on all plots was less than one-half
of one percent.

Wheat plant emergence generally
decreased in direct relation to increasing
rainfall amounts for all tillage and
residue levels, Hinkle reports.

His study showed that emergence was
not significantly different in plots that
were planted with the V-shaped press
wheels (all tillages and residues) and
with the flat press wheels in dry clean-
tilled plots. These plots had the lowest
plant populations among all tillage and
residue treatments for each rainfall
amount.

When winter wheat was planted with
the flat press wheels in clean-tilled plots
with no residue, emergence levels were
similar to the plots planted with the V-
shaped press wheels. That’s because soil
in the clean-tilled plots was so loose that
it fell back into the furrows behind the
flat press wheels, Hinkle explains. As a
result, the three-inch-wide flat press
wheels had no effect in changing the
furrow shape.

However, using wide, flat press
wheels in reduced-tillage conditions with
surface residue significantly improved
emergence.

The amount of residue is also a fac-

Wheat emergence after one inch of
rain applied after planting to sweep-
plowed fields planted with flat press
wheel (left), and to clean-tilled
fields planted with traditional
V-shaped press wheels (right).