Packing Summer Fallow in the Pacific Northwest: 
Agronomic Benefits and Environmental Concerns

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ABSTRACT
Winter wheat (*Triticum aestivum* L.) is sown as deep as 20 cm below the summer fallow soil surface in dry years in the semiarid Pacific Northwest (PNW). Many growers pack the summer fallow mulch in late August before seeding winter wheat to improve stand establishment. But packing may increase blowing dust, which is a major soil loss and air quality concern. A 2-yr study was conducted on two silt loam soil types in 280 mm and 230 mm average annual precipitation zones in eastern Washington to determine the agronomic benefits and potential wind erosion hazards associated with packing. Packing a loose, thick surface mulch increased soil bulk density (BD) between the 5- to 12-cm depth. This significantly benefited wheat seedling emergence and stand establishment, which subsequently increased grain yield 9% over nonpacked plots. But packing a soil with a thin mulch layer overlying a high BD tillage pan had no effect on soil BD, wheat seedling emergence, or grain yield. Packing rendered the soil more vulnerable to wind erosion at both locations by reducing soil clod mass 55% and surface residue 38% compared with not packing. There are agronomic benefits from packing summer fallow mulch before seeding, but packing should be practiced judiciously, and not considered when surface residue or soil clods are lacking. This is especially true for poorly aggregated coarse-textured soils where soil structure is difficult to maintain.