

**TABLE 1. TRACTOR ROW TILLAGE VERSUS NO-TILLAGE EFFECTS**

<b>Effect on:</b>	<b>Tillage</b>	<b>No-Tillage</b>
Competition with vines for soil resources	Eliminates	Creates
Grapevine root zone position	Mostly below the depth of cultivation	Mostly below the majority of cover crop roots
Grapevine frost damage	Provides a few degrees of passive protection	May exacerbate damage depending on cover crop height and density
Soil organic matter	Rapidly adds through incorporation, but will decrease with excessive repeated tillage	Slowly adds through root sloughing
Soil permeability	Diminishes; can create an evaporation barrier	Enhances due to the presence of cover crop roots and root traces
Water infiltration	Usually slows	Usually accelerates
Soil moisture	Conserves below evaporation barrier	Consumes or if dead, slow evaporative losses through pores until topsoil is dry
Applied amendments and fertilizers	Incorporates and blends to promote topsoil contact and accelerated efficacy	Deposits on the soil surface, requiring rain to dissolve and move into the topsoil
Soil compaction (1)	May create a high density pan layer at the depth of cultivation	Cover crop roots increase soil resistance to compaction
Soil erosion	Exposes soil surface to wind, rain, and surface water runoff	Protects soil surface from wind and rain, and disrupts and slows runoff
Atmospheric dust	Does not control	Restricts
Solar radiation	Promotes absorption	Promotes reflectance
Rocky soil suitability	Poor	Good

1. All mechanized vineyard operations compact soils to some degree.