Agricultural development is rapidly changing the landscape of the American west. This is especially true in the rich agricultural regions of the coastal and interior valleys and foothills of California, Oregon and Washington. Thousands of acres of grassland and oak woodland have been converted to vineyard and been subject to fundamental changes in land management. These agricultural systems are human-manipulated, and the potential for putting this to use for maximizing the sequestration of carbon is high. In general, what this change in land use means for the carbon budget is not clear and warrants comparison with grassland. A novel application of tripod LiDAR is being tested in tandem with traditional ground measures to verify herbaceous and woody biomass at two sites (vineyard and pasture). As well, soil surveys will characterize below ground carbon storage. It is anticipated that an accurate inventory of stored carbon will provide a means by which the two sites may be compared with respect to their potential for directed use for carbon sequestration.