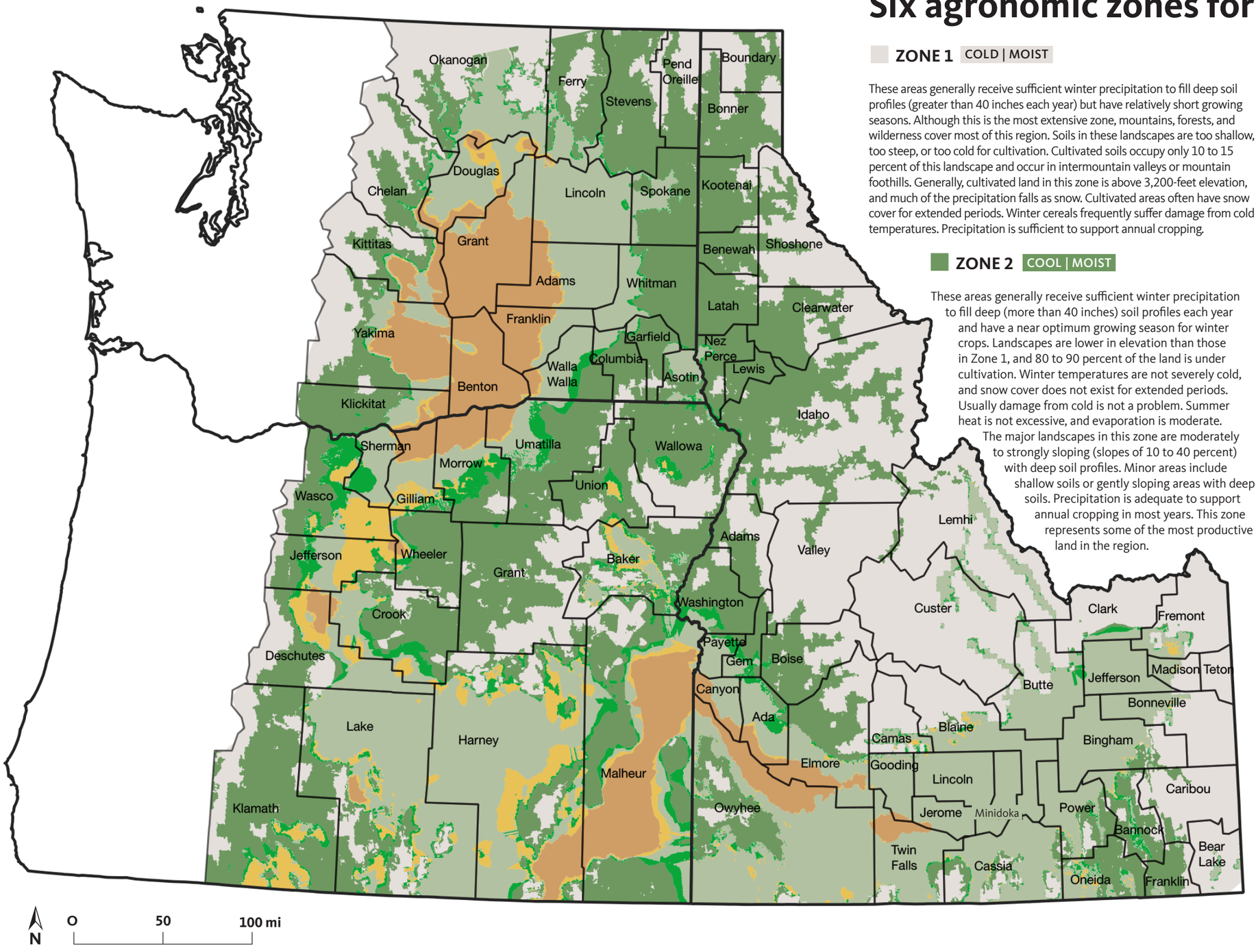
Six agronomic zones for the dryland Northwest



ZONE 1 COLD | MOIST

These areas generally receive sufficient winter precipitation to fill deep soil profiles (greater than 40 inches each year) but have relatively short growing seasons. Although this is the most extensive zone, mountains, forests, and wilderness cover most of this region. Soils in these landscapes are too shallow, too steep, or too cold for cultivation. Cultivated soils occupy only 10 to 15 percent of this landscape and occur in intermountain valleys or mountain foothills. Generally, cultivated land in this zone is above 3,200-feet elevation, and much of the precipitation falls as snow. Cultivated areas often have snow cover for extended periods. Winter cereals frequently suffer damage from cold temperatures. Precipitation is sufficient to support annual cropping.

ZONE 2 COOL | MOIST

These areas generally receive sufficient winter precipitation to fill deep (more than 40 inches) soil profiles each year and have a near optimum growing season for winter crops. Landscapes are lower in elevation than those in Zone 1, and 80 to 90 percent of the land is under cultivation. Winter temperatures are not severely cold, and snow cover does not exist for extended periods. Usually damage from cold is not a problem. Summer heat is not excessive, and evaporation is moderate. The major landscapes in this zone are moderately to strongly sloping (slopes of 10 to 40 percent) with deep soil profiles. Minor areas include shallow soils or gently sloping areas with deep soils. Precipitation is adequate to support annual cropping in most years. This zone represents some of the most productive land in the region.

ZONE 3 COLD | DEEP | MODERATELY DRY

These areas have deep soils (more than 40 inches) and a near optimum growing season, where there is enough winter precipitation to recharge the soil profile in most years. With proper rotations and management techniques, growers can practice annual cropping in most years. Summer fallowing in drier years may be necessary to maximize production and make efficient use of water. About 90 percent of this zone is cropland. Most landscapes in this zone are gently to strongly sloping (slopes of 10 to 40 percent) with deep loess soils over basalt bedrock or hardpan.

ZONE 4 COOL | SHALLOW | DRY

These areas have shallow soils (less than 40 inches) and near optimum growing seasons. Although the annual precipitation is low, the shallow soils fill with water most winters. Summer-fallowing has little advantage from the standpoint of water conservation or water use. Annual cropping provides the most efficient use of these soils. A typical landscape in this zone consists of gently to steeply sloping (slopes of 4 to 30 percent) loess soils over basalt of root-restricting layer at shallow depths. About 50 percent of this zone is cultivated.

ZONE 5 COOL | DEEP | DRY

Zone 5's areas have deep soils (more than 40 inches) and near optimum growing seasons but receive insufficient winter precipitation to fill the soil profile. Because of these conditions, it is practical to increase production and water-use efficiency by summer fallowing. Typically, landscapes in this zone consist of gently to moderately sloping, deep, loess soils over basalt bedrock or Pleistocene flood deposits. About 90 percent of this zone is cultivated. Soils in this zone are low in organic matter, medium textured, and susceptible to wind erosion. Landscapes are gently sloping to moderately steep.

ZONE 6 HOT | VERY DRY

This zone identifies areas that typically receive very low annual precipitation and have hot summers with high evaporative demands. These areas are unsuited for crop production unless irrigated. Included in this zone are small areas that, without irrigation, would fall in zones 1 through 5. About 50 percent of this zone is cropland. Soils in this zone are quite variable; many are sandy loam (coarse in texture). Some are gravelly at shallow depths, which accentuates drought conditions.

HOW THIS MAP WAS MADE: Soils data were converted from vector format to raster at an 800m spatial resolution and grid, matching both precipitation and GDD inputs. Then, a per-pixel decision tree classification model was run with criteria for each individual zone. Pixels missing soil features were stored as no-data. After running the zone classification, an interpolation model to fill gaps in data was run; the model was run using inverse distance weighting and a maximum search neighborhood of 10 pixels. The result is a continuous raster of all six agronomic zones.