

LOW-DENSITY TREE PLANTING: SCOPE OF OAK CLUSTER PLANTING TO CREATE MIXED FORESTS

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Creating mixed forests by converting monospecific stands or restoring degraded forests is seen as a climate change adaptation strategy and option for increasing the supply of ecosystem services. Cost-effective low-density tree planting combines enrichment planting of desired tree species with natural regeneration and is seen as an alternative to cost-intensive high-density row planting. Oak cluster planting is a type of low-density tree planting, and clusters comprise 20 to 30 seedlings in either nests (nest planting) with a very dense spacing of about 0.2 m between trees or groups (group planting) with 1 m between trees. In contrast to nest plantings, clusters in group plantations are encircled with varying individuals of a trainer tree species (e.g., lindens, hornbeams). Approximately 60 to 100 groups or 200 nests/ha were planted uniformly. I compared the silvicultural (e.g., growth, potential future crop trees, mortality) and ecological (e.g., tree species richness, stand basal area, competition) attributes between oak cluster and row plantings among 52 stands in Germany, Austria, and Switzerland in my Ph.D. dissertation. I found that the group planting of oaks can be a promising alternative to traditional row planting, which can guarantee a good amount of future crop trees of oaks and other species, high tree species diversity, and comparable stand basal area in the first two decades after planting. I recommend that group planting of different tree species should be experimented with in other temperate and tropical forest ecosystems where the goal is to create a mixed forest through low intervention.