PLANT COMPOSITION AND MICRO-LANDSCAPE ORGANIZATION OF POST-QUARRIED LAND IN NDARUGU AREA, KIAMBU COUNTY

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Abstract
Quarry rehabilitation helps in making quarried land become more productive while overcoming the negative impacts of quarrying. Ndarugu region in Kiambu County, Kenya, has experienced long term quarrying that has left behind significant landscape scars in the environment. An investigation of plant composition on three quarried sites under different management regimes and time since quarrying, was conducted to evaluate the plant colonization and micro-landscape organization of the quarried land. Patch and inter-patch areas were analyzed along gradient-oriented line transects 10 meters apart. Three transects were set for each landscape unit type, and a survey was done during the dry and rainy seasons. The main types of rehabilitation were either backfilled levelled or back filled not levelled. The levelled site was 5-10 years since last quarried while the not levelled were 1-5years and 10-15years since last quarrying. Four types of patch areas were identified, stones, plant stone complex, individual plant, and plant complex. Micro-landscape organization index was higher during the rainy season compared to the dry season. The highest micro-landscape organization index was 0.95 for the rainy season of 10-15 years' category quarry, while the least was 0.55 for dry season of 1-5years' category quarry. The landscape organization index was found to be higher in backfilled not levelled quarries during the rainy season and lower during dry season compared to backfilled and levelled quarries. The number of patches per ten meters along the transect decreased with increase in time since quarried. Plant species richness was highest during the rainy season (109) compared to the dry season (108). Plants in the *Asteraceae*, *Poaceae* and *Fabaceae* families were the most common plant families. From the research, quarry rehabilitation process was found to be significantly impacted by time, rehabilitation method as well as seasonal dynamics.

Key words: Quarrying impact, rehabilitation method, plant colonization, LFA, patches, landscape, organization index