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In the recent years, the coppice system has regained importance as a production system for forest species plantations all over the world. In Brazil, some forest companies have begun to use the coppice system as a strategy due to its well-known economic and sustainability advantages. Thus, the question that raised was: how to conduct the selection of superior genetic material for this management strategy? Information in the literature are scarce. To fill this gap in the knowledge of coppice system for *Eucalyptus* spp., we evaluated the individual volume (m^3) of five clonal tests located in Botucatu and Angatuba, São Paulo State, Brazil, and we estimated the genetic control of productivity, the coefficient of repeatability, and the genetic correlations for regrowth management in two rotations at 5.5 years of age. The randomized block design was used, with six replicates, five plants per plot, and unbalanced treatments. The results showed a great variation among clones regarding the heritability in the broad sense (\hat{h}_g^2), which ranged from 0.28 to 0.88. The genotypic correlation between the means for the two rotations was positive, high (0.71 to 0.86), and statistically significant and the coefficient of repeatability (\hat{r}), that encompasses the estimate that determine if the observed behaviour of clones will be maintained all over rotations, was high in the five experiments (0.88 to 1.00). The elevated similarity of the ranking of the best clones between rotations (76.5%) allows us to conclude that, for the evaluated material, the selection can be performed in the first rotation for coppice system.