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Mathematical models of optimal harvesting in age-structured biological populations are considered. The models are formulated in integral settings if there is only natural reproduction in the population and in partial differential settings if individuals of a certain age, including newborns, are brought from outside. Necessary extremum conditions for the corresponding optimal control problem are established. Conclusions based on the necessary conditions are discussed and their applied interpretation is provided. The results of the research can be applied to fishery and forestry, dairy milk farms and horse breeding, gardening and plant landscaping, etc. (Received September 02, 2007)