This diploma thesis is focused on the topic of genetically modified organisms and their use in the practical sectors of human life. Theoretical part of the thesis defines general terms GMO, plasmid, genetic engineering, biotechnology. It also records historical milestones relating to the problematic, deals with individual techniques of genetic engineering and briefly states legislative procedures in context of dealing with GMO. It gives examples of transgenic organisms and summarizes advantages and disadvantages of their use. Practical part of the thesis contains educational program called “Genetically modified organisms”, which was conceived by the author and includes a draft of a lesson inclusive of teaching materials - powerpoint presentations, worksheets, interactive worksheets, auxiliary text for teacher and written preparation. Research part deals with high school students change of view about using GMOs after completing the educational program. Due to analysis was proven that most of the attitudes and knowledge about GMO was changed after completing the educational program (for example in issues of willingness to consume GM food and animal products, perception of advantages and disadvantages etc.) Data was still unchanged in questions which cannot be affected by the program (control of food packaging or whether the students encounter GM food etc.).