

## **Kultura *in vitro* i biotechnologia – spełnione nadzieje?**

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### ***In vitro* culture and biotechnology – fulfilled expectations?**

#### **Summary**

The methods for *in vitro* culture of plant cells, tissues and organs had focused much attention in the beginning of the last century, which resulted in setting up the first commercial laboratories over 60 years ago. These laboratories concentrated their activity on clonal propagation and their economical importance has been permanently growing. However, some of the applications of *in vitro* methods are still not realistic, whereas introduction of other is not satisfactory. Plant breeding is an example where application of tissue culture techniques is below expectations. There are several reasons for such situation. Two of them are of biological nature (genotypic effect, somaclonal variation), and the third reason results from the development of other molecular methods providing alternative solutions. We suggest that the main limitations in more effective usage of *in vitro* methods should be minimized by the development of efficient plant stem cells' culture procedures.

#### **Key words:**

micropropagation, somaclonal variation, genotypic effect, plant stem cell

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