

Pesticide Residues in Strawberries

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Strawberries (*Fragaria × ananassa* Duchesne) is important fruit of family *Rosaceae* Juss., grown throughout the world. It is rich in vitamin C, sugar, organic acids, anthocyanin, phosphorus, iron, other minerals, vitamins, etc. and its flavour is characterized as fruity, sweet and tart. It is utilized for the production of purees, juice concentrate, juice, jams, preserves and rose red wine. The major strawberry producing countries are USA, Spain, Japan, Poland, Korea and Russian Federation [1].

The protection of strawberries against diseases, pests and weeds is mainly based on the chemical method. In planning protection programs, it is necessary to conduct monitoring in individual phenological phases, which will allow to assess the severity of diseases, and in the case of pests - also to determine the thresholds of danger. The identification of pests is also very important, including the use of familiarity with the symptoms of their feeding [2]. There are 131 plant protection products registered in Poland to control strawberry plantations. Almost half of them are fungicides [3].

The result of chemical protection of strawberry plant are pesticide residues in fruits. According to literature data strawberry fruits contain a lot of pesticide residues, even over 60% of samples contain one or multiple substances, but their concentrations usually do not exceeded their Maximum Residues Levels [4-6]. Pesticide residues most often found in strawberry samples are fungicides: azoxystrobin, boscalid, cyprodinil, difenoconazole, dithiocarbamates, fludioxonil, folpet, pyrimethanil, tebuconazole, pyraclostrobin, tetraconazole, thiophanate-methyl and fenhexamid and insecticide - chlorpyrifos [5,6]. Although strawberries contain a lot of pesticide residues, dietary exposure associated with consumption of these fruits is assessed as low [7,8].

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