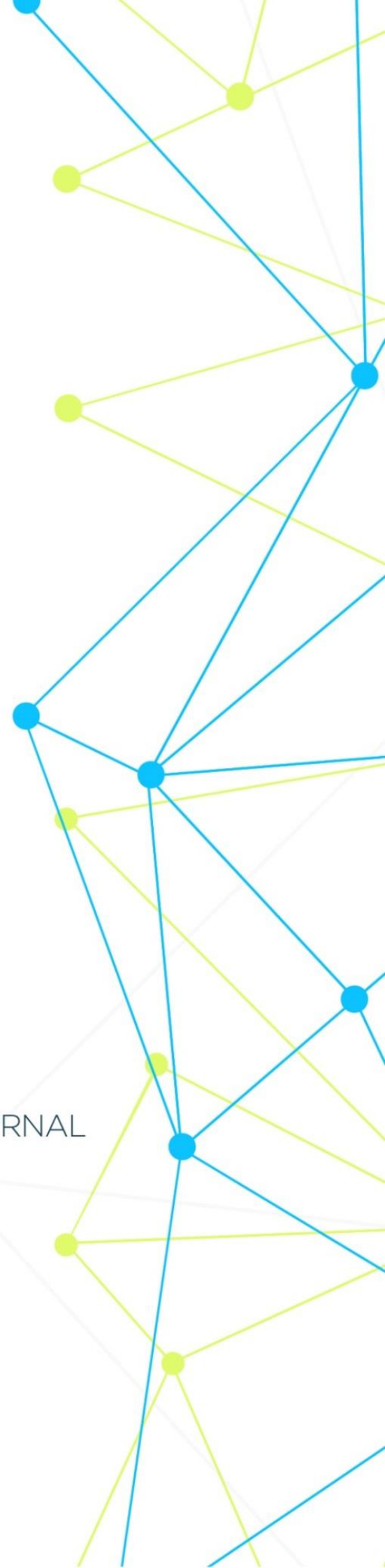


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## **IMPACT OF METEOROLOGICAL FACTORS OF LABOR CONDITIONS DURING ORCHARD TREATMENT WITH PESTICIDES ON EMPLOYEES' HEALTH**

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**Abstract:** This work is devoted to studying the hygienic working conditions of workers in horticulture and vegetable growing. The influence of the external environment and meteorological factors on the state of health of workers is analyzed. Meteorological factors were determined: atmospheric air temperature, relative humidity, and air speed. Along with this, the state of workers' health was investigated. The results of the research are analyzed, and corresponding conclusions are presented.

**Keywords:** hygiene, working conditions, meteorological factors intoxication, liver.

### **Relevance**

Analysis of domestic and foreign publications revealed a significant preponderance of research on hygiene of pesticides use, but without taking into account their consistent, combined and intermittent effect on the organism at all stages of pesticide use in cotton - growing, horticulture and vegetable growing in normal and hot periods. Thus, numerous domestic and foreign publications describe [7] the effect of hot and dry climate on health. Where substantiated that, in hot conditions immunobiological reactivity is weakened, somewhat reduced resistance of the body to external factors. The greatest blood clotting is observed under water deficiency and disorder of mineral and other exchanges, which complicates the course of any disease and, in cases of a hydraemia, is of independent importance. In this regard, studying the effect of hot climate on the health of workers and assessing the degree of influence of meteorological factors is an urgent problem.

### **Objective of the study**

Hygienic assessment of working conditions of workers when processing fruit crops and identifying the degree of influence of air temperature on the health of workers.

### **Material and methods**

The study examined the working conditions of workers at the sites of pesticide application, the control group included 16 people (healthy) who worked without contact with pesticides, 408 workers and 264 patients. From 264 patients 142 patients received traditional treatment and 122 patients who were prescribed biologically active preparations. Workers and working conditions of the workers were the objects of study. The research was carried out by treatment of fruit crops with Fozalon and Baton EU solutions. To determine contamination To characterize working conditions when using pesticides we used standard methods of assessing parameters of chemical and physical factors using gas chromatograph of "Tsvet-5" mark. Significance of differences (P) of averages was determined using an indicator according to the table.

### **Results**

Hygienic survey of territories and working areas showed that high air temperature contributes to evaporation of individual components. For example, all air

samples taken for the content of pesticides Fozalon and Baton EC during daytime and evening periods, when air temperature is at a high level (from 28 to 42°C) (Table 1).

To determine the degree of skin contamination, washes were made of the face and hands. The washes were made after the end of the work cycle. The data obtained indicate abundant contamination of skin with pesticides (Fozalon, Baton EU)

**Table 1**  
**State of meteorological factors in horticulture during treatment of orchards with Fozalon and Baton EU pesticides**

Name of pesticide	Timing of measurement	Air temperature, °C			Relative humidity %			Air velocity, m/sec.		
		measuring hours	Min-max	M ± m	measuring hours	Min-max	M ± m	measuring hours	Min-max	M ± m
Treatment pesticide Fozalon	morning	9 <sup>00</sup>	23-27	24,3 ±4,4	9 <sup>00</sup>	52-68	59,4 ±6,31	9 <sup>00</sup>	0,47-0,94	0,66 ±0,08
	afternoon	13 <sup>00</sup>	33-39	36,1 ±4,11	13 <sup>00</sup>	41-46	43,7 ±4,83	13 <sup>00</sup>	0,31-0,76	0,57 ±0,06
	evening	17 <sup>00</sup>	27-36	29,4 ±1,94	17 <sup>00</sup>	35-42	41,3 ±3,84	17 <sup>00</sup>	0,48-1,03	0,87 ±0,05
Treatment pesticide EU Baton	morning	9 <sup>00</sup>	24-25	26,9 ±0,21	9 <sup>00</sup>	49-63	56,7 ±4,27	9 <sup>00</sup>	0,68-1,20	0,87 ±0,09
	afternoon	13 <sup>00</sup>	34-41	37,1 ±1,48	13 <sup>00</sup>	37-44	40,3 ±4,12	13 <sup>00</sup>	0,51-0,74	0,63 ±0,04
	evening	17 <sup>00</sup>	24-32	32,8 ±2,63	17 <sup>00</sup>	33-42	37,6 ±2,91	17 <sup>00</sup>	0,73-1,34	1,10 ±0,34

At high air temperatures (up to 400C), the toxic effect of chemicals increases and their permeability through human skin increases, the air temperature during treatment of orchards with Fozalon pesticide in the morning hours ranged from 23 to 270C. In the afternoon and evening hours, during some periods of treatment, it reached 33-390C and 34-410C. The average temperature at the stages was  $36.1 \pm 4.11$  and  $29.8 \pm 1.230$ .

Similar phenomena were observed during application of Baton EU pesticide in the treatment of fruit and garden plants. At the same time, air temperature in the working places averaged  $36.7 \pm 4.20$  in the morning treatment period,  $37.1 \pm 1.40$  in the daytime and  $32.8 \pm 2.930$  in the evening. So, treatment of orchards with Fozalon and Baton EU was carried out in different farms at different treatment hours: morning (23-270), daytime (33-410), evening (27-360) and therefore there are some deviations of atmospheric air temperature. Relative humidity in all study hours was 52-68% in the morning treatment hours, 41-46% in the afternoon treatment hours, and 35-42% in the evening treatment hours. During all periods of observations the average air velocity during the treatment period ranged from 0.31 to 1.34 m/sec.

### **Conclusion**

The impact of temperatures, relative humidity on the body of workers of different groups, contacting with pesticide FOS and pyrethroids leads to violations of adaptive and adaptive systems of the body.

Under the influence of meteorological factor, the greatest intensity of contamination of skin of workers, who are in contact with pesticides, occurs mainly through the air environment (air in the tractor operator's cabin, hoses and during manual treatment), contaminated with vapors of Fosalon and Baton EU settles on the skin of workers.

The combined effect of industrial poisons on the body and a complex of unfavorable environmental factors (high air temperature, relative humidity, noise, vibration, significant physical stress) in many cases increases the toxic effects of pesticides on the human body and the development of various diseases of chemical etiology. Skin pathology is observed in people who work with organophosphorus pesticides (OPP) in horticulture for a long time.

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