SPECIFICITY OF RESPONSE REACTION OF NORWAY SPRUCE TO GLOBAL CLIMATE CHANGE

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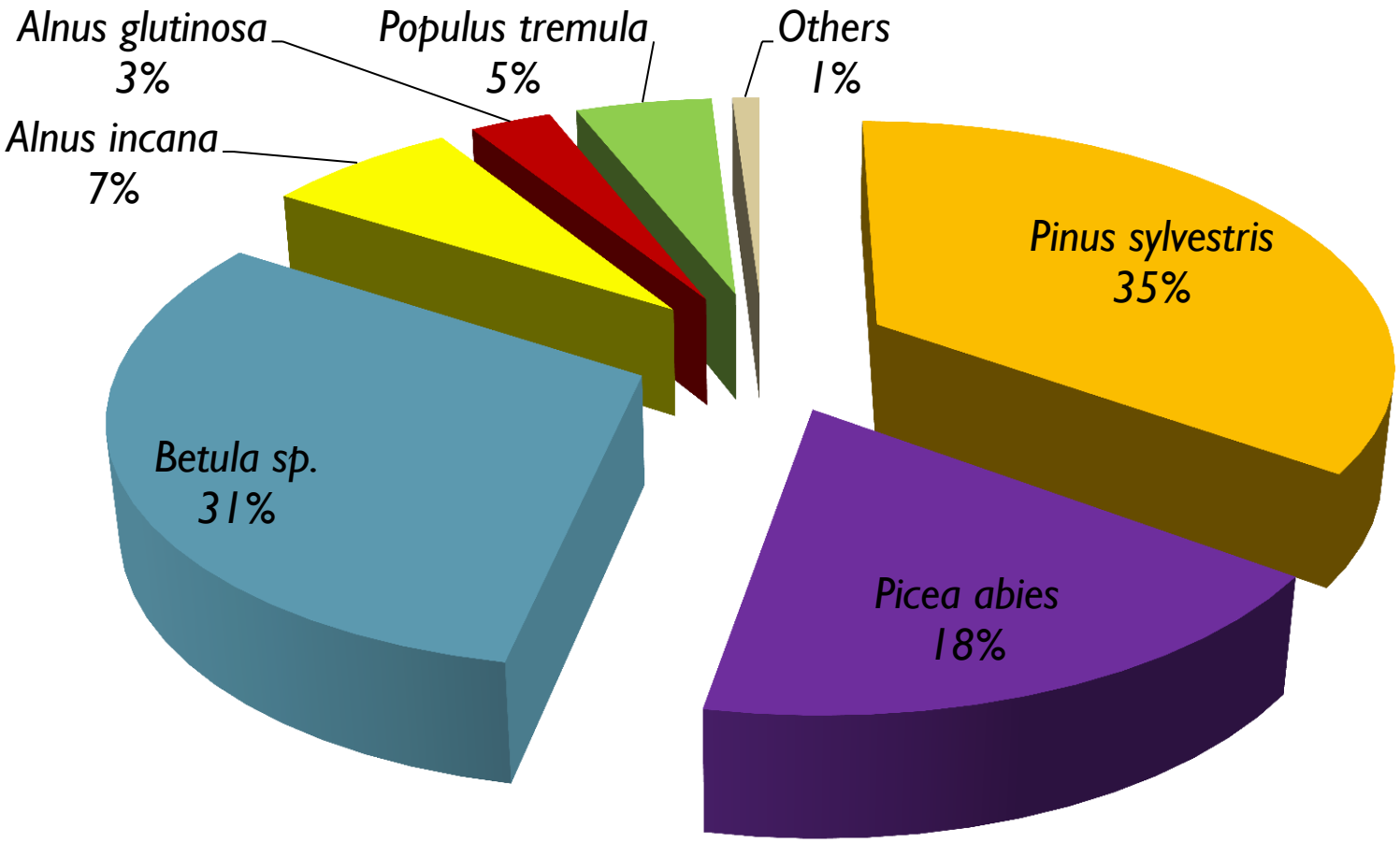
EIROPAS REĢIONĀLĀS ATTĪSTĪBAS FONDS

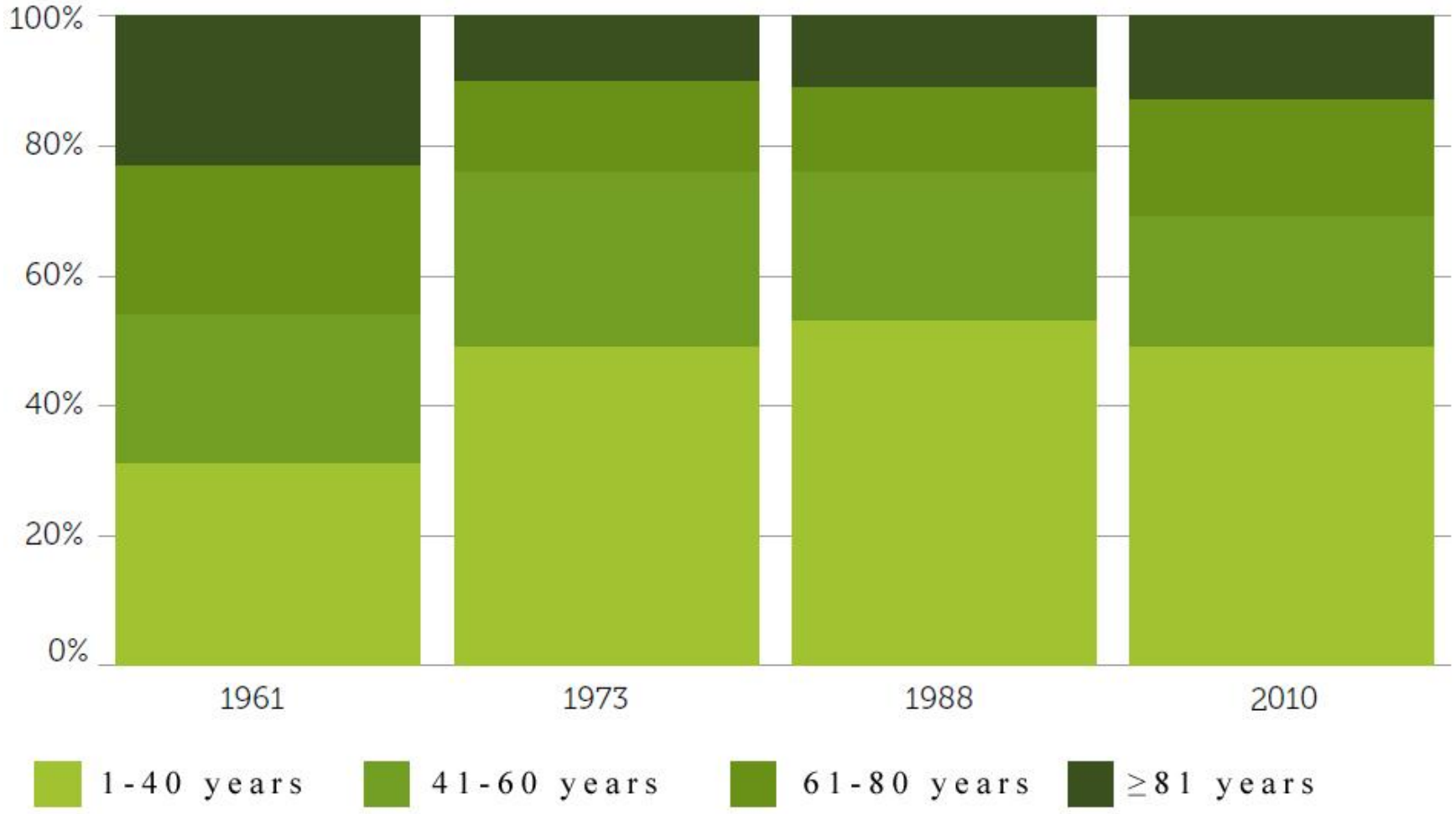
19th Annual International Scientific Conference "Research for Rural Development 2013", LLU, Jelgava, Latvia, 15 - 17 May 2013

Topicality (1)



VMD, 2012

Topicality (2)



VMD, 2012

Aim and tasks of research

The aim -

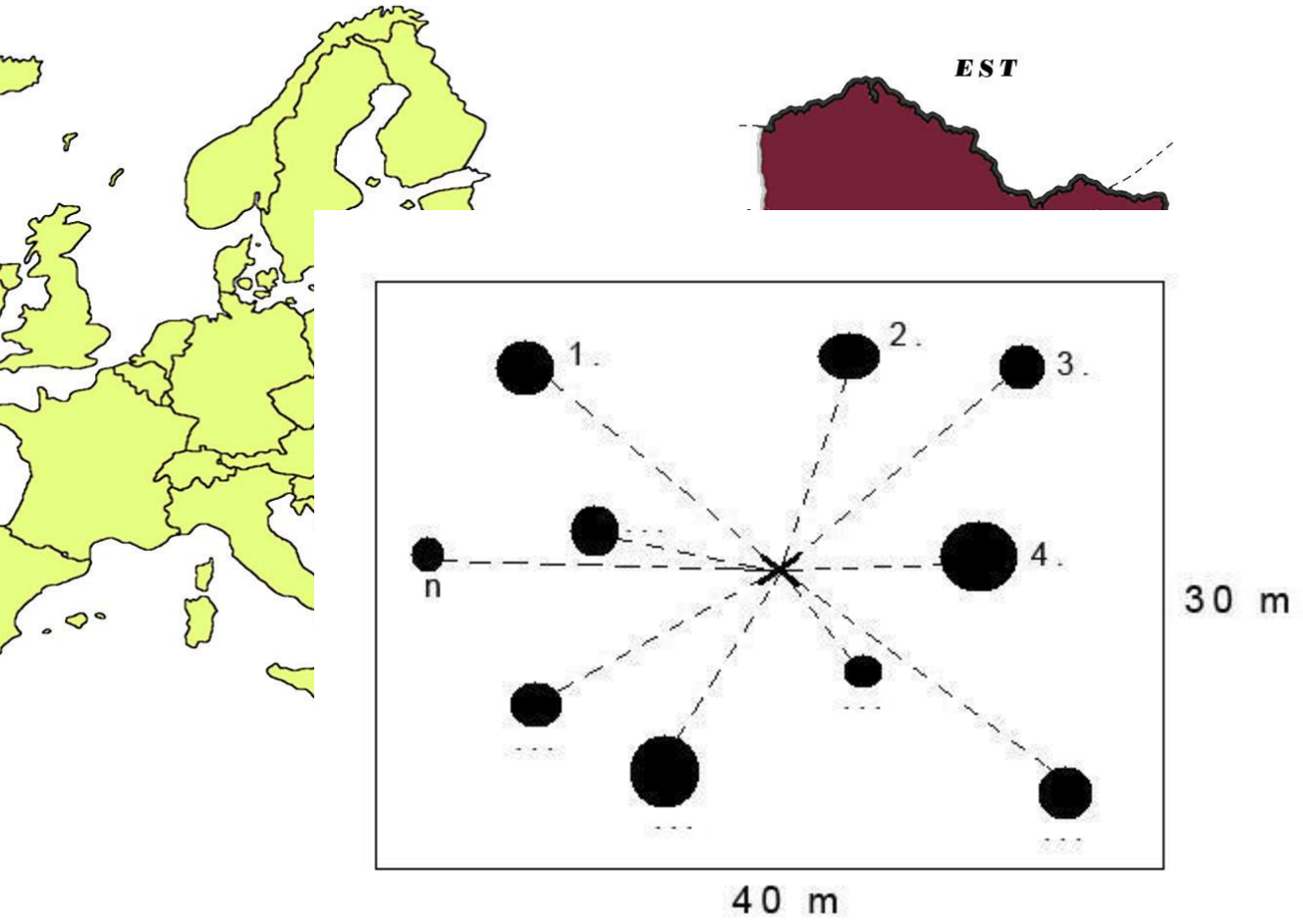
to describe growth tendencies of Norway spruce *Picea abies* (L.) Karst. during the last 50 years (1960 – 2010) in eastern part of Latvia

The tasks:

1. analysis of the trendal specificity of average, minimal and maximal temperature active periods during the first t_1 (1960-1985) and the second t_2 (1986-2010) time interval in eastern part of Latvia;

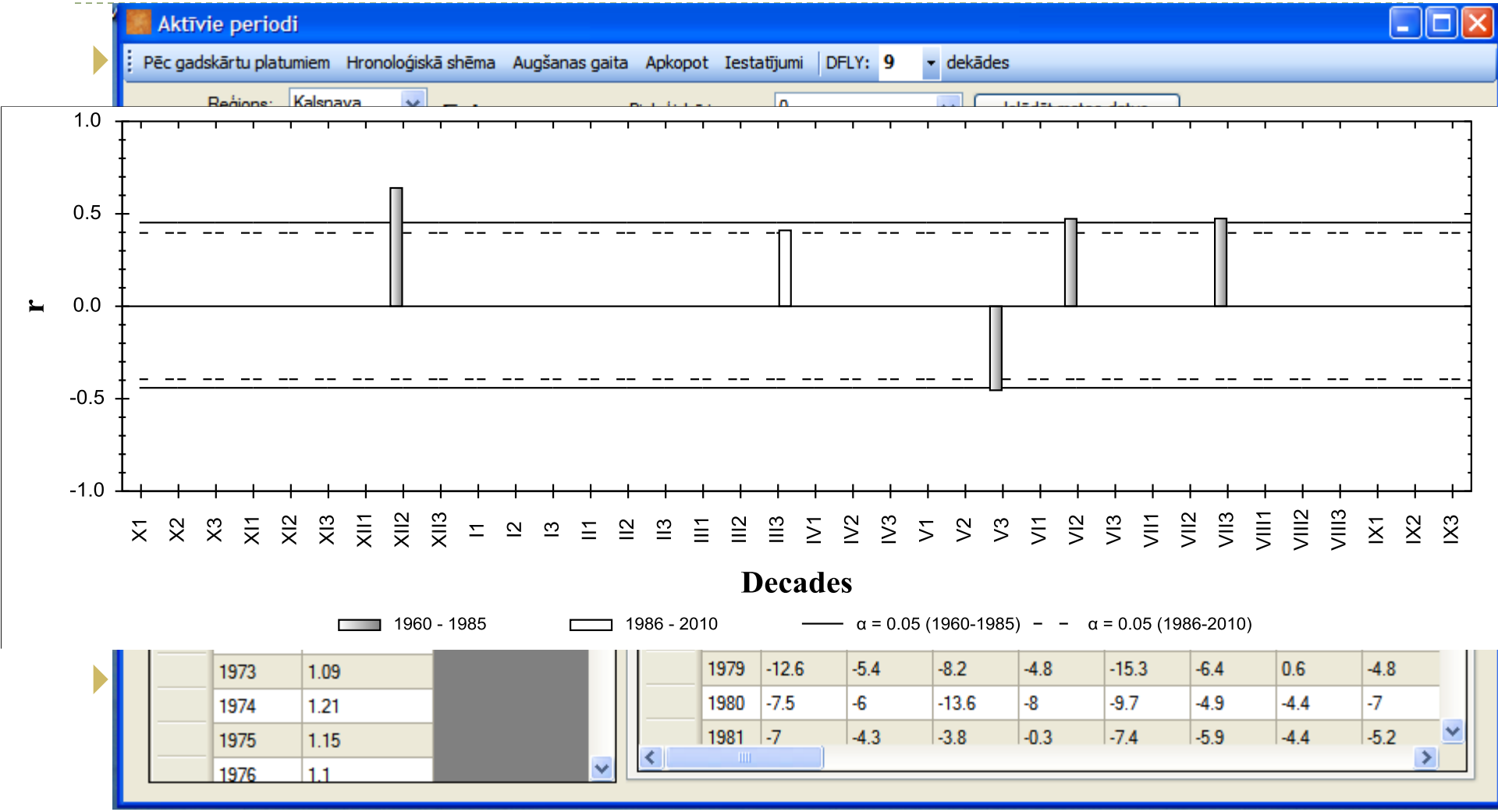
2. analysis of the trendal specificity of precipitation active periods during the first t_1 (1960-1985) and the second t_2 (1986-2010) time interval in eastern part of Latvia

Material and methods (1)



- 6 tentative sample plots
- conformable weather-stations Alūksne, Zīlāni
- 150 cores were collected
- direction of boring – random

Material and methods (2)



Results (1)

Alūksne weather-station			
average annual temperature, °C		**annual precipitation sum, mm**	
t_1	**t_2**	**t_1**	**t_2**
4.4 ± 0.17	5.4 ± 0.17	685 ± 19.8	766 ± 21.5

Zīlāni weather-station			
average annual temperature, °C		**annual precipitation sum, mm**	
t_1	**t_2**	**t_1**	**t_2**
5.3 ± 0.24	6.2 ± 0.18	642 ± 17.8	695 ± 17.5

Results (3)

Region	Average temperature				Minimal temperature				Maximal temperature			
	t_1		t_2		t_1		t_2		t_1		t_2	
	+	-	+	-	+	-	+	-	+	-	+	-
Alūksne	XII2 VII3		III3	X3	XI3 III3 IV1	VI2		III3 VII2 IX2 IX3	IV1	VI2		VII2 VIII2 IX2
Kalsnava			V2	XIII IX1 IX3	XII3			XI3 XIII XII2	V3	II3		VII2

Results (2)

Region	Sum of decade precipitation , mm			
	t_1		t_2	
	+	-	+	-
Alūksne	I2 IV1		III V2 VII	XIII
Kalsnava	IIII		XI2	

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Conclusions (1)

1. Active periods of meteorological factor's impact on Norway spruce growth in eastern part of Latvia during last decades have changed not only their location but also direction of impact from positive to negative.
2. Minimal and maximal decade temperatures are those mostly determinating the radial growth of Norway spruce in eastern part of Latvia.
3. Decade minimal temperature active periods have largely changed their direction of impact from positive to negative and they are located in the end of previous year (the third decade of October, the second and the third decades of November and all decades of December) and in summer months (from the second decade of July to the first decade of August).
4. Increase of decade precipitation level in winter caused tree-ring growth positively both in the time interval t_1(1960 – 1985) as well as in interval t_2(1986 – 2010).
5. Sum of decade precipitation in the end of previous year plays significant role in growth of Norway spruce in eastern part of Latvia – that was actually both in interval t_1(1960 – 1985) as well as in interval t_2(1986 – 2010).

Thank you for attention!

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