The potential of Estonian agro-climate and extraordinary weather situations during the last 50 years

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Estonia is situated on the shore of the Baltic Sea. From the north to the south the distance is 240 km and from the west to the east 350 km. There is more maritime climate in the western part of Estonia and more continental climate in the eastern part of the country. The winter period (average temperature permanently below 0 degrees) is the longest in the north-eastern part of Estonia (lasted 130 days in average) and the shortest in the western part and the islands (last less than 100 days in average). The average temperature of the coldest months is -6...-7 degrees in the eastern part and about –3...-4 degrees in the western part of the Republic. The temperatures below -30 degrees are not unusual in the eastern part of Estonia. There are 120...130 days in average with snow cover in uplands and only 80...100 days on islands and the western part of Estonia. Duration of the vegetation period (air temperature permanently above 5 degrees) is 175...190 days in average, during which the sum of mean effective air temperatures above 5 degrees is 1300...1500˚C and mean sum of active air temperature is 1740...2000˚C. The temperature in midsummer (in July) is 16...17˚C in average. The absolute registered maximum is 36˚ C. The average period without night frosts lasts 4 months in most parts of Estonia. Mean precipitation of the year is 550...700 mm, in the period 01.04...30.10. it is 350...500 mm. Mean value of sunshine duration of the year is 1640...1940 hours, from what there are 1410...1640 hours in the period of 01.04...30.10. The beginning dates of growth stages in Estonia vary from 10 days to 2 weeks in average.

Main agricultural crops in Estonia are winter and spring wheat, spring barley, winter rye, spring oat, rapeseed, potato, grasses (clover, lucerne, timothy, festuca, orchard grass etc), vegetables. Grain yields of cereals have been 7...9 t/ha from trials, of rapeseeds 4...5 t/ha, tuber yields of potato 60...70 t/ha, dry matter yields of clover 15...16 t/ha, seed yields of pea 5...6 t/ha in favourable years.

Extraordinary weather conditions during the last 50 years, which have caused damages to plants in the fields, and decreased yield and its quality most significantly, are severe night frosts in late spring and in early autumn, over humidity (flooding) and shortage water by high temperature regime, too little warmth during growth period, much rain and high air humidity at harvest time, hail and heavy shower (especially with strong

wind). The main reason of winterkill of plants in Estonia have been water and ice damages (soaking), not getting enough air, snow mould and rarely low temperatures in snow poor winters.