

Contents

List of Figures

List of Tables

List of Abbreviations and Symbols

Introduction	11
1 Overview of the Current State of the Problem	13
1.1 The impact of fertilization on the cultivation of selected crops in the Slovak Republic	13
1.2 Types of fertilization	16
1.3 Composition of fertilizers	20
1.4 Importance of fertilization	21
1.5 Precision agriculture	26
1.6 Characteristics of fertilizers and their properties	27
1.6.1 Industrial fertilizers	27
1.6.2 Farm fertilizers	31
1.6.3 Chosen physical - mechanical properties of fertilizers	32
1.7 Mixing of industrial fertilizers	37
1.7.1 Fertilizer storage	37
1.8 Fertilization with industrial fertilizers	38
1.8.1 Variable fertilization	38
1.8.2 Conventional fertilization	44
1.9 Machines for the application of industrial fertilizers	45
1.9.1 JCB Fastrack 3620 tractor with Axera 1102 spreader	45
1.9.2 Aircraft Z - 37	46
2 The Aim of the Monograph	47
3 Work Methodology and Research Methods	48
3.1 Time frame measurement	48
3.1.1 Calculation of compound times	49
3.1.2 Calculation of time utilization factors	50
3.1.3 Calculation of vehicle performance indicators	50
3.2 Penetrometric measurement	51
3.3 Statistical evaluation	52
3.4 Characteristics of enterprises	52

3.4.1	Agricultural cooperative Dobrá Niva, a.s. (joint stock company).....	52
3.4.2	I. DRUŽSTEVNÁ, a.s. Dačov Lom (joint stock company).....	54
3.5	Methodology of evaluation the transverse inequality	5
3.5.1	Laboratory measurement of physical and mechanical properties of fertilizers	55
3.5.2	Field measurement of transverse unevenness	56
4	Results.....	60
4.1	Time frame measurement results	60
4.2	Results of penetrometric measurement	61
4.3	Results of statistical observations	62
4.4	Results of the assessment of transverse inequality	79
4.4.1	The object of research	79
4.4.2	Results of evaluation of the physical-mechanical properties of fertilizer	83
4.4.3	Results of evaluation of transverse fertilizer spreading unevenness	84
4.4.4	Results of fertilizer damage when it is applied with a screw	88
5	Discussion	90
6	Conclusion	92
	References	93
	Annexes	100