

OPTIMIZED NITROGEN MANAGEMENT PLANS FOR HUMAN HEALTH AND WELFARE

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OPTIMUM NITROGEN APPLICATION RATES AT FARM LEVEL

The Nitrates Directive is transposed in Romanian legislation by the Government Decision no. 964/2000 with its amendments which approves the Action Plan for water protection against nitrates pollution from agricultural sources.

Nitrogen quantities from organic and mineral fertilizers have to be applied in soil according to plant needs and the thresholds imposed by legislation. A computing program is used for evaluation of both economic optimum doses and technical doses for the main cultivated crops. The inputs for the program are: agrochemical indicators, fertilizers costs and production costs, the limits imposed by legislation.

Proper nitrogen fertilizer doses should be applied for increasing soil nutrients content as well as the soil fertility without losing nitrates by surface runoff or by leaching and, thus, the water bodies pollution is avoided.

FERTILIZATION PLAN

The fertilization plan is accomplished for a period of 4-5 years for crops within a certain rotation at farm level and contains economic optimum doses (for a maximum economic benefit) and technical doses (for maintaining soil fertility). The fertilization plan is carried out going through three stages: the field stage, laboratory stage and desk stage.

Field stage

- It includes activities such as:
- obtaining information about the specific conditions of the farm (physical blocks, crop location on physical blocks, previous agrochemical treatments, soil types);
 - soil sampling according to the instructions from the agrochemical studies accomplishing. The soil samples are numbered and identified on the physical blocks within the farm.

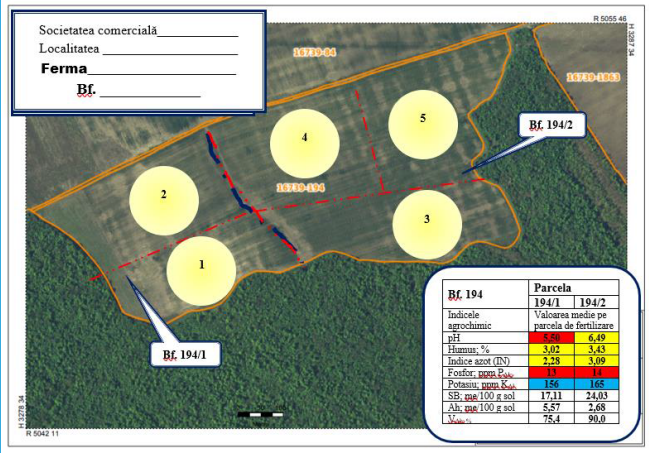


Laboratory stage

It includes measurement of soil indicators used for nitrogen doses calculation: soil reaction (pH), hydrolitic acidity (Ah), sum of exchangeable bases (SB), exchangeable sodium (Nasch), organic carbon (Corg), available phosphorus (PAL), available potassium (KAL). Based on the agrochemical parameters, the degree of base saturation (VAh) and nitrogen index (IN) are calculated.

Desk stage

It includes cartograms related to soil reaction (pH) and availability of phosphorus (PAL) and potassium (KAL). Each soil sample is located by numbers and agrochemical values on cartograms. Then, fertilization parcels (groups of agrochemical subparcels with agrochemical values included in the same variation interval) are established. Within the physical blocks, fertilization parcels are established. For each fertilization parcel a fertilization plan is accomplished.



Recomandări	Bloc fizic 194					
	Parcela de fertilizare					
	Numărul		194/1	194/2		
	Doze de amendamente, îngrășăminte organice					
	CaCO ₃ /gips, t/ha					
	Gunoi de grajd semifermentat, t/ha		23	23		
	Doze de azot, fosfor și potasiu pe parcele de fertilizare, din cadrul blocului fizic					
	Tip de doză		DOE	DOT	DOE	DOT
	Grâu	Azot (N); kg/ha s.a.	137	217	127	207
		Fosfor (P ₂ O ₅); kg/ha s.a.	83	158	80	154
		Potasiu (K ₂ O); kg/ha s.a.	35	114	31	111
	Porumb	Azot (N); kg/ha s.a.	184	291	171	279
		Fosfor (P ₂ O ₅); kg/ha s.a.	75	149	74	147
		Potasiu (K ₂ O); kg/ha s.a.	69	167	62	161
Floarea soarelui	Azot (N); kg/ha s.a.	94	167	85	158	
	Fosfor (P ₂ O ₅); kg/ha s.a.	118	192	116	190	
	Potasiu (K ₂ O); kg/ha s.a.	59	134	56	131	
Rapiță	Azot (N); kg/ha s.a.	93	15	87	145	
	Fosfor (P ₂ O ₅); kg/ha s.a.	98	153	97	150	
	Potasiu (K ₂ O); kg/ha s.a.	45	108	41	105	

A proper plant fertilization maintains human health and welfare.



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