

### **Effective fertilizing peculiarities**

Crops' active fertilizing system is the major constituent part of growing technological guarantees. This system supports consistent land fertility increasing. **Usage of the basic fertilizers for appropriate land cultivation during autumn** is the indispensable element of crops' high-effective fertilizing system..

When using the basic fertilizers the following issues are taken into consideration:

- basic elements ratio must conform to the soil and growing crop;
- **Phosphate fertilizers action** is directly related to their even distribution in the same soil bed and crop's provision with other nutrients, especially nitrate and potassium
- Disharmonious elements ratio in the soil, which results in productivity reduction, especially when the fertilizers applying is exceeded..

The crops use basic fertilizer during the whole vegetation period. This fertilizer has greatest effect on harvest's quantity and quality formation in comparison with preplant fertilizers' applying. Long-term experience shows that **preplant fertilizers applying efficiency is 1.5-2 times lower**. At the same time fertilizers applying during spring on any conditions cannot secure the optimal crop's productivity.

High fertilizers' dozes, especially nitrate, applied before planting, increase soil conductivity (ions' concentration in the sown bed) thus have negative effect on the field similarity and sown seeds' germs development. Moreover, the applied at once soil herbicides potentize this negative effect and sometimes have even such fatal consequences as young crops' appearance term prolongation and sharp reduction of the sown seeds' field similarity and crops' growing energy.

The basic fertilizer supplied for the autumn soil cultivation releases the crops from the negative chlorine effect (contained in fertilizers) almost completely. It is most expedient to secure the basic fertilizer with technological fertilizers mixtures. The technological mixtures price (nutrients) and their applying doesn't exceed the cost of separately applied simple fertilizers.

### **Major advantages of technologically mixed fertilizers:**

- Mixtures, made of concentrated fertilizers, contain come-at-able nutrients in terms of numbers corresponding to the climate conditions and crop's biology; they have good physical and chemical properties and are ecologically safe.
- Broad range of different N:P:K ratios allows securing of optimal crop nutrition depending on the soil's quality, planned crop and its peculiarities.
- The phosphor's comprehensibility in technological mixtures is 2 times higher than in superphosphat.
- Technological mixtures transportation and applying expenses are 2-3 times less than in simple fertilizers.
- Usage of technological mixtures results in 50% total saving.

**WHINTER WHEAT** assures stable harvests and has good reaction on fertilizers. It grows in the best way on soils with pH reaction 6.5-7.5. Winter wheat is very exacting in nutrition conditions. Its rootage is characterized with low ability to assimilate the nutrients from sparingly soluble soil compounds. Nitrate, phosphate and potassium carry-over for 50 centners / hectare harvest are correspondingly 12, 50, and 90 kg per 1 hectare.

Winter wheat assimilates the basic nutrients' quantity (75-85%) during bushing out - ears forming phases.

Combined phosphor-potassium fertilizers are usually applied before sowing together with basic fertilizer, but for all that the nitric fertilizers comes to 20-30% from the norm. The rest of nitrate should be applied soon after the autumn vegetation or with the spring additional fertilizing.

After growing silage maize the nitrate norm should be increased up to 20 kg / hectare.

#### Winter wheat fertilizing system

Zone	Soil Type	Nutrients Norms, kg/hectare, NPK	Mixture Formula,NPK	Basic applying, kg/hectare, NPK	Nitrate additional fertilizing		Mixture Norm, kg / hectare
					Fall	Spring	
Marshy Woodlands	sod-podzol	100 - 50 - 60	6 : 26 : 30	12 : 52 : 60	-	90	200
Forest-Steppe	chernozem, typical	120 - 50 - 60	6 : 26 : 30	12 : 52 : 60	90	20	200
	forest gray	100 - 50 - 60	6 : 26 : 30	12 : 52 : 60	70	20	200
Steppe	chernozem, typical and south	100 - 50 - 60	6 : 26 : 30	12 : 52 : 60	70	20	200

[Back](#)

**SUGAR-BEET** assimilates the majority of nutrients during the second stage of vegetation.

During the first vegetation stage nitrate and phosphor are mostly assimilated, than potassium will be mostly assimilated.

The productivity of 40-60 tons per 1 hectare foresees average nutrients need (including rootage and leaves needs) is the following:

N	180	-	240
P <sub>2</sub> O <sub>5</sub>	60	-	100
K <sub>2</sub> O	250	-	300
Na	50	-	60
Mg	30	-	40

This crop demands preplant or, even better, during the fall fertilizers applying.

#### Sugar-beet fertilizing system

Zone	Soil Type	Nutrients Norms, kg/hectare, NPK	Mixture Formula,NPK	Basic applying, kg/hectare, NPK	Nitrate spring additional fertilizing	Mixture Norm, kg / hectare
Marshy Woodlands	forest gray	160-75-185	16 : 10 : 25	120 : 75 : 185	40	750
Forest-Steppe	chernozem, typical	150-70-175	16 : 10 : 25	110 : 70 : 175	40	700
	chernozem, leached and podzolloed	130-60-150	16 : 10 : 25	95 : 60 : 150	35	600

[Back](#)

**MAIZE** became the most important crop in modern farming. Maize is the top-produced crop in the world with annual productivity in times exceeding the grain crops.

Maize is particular in soil's fertility and additional fertilizing. The productivity of 60-70 centners per 1 hectare carrying-out 150-170 kg of nitrate, 50-60 kg of phosphate and 150-190 kg of potassium.

Maize assimilates nutrients from chemical fertilizers better than any other crop, so high harvest demands sufficient amount of fertilizers.

#### **Maize fertilizing system**

Zone	Soil Type	Nutrients Norms, kg/hectare, NPK	Mixture Formula,NPK	Basic applying, kg/hectare, NPK	Nitrate spring additional fertilizing	Mixture Norm, kg / hectare
Forest-Steppe	forest gray	140 : 60 : 120	19 : 10 : 20	115 : 60 : 120	25	600
	chernozem, typical	135 : 60 : 120	19 : 10 : 20	115 : 60 : 120	20	600
Steppe	chernozem, typical and south	120 : 50 : 60	23 : 10 : 12	115 : 50 : 60	5 - 10	500

[Back](#)

**SUNFLOWER** is very soil-unpretentious crop, but it is particular to the high content of nutrients in the soil.

To produce 1 centner of sunflower you will need:

N	-	5	kg	per	1	hectare;
Ph	-	2	kg	per	1	hectare;
K	-	10	kg	per	1	hectare.

It is expedient to apply the necessary dozes of fertilizers during fall. The fields without proper fall fertilizing must be locally applied with nutrients on early spring.

#### **Sunflower fertilizing system**

Zone	Soil Type	Nutrients Norms, kg/hectare, NPK	Mixture Formula,NPK	Basic applying, kg/hectare, NPK	Mixture Norm, kg / hectare
Forest-Steppe	forest gray	95 : 50 : 100	19 : 10 : 20	95 : 10 : 20	500
	chernozem, typical	75 : 40 : 80	19 : 10 : 20	75 : 40 : 80	400
Steppe	chernozem, typical	70 : 40 : 60	23 : 13 : 20	70 : 40 : 60	300
	chernozem, south	70 : 40 : 60	23 : 13 : 20	70 : 40 : 60	300
	liver-coloured	65 : 40	32 : 20 : 0	65 : 40	200

[Back](#)

**BARLEY** is very particular to the soil, especially in comparison with other crops. It has weak rootage and short term of active nutrients assimilation. To produce 1 centner of barley you will need:

N	-	2-2.5	kg	per	1	hectare,
Ph	-	1-1.3	kg	per	1	hectare,
K	-	2-2.5	kg	per	1	hectare.

Good harvest can be gathered on the fields supplied with balanced content of active nutrients. When growing the barley for brewery nitrate content should be reduced and at the same time the potassium doze increased in 15-20%.

#### **Barley fertilizing system**

Zone	Soil Type	Nutrients Norms, kg/hectare, NPK	Mixture Formula,NPK	Basic applying, kg/hectare, NPK	Mixture Norm, kg / hectare
Marshy Woodlands	sod-podzol	65 : 40 : 60	23 : 13 : 20	65 : 40 : 60	300
		40 : 40 : 55 *	15 : 15 : 22	40 : 40 : 55	250
Forest-Steppe	forrest gray	80 : 45 : 70	23 : 13 : 20	80 : 45 : 70	350
		45 : 45 : 65 *	15 : 15 : 22	45 : 45 : 65	300
	chernozem, podzolloed	70 : 40 : 60	23 : 13 : 20	70 : 40 : 60	300
		35 : 35 : 55 *	15 : 15 : 22	35 : 35 : 55	250
Steppe	chernozem, typical and south	60 : 35 : 50	23 : 13 : 20	60 : 35 : 50	250
		35 : 35 : 50 *	15 : 15 : 22	35 : 35 : 55	250

\* Norms for brewery barley only.

[Back](#)

**PEA / SOY BEAN** . nutrition is closely related to their abilities to assimilate air nitrate by means of bubble bacteria. These bacteria are most productive when the soil has neutral pH

reaction and appropriate content of phosphate, potassium and micro-elements. To produce 1 centner of pea beans you will need:

N	-	4.5-6	kg	per	1	hectare,
Ph	-	1.7-2	kg	per	1	hectare,
K	-	3.5-4	kg	per	1	hectare,

And for soy beans consequently:

N	-	7.7-10	kg	per	1	hectare,
Ph	-	1.7-3	kg	per	1	hectare,
K	-	3.5-4	kg	per	1	hectare.

The planned harvest of the crops demands full norm applying of phosphate and potassium fertilizers, and 30-50% of nitrate fertilizers taking into account the symbiotic nitrate fixation from the air (50-70%). When forming the fertilizing system this peculiarity of pea / soy beans should be taken into consideration. The most effective fertilizing norms for pea / soy beans are provided in the table below.

**Pea/soy bean fertilizing system**

Zone	Soil Type	Nutrients Norms, kg/hectare, NPK	Mixture Formula,NPK	Mixture Norm, kg / hectare
Marshy Woodlands(pea / soy)	sod-podzol, forrest gray	40 : 40 : 55	15 : 15 : 22	250
Forest-Steppe(pea / soy)	chernozem, typical and podzollod	140 : 40 : 55	15 : 15 : 22	250
Steppe (soy on irrigated lands)	chernozem, typical and south	45 : 50 : 0	23 : 26 : 0	200
	liver-coloured	60 : 65 : 0	23 : 26 : 0	250