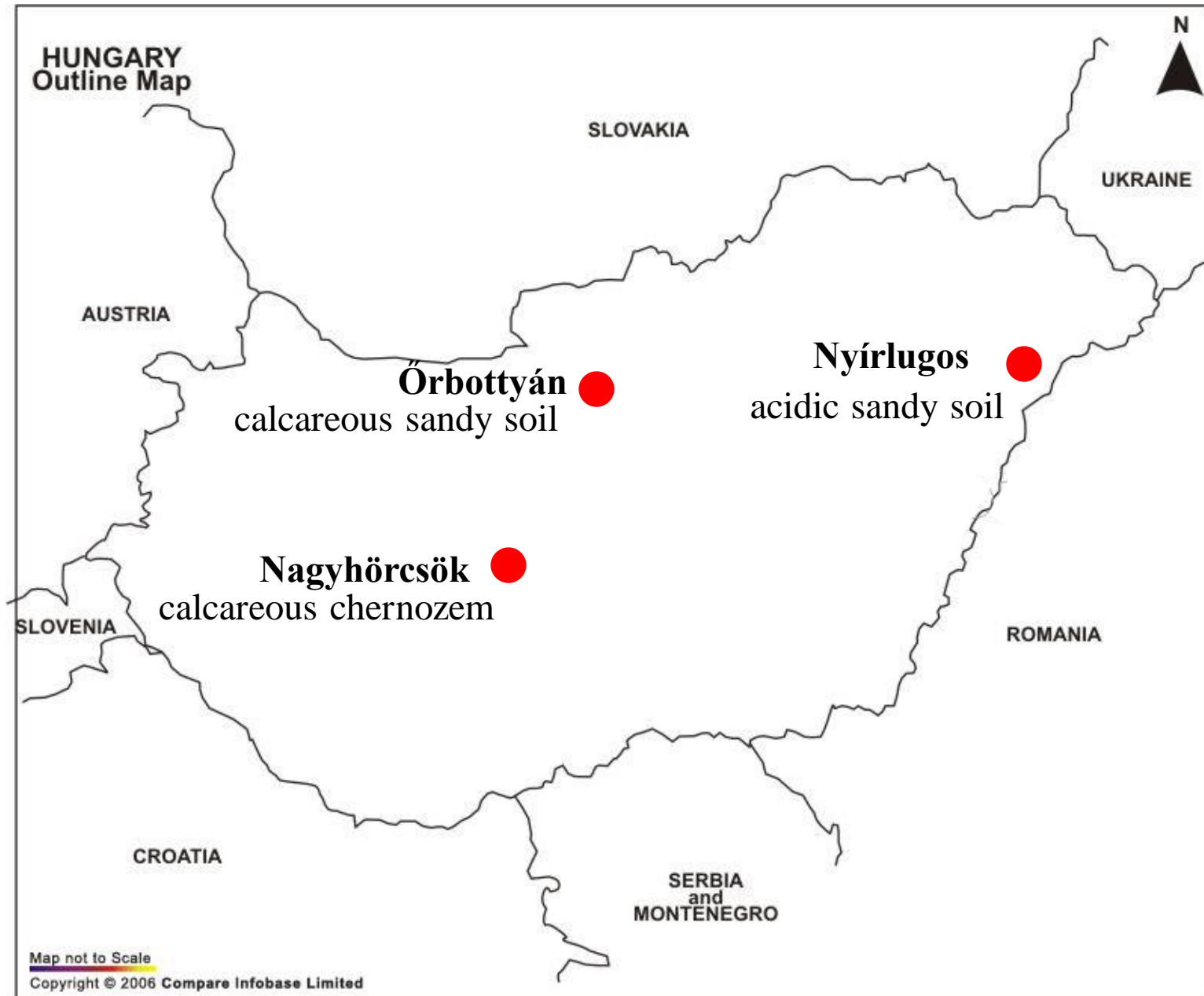


# Experimental sites of the MTA ATK TAKI and research experiences

Márk Rékási





## Calcareous chernozem



### Climate

precipitation (mm)	500-600
temperature °C (min/max)	9.7 (-25/+35)

### Soil properties

pH(H <sub>2</sub> O)	7.6
pH(KCl)	7.1
Humus %	3.1
CaCO <sub>3</sub> %	1.8
CEC meq/100g	32
Sand % (>0.05 mm)	17
Silt % (0.05-0.002 mm)	60
Clay % (<0.002 mm)	23

### Experiments

Since **1967**. The effect and after-effect of fertilizers in different loads and ratios. I., II., III.

Since **1973**. The connection between the nutrient supply and fertility of the soil

Since **1985**. Development of different N-supply levels in soil

Since **1989**. The adsorption of K-fertilizer in soil

Since **1991**. Accumulation of heavy metals in the soil-plant-animal system

Since **2003**. Testing the fertilization recommendation system



# Experiments: Nagyhörcsök

The connection between the nutrient supply and fertility of the soil (Kádár and Ragályi). Since 1973.

Experiment treatments (2 replications, 128 plots):

Treatment level	N (kg/ha) yearly	P <sub>2</sub> O <sub>5</sub> (kg/ha) in years: 1973, 1980, 1999.	K <sub>2</sub> O (kg/ha) in years: 1974, 1980, 1984, 1986, 1999.
0	0	0	0
1	100	500	500
2	200	1000	1000
3	300	1500	1500

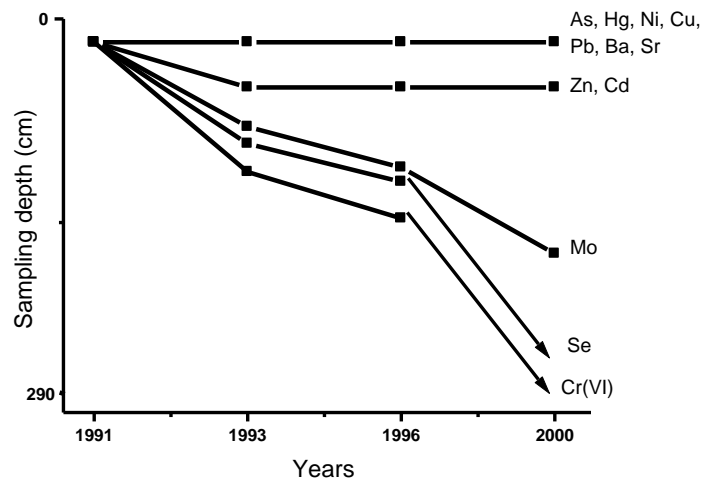


**Result:** the long-term fertilization can drastically change the concentrations and ratios of elements in the grass. The N-fertilization was of vital importance, which increased the hay mass 5 times. The P-response was moderate while there were no K-responses at all.

Accumulation of heavy metals in the soil-plant-animal system. (Kádár and Rékási) Since 1991.

Treatments (2 replications, 104 plots):

Elements: Al, As, Ba, Cd, Cr, Cu, Hg, Mo, Ni, Pb, Se, Sr, Zn. Load levels: 0, 90, 270, 810 kg/ha



## Calcareous sandy soil



### Climate

precipitation (mm)	550
temperature °C (min/max)	10.6 (-27/+40)

### Soil properties

pH(H <sub>2</sub> O)	7.7
pH(KCl)	7.6
Humus %	1
CaCO <sub>3</sub> %	3.3
CEC meq/100g	11
Sand % (>0.05 mm)	81
Silt % (0.05-0.002 mm)	13
Clay % (<0.002 mm)	6

### Experiments

Since **1959**. Effect of fertilization on the yield and nutrient uptake of a rye monoculture

Since **1970**. Effect of fertilization on the fertility of sandy soil

Since **1985**. Development of different N-supply levels in soil

Since **1995**. Accumulation of heavy metals in the soil-plant-animal system

**2002 – 2010** Effect of composted slaughterhouse wastes and meat meal



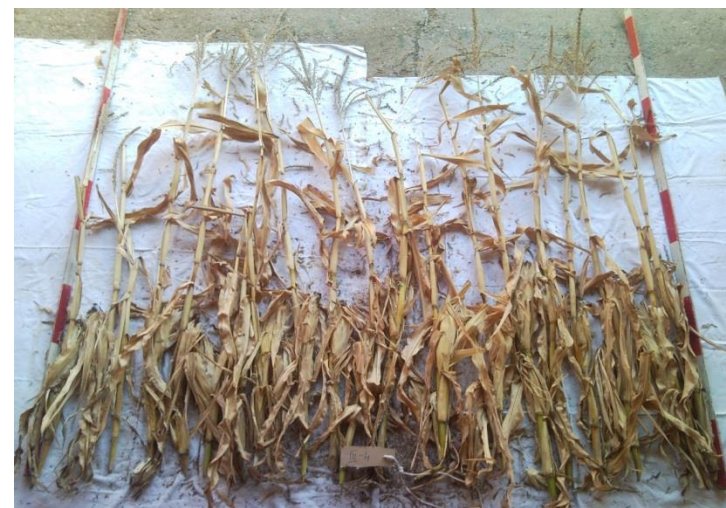
## The effect of bioash and peat blend on soil and maize. (Anton, Uzinger, Rékási)



Control



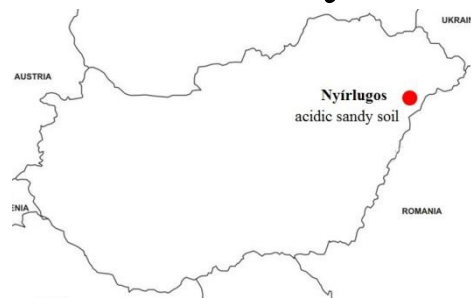
24 t bioash+peat



**Results:** The bioash+peat blend increased the soil AL-soluble K content and may make for an S source. The pH value of calcareous sand significantly increased. These favorable effects could not change the maize yield because of low precipitation.

# Experimental site: Nyírlugos

## Acidic sandy soil with alternating thin layers of clay substance



### Climate

precipitation (mm)	550-600
temperature °C	9.7

### Soil properties

pH(H <sub>2</sub> O)	4.9
pH(KCl)	4
Humus %	0.5
CaCO <sub>3</sub> %	0
CEC meq/100g	5
Sand % (>0.05 mm)	85
Silt % (0.05-0.002 mm)	10
Clay % (<0.002 mm)	5

### Experiments

Since **1962**. Effect of fertilization and liming on acidic sandy soil

Since **2011** . Effect of alginite on the fertility of acid sandy soil



# Experiments: Nyírlugos

## Effect of fertilization and liming on acidic sandy soil. (Kádár)

One of the oldest field experiments in Hungary. At the start (in 1962 by István Láng) it was unique in the country. It had 512 plots for the investigation of different agrotechniques. Many hundred publications have been published about the results.

Treatments since 2001:

Treatment level	N (kg/ha)	P <sub>2</sub> O <sub>5</sub> (kg/ha)	K <sub>2</sub> O (kg/ha)	Ca (kg/ha)	Mg (kg/ha)
0	0	0	0	0	0
1	50	60	60	100	40
2	100	120	120	200	80
3	150	180	180	400	-

N fertilisation: every year. P, K, Ca, Mg: every 5th year





Thank You for Your Attention!

