

# K INTERACTION WITH OTHER IONS

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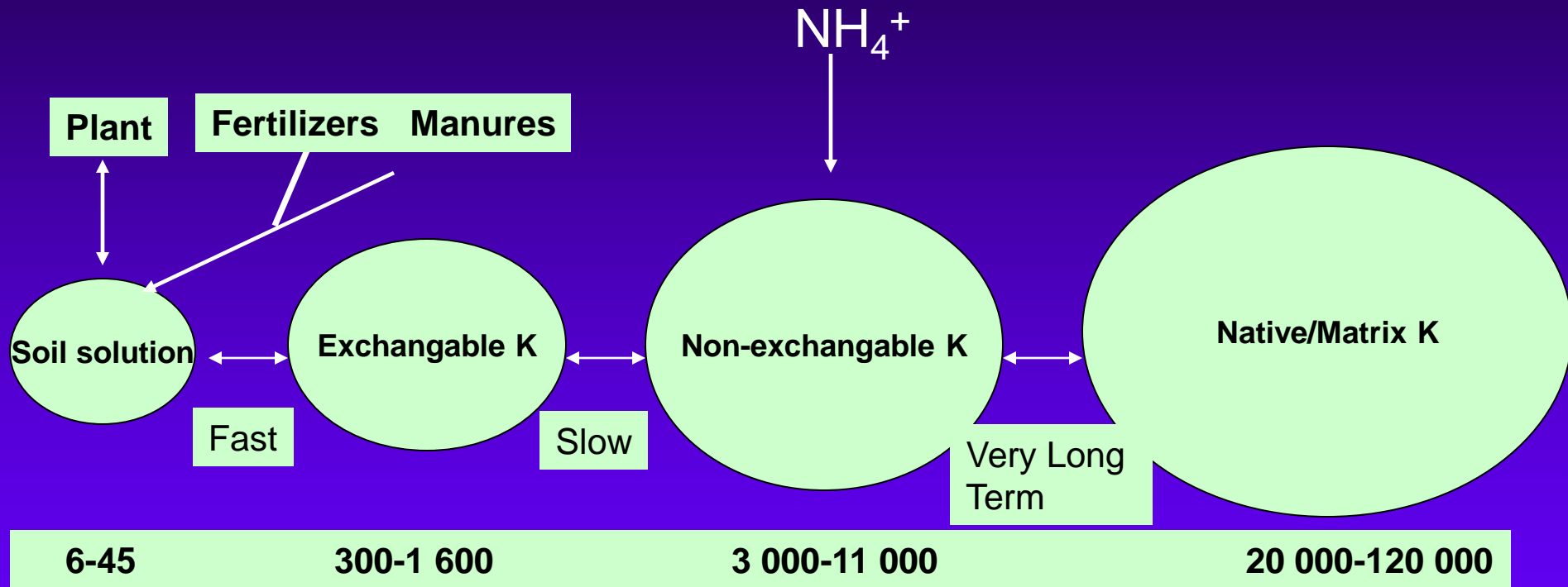


**SIMPÓSIO SOBRE  
POTÁSSIO NA AGRICULTURA BRASILEIRA**



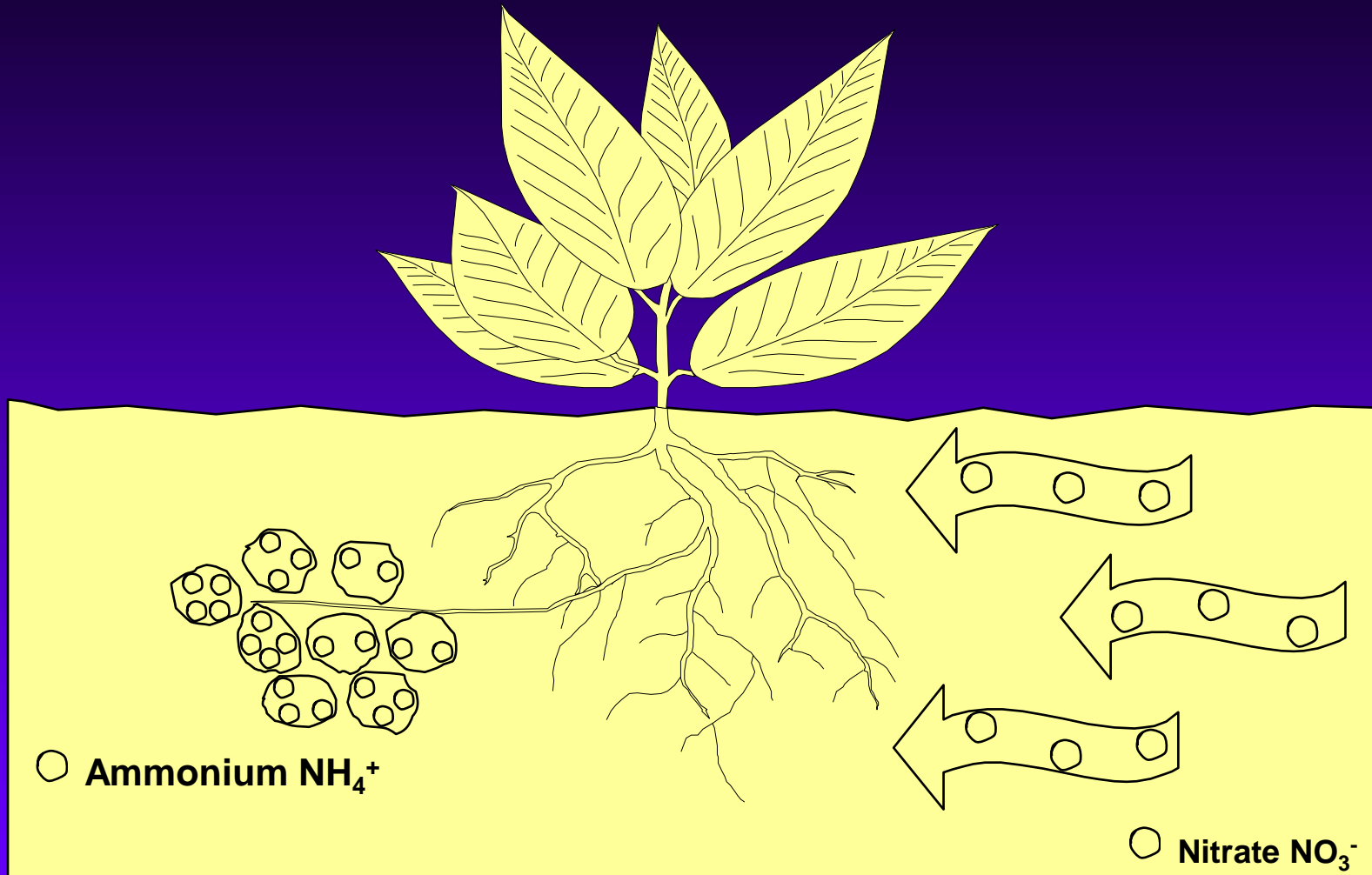
SÃO PEDRO-SP, 22 a 24 de Setembro de 2004

# Potassium cycle in the soil-plant system

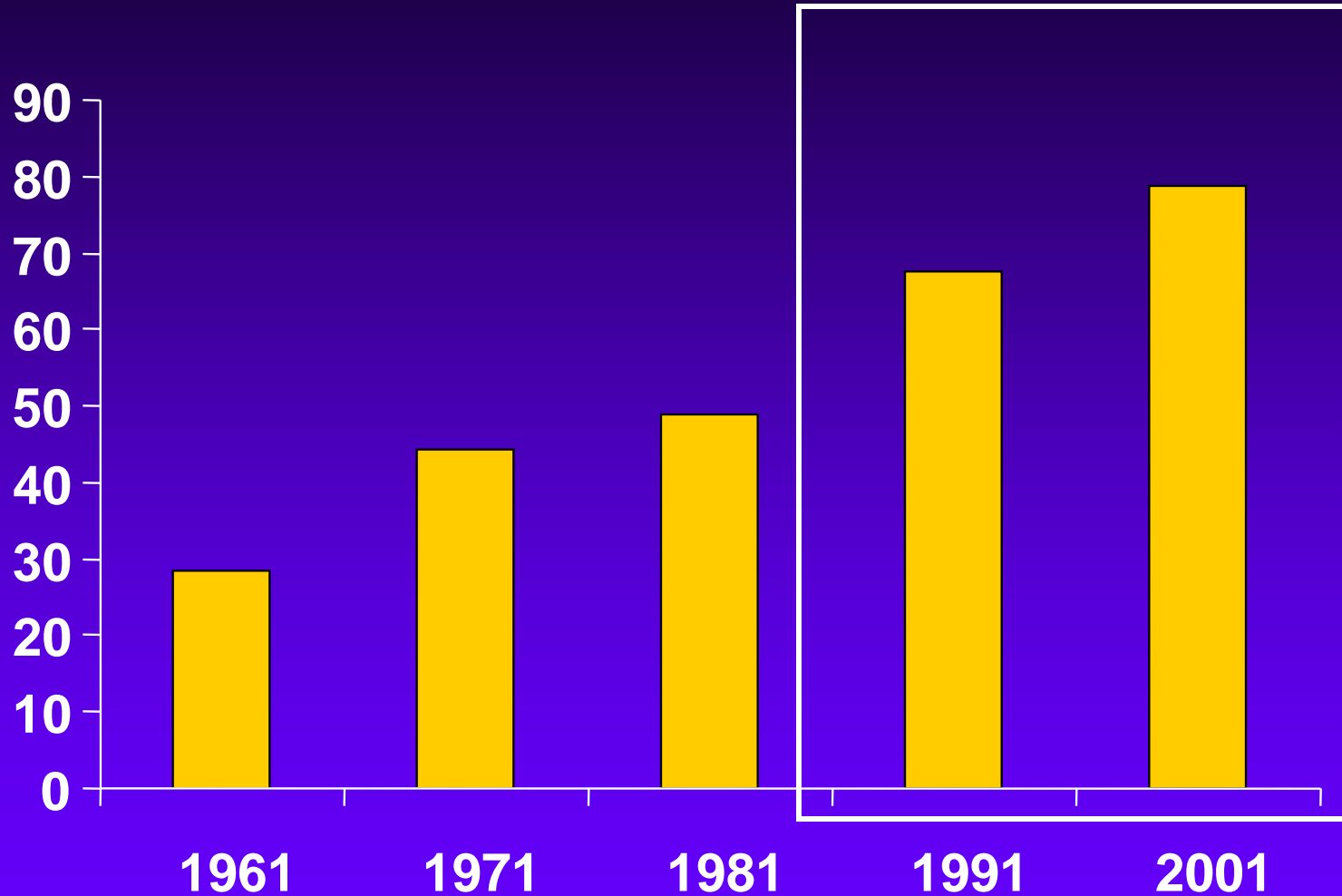


Kg K<sub>2</sub>O in the soil

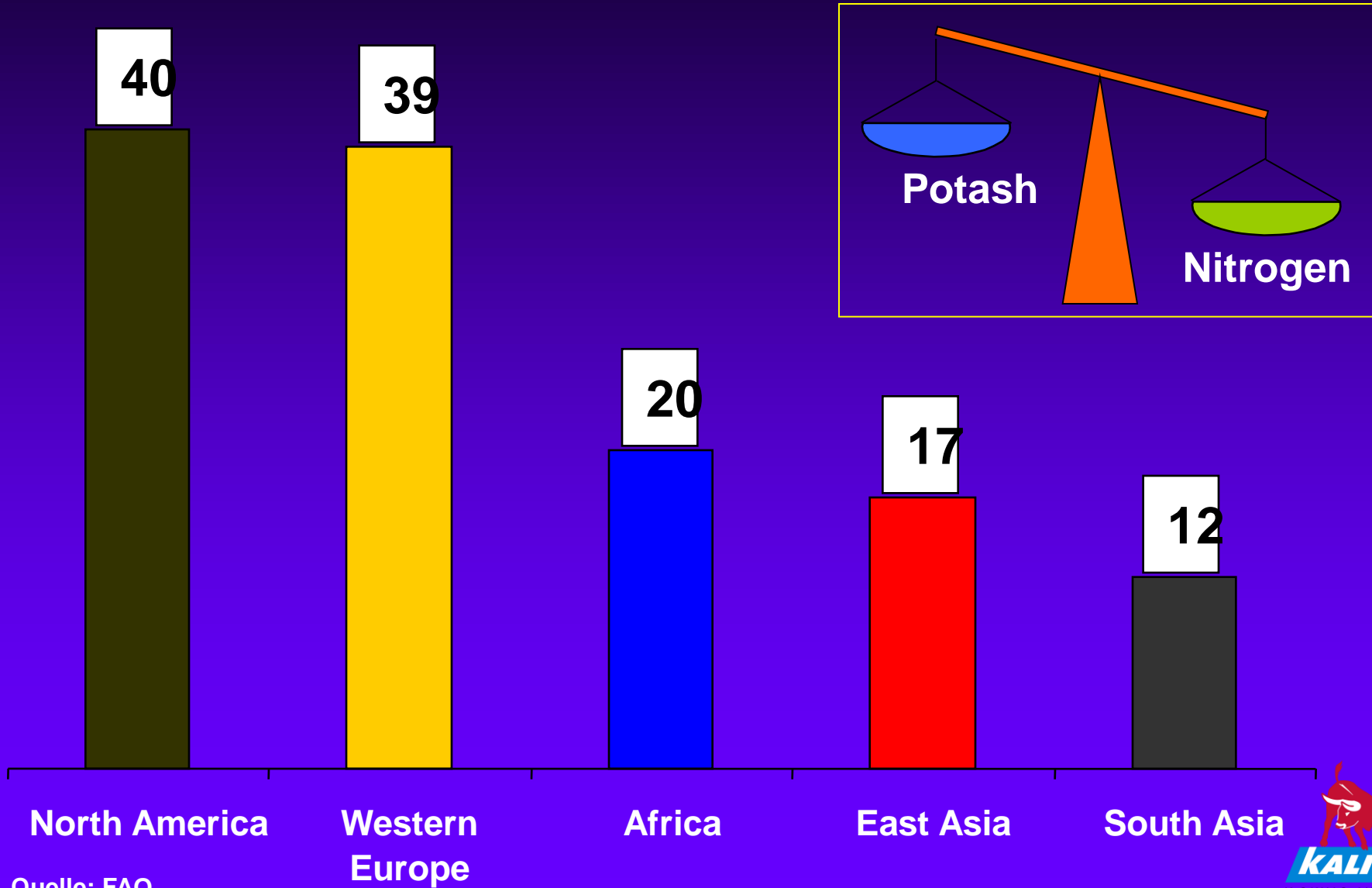
# Nitrogen uptake of the plant



# Trend of wheat yields in Germany (in dt/ha)

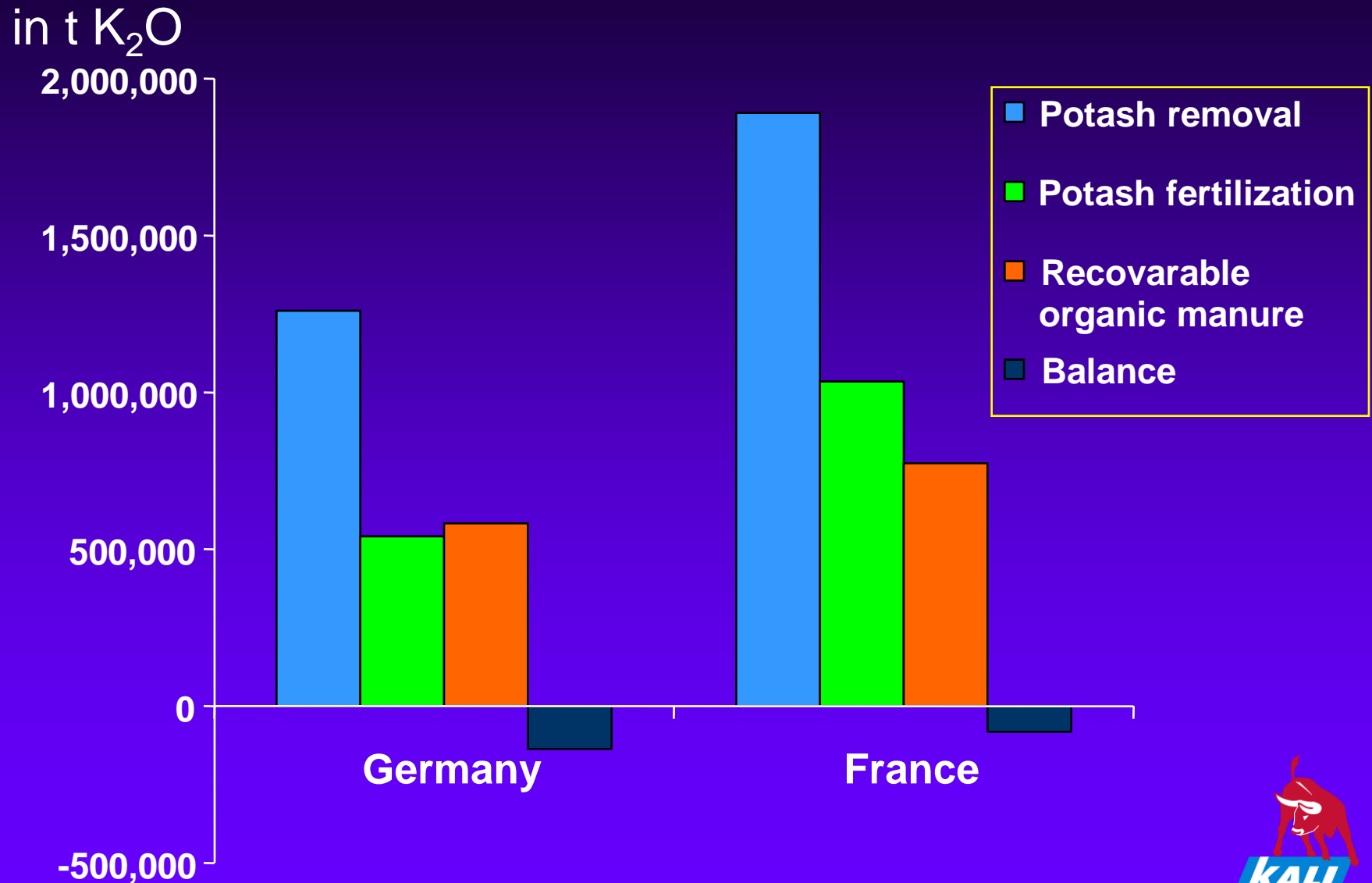


# Nitrogen : Potash Ratio 2001 (Nitrogen = 100)



Quelle: FAO

# K balance in Germany und France



Source: PPI, FAO, EFMA, K+S

# Experimental data

<b>Soil</b>	<b>Luvic Phaeozem</b>
<b>C<sub>t</sub></b>	<b>1.5 %</b>
<b>N<sub>t</sub></b>	<b>0.12%</b>
<b>Rainfall</b>	<b>466 mm per year</b>
<b>Crop rotation</b>	<b>maize - wheat - sugar beets- barley</b>

## Potassium fertilization

<b>K0</b>	<b>no K fertilization since 1949</b>
<b>K4</b>	<b>160 kg K (cereals) per year</b> <b>320 kg K (sugar beets) per year</b>

# Pot experiment

Plastic containers filled with 1.5 kg of K0 or K4 soil resp.

N fertilization: 75 mg  $(\text{NH}_4)_2\text{SO}_4$  and  $(^{15}\text{NH}_4)_2\text{SO}_4$

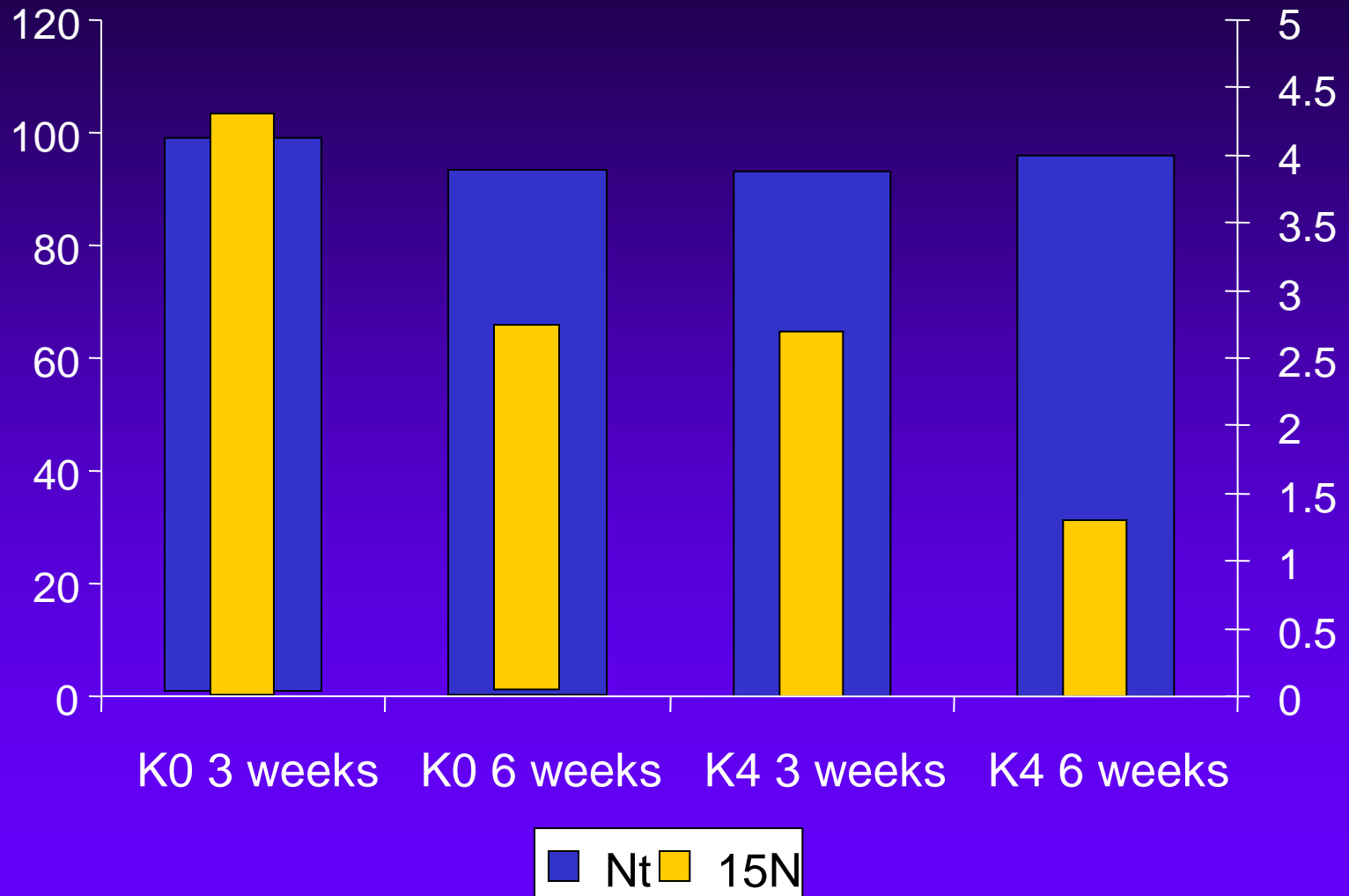
barley

4 replications

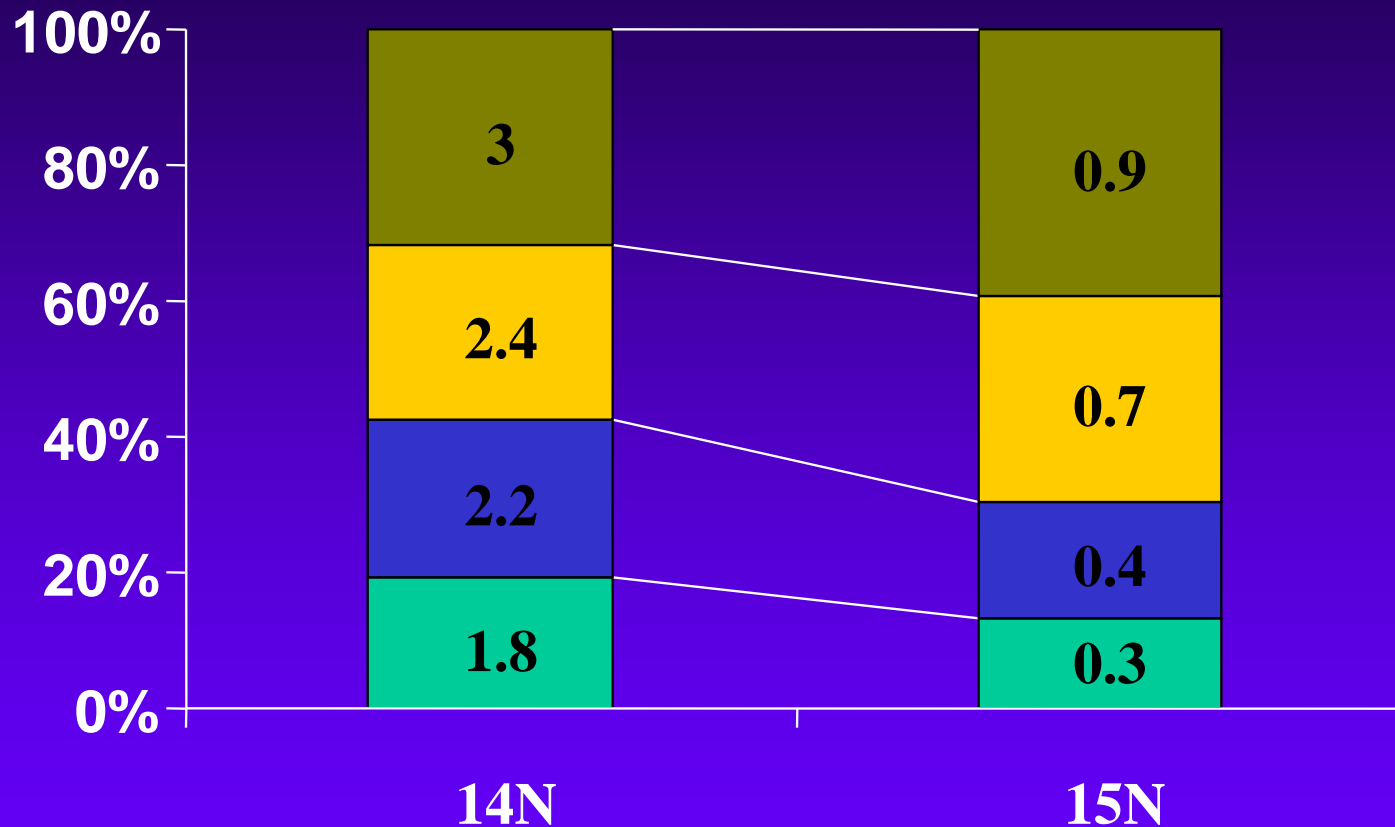
harvest after 3 and 6 weeks



# $N_t$ and $^{15}N$ content in the soil after 3 and 6 weeks

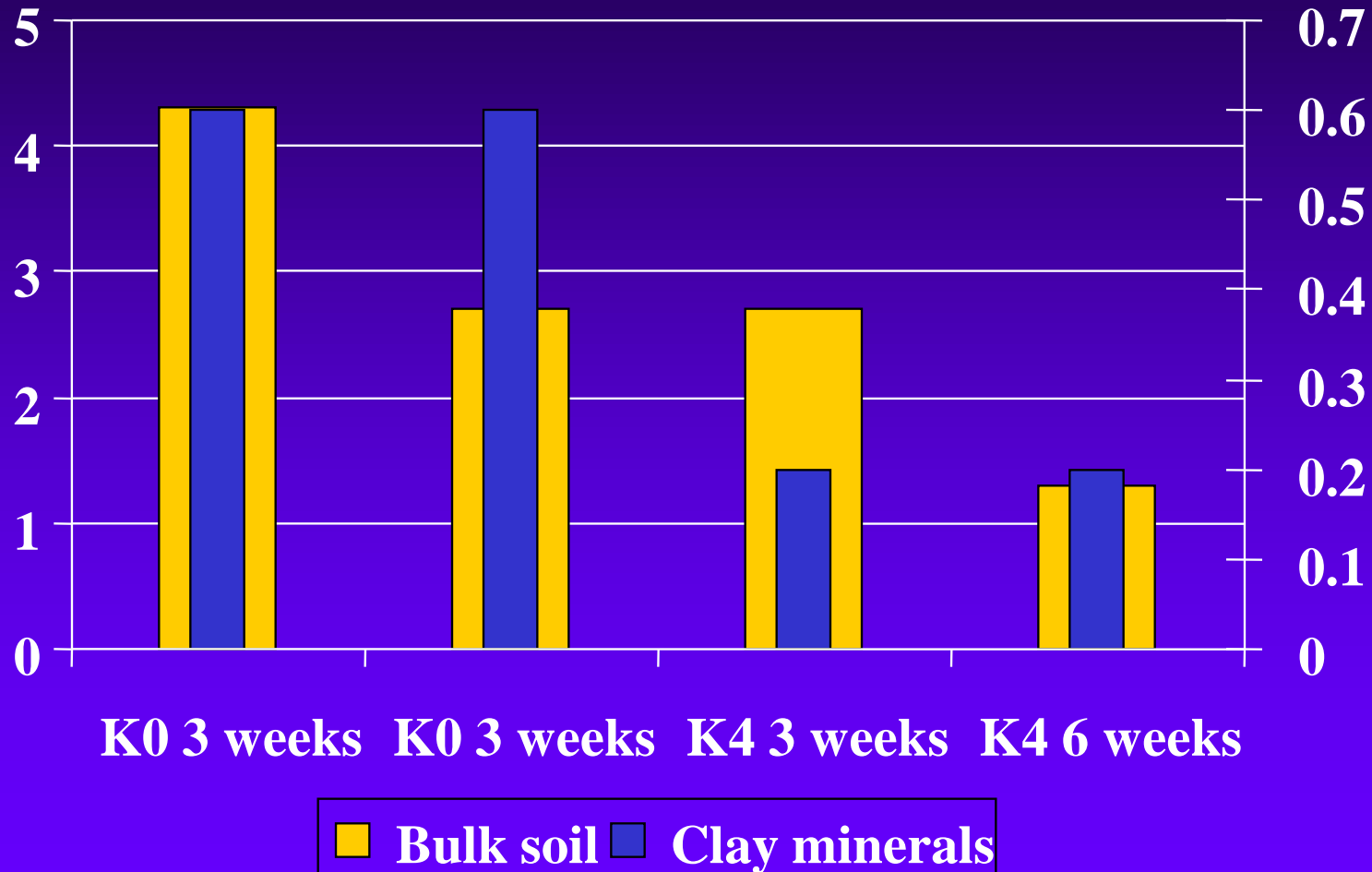


# $N_t$ and $^{15}N$ content in the shoots after 3 and 6 weeks

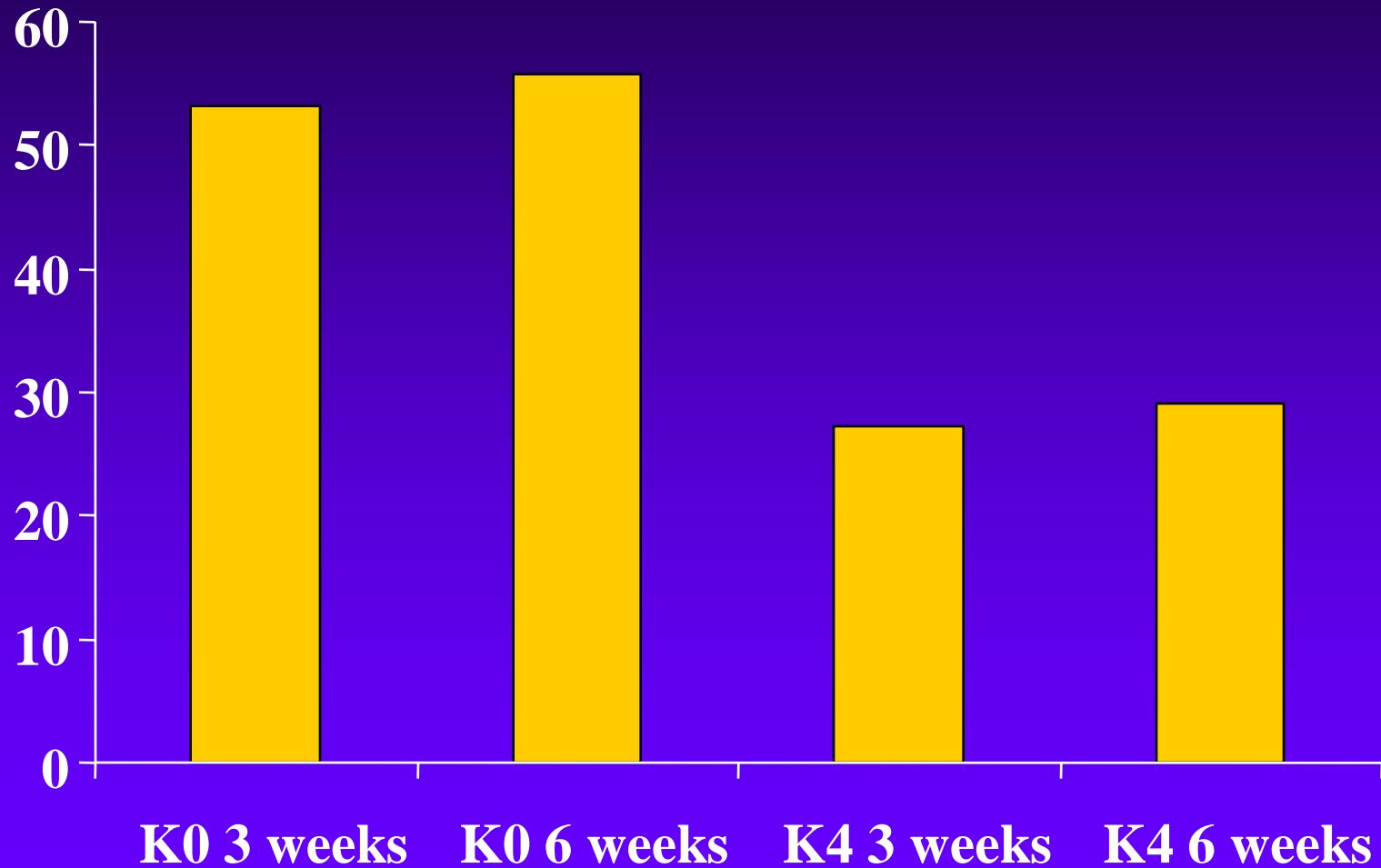


■ K0 3 weeks ■ K0 6 weeks ■ K4 3 weeks ■ K4 6 weeks

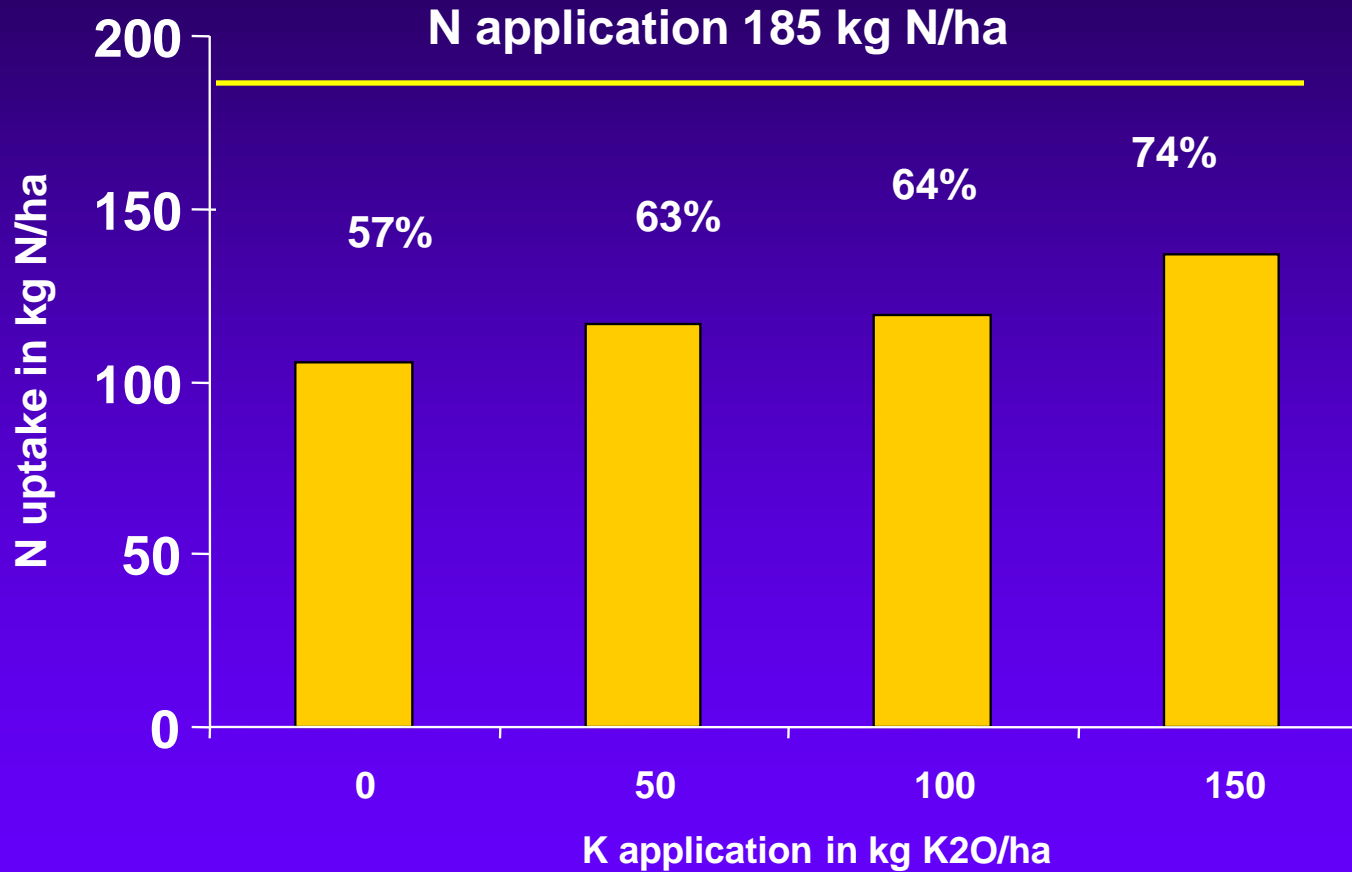
# Nitrogen concentrations in various soil fractions



# $N_t$ content in the clay mineral fraction



# Influence of K fertilization on the N uptake of Triticale



Thank you for your attention!