# New soil improvement products for reducing the pollution of soils and waters and revitalizing the soil system „BIOREWIT

## II. The use of new biodegradable agro-fleece for soil mulching in organic vegetable production

LIFE10 ENV/PL/661

# Soil mulch applied in vegetable crops production:



- ✓Non biodegradable covers have to be removed from the field after harvest – more labor cost and energy
- ✓The wastes need to be recycled
- ✓Products not friendly to environment

# Innovative soil covers for field vegetable production

## Biodegradable organic agro-fleeces:

**Covelana** - agro-fleece made from by-product of textile industry

**Covelana K** - agro-fleece enriched with dry biomass of **red clover**

**Covelana L** - agro-fleece enriched with dry biomass of **lucerne (100g/m$^2$)**

**Dry matter of legume plants of red clover nad lucerne is a source of nitrogen, gradually released in mineralisation process.**

# Why use biodegradable mulch Covelana?

- Successful weed control
- Agro-fleece fully biodegradable
- Soil humidity protection
- The source of organic matter and slow nutrients release
- Useful to organic production

# The amount of nutrients incorporated to agro-fleece with dry matter of legume plant (g/1m$^2$)

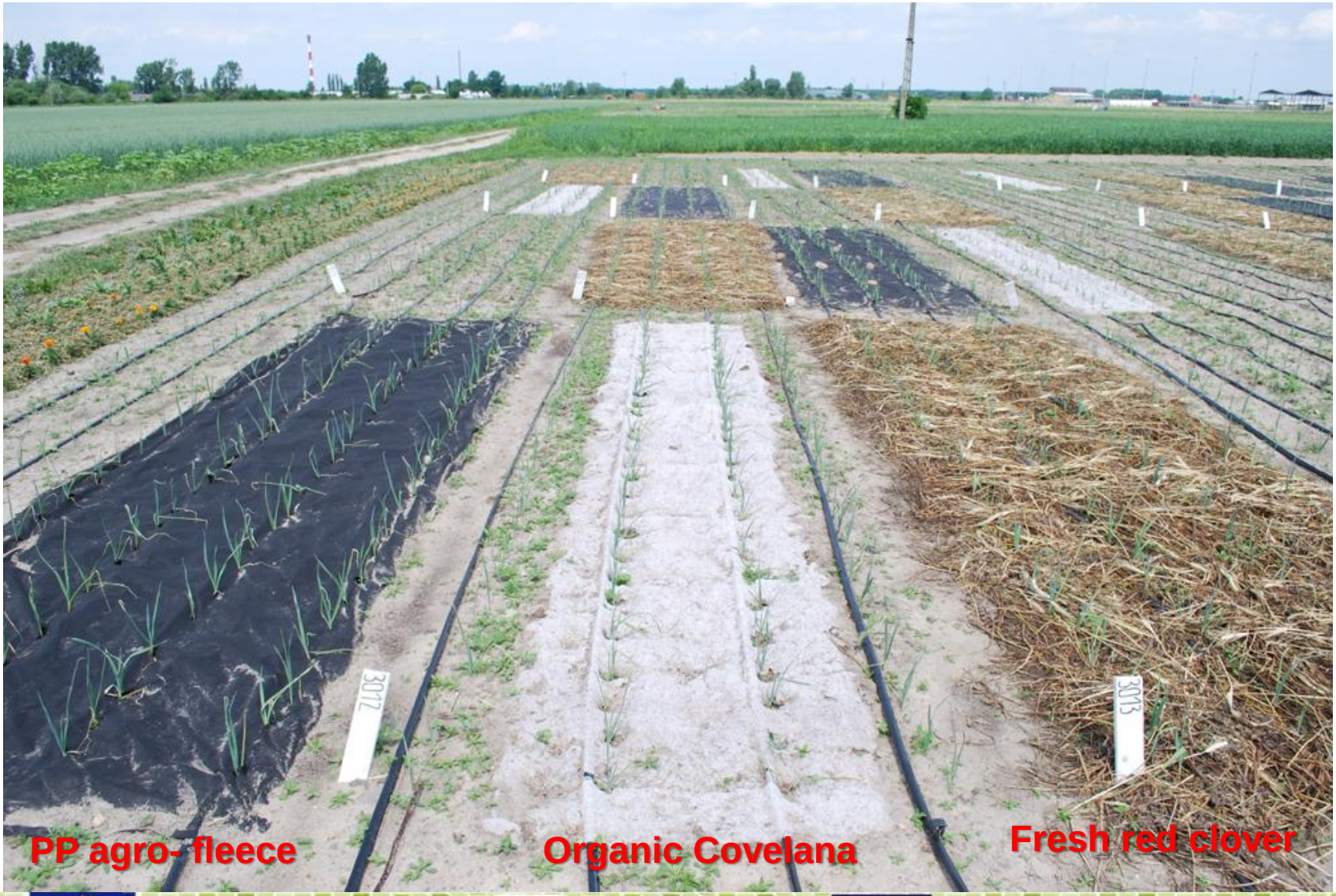
| The type of agro-fleece | Nutrient content in fleece - g/m$^2$ | | | | |
|---|---|---|---|---|---|
| | N | P | K | Mg | Ca |
| Covelana | - | - | - | - | - |
| Covelana K (red clover) | 0,31 | 0,02 | 0,30 | 0,03 | 0,15 |
| Covelana L (lucerne) | 0.35 | 0,02 | 0,31 | 0,02 | 0,16 |

Total weight – about 200 g/m$^2$; Addition of dry plant matter about 100 g/m$^2$

# Soil mulching in the experiments in the Research Institute of Horticulture in Skierniewice, Poland




# Various types of mulches in leek cultivation

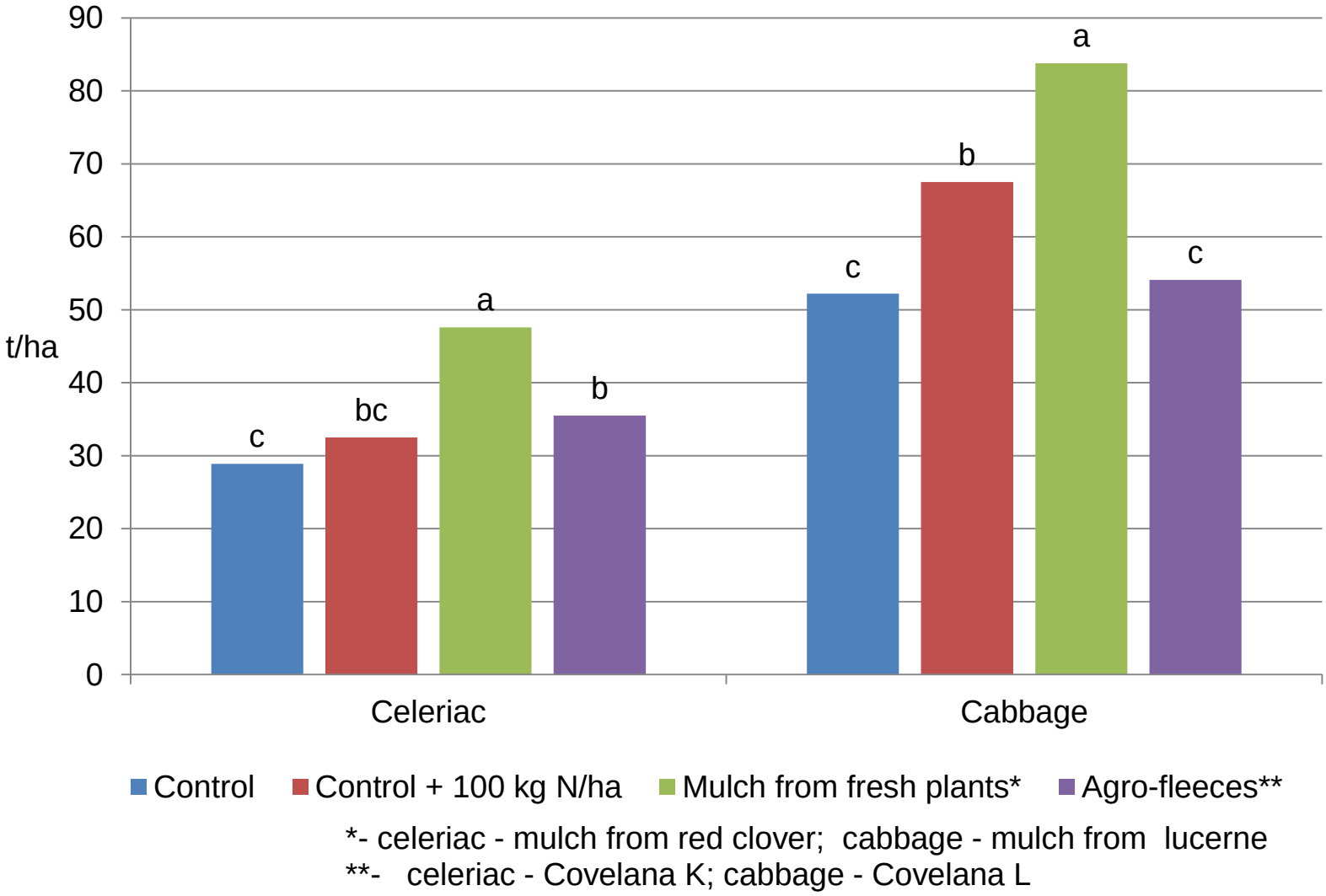


# The use of agro-fleece Covelana in organic production of field cucumber and celeriac

Cucumbers mulched with Covelana on organic field of RIVC in Skierniewice

Celeriac cultivation – Demonstration Organic Farm in Chwałowice

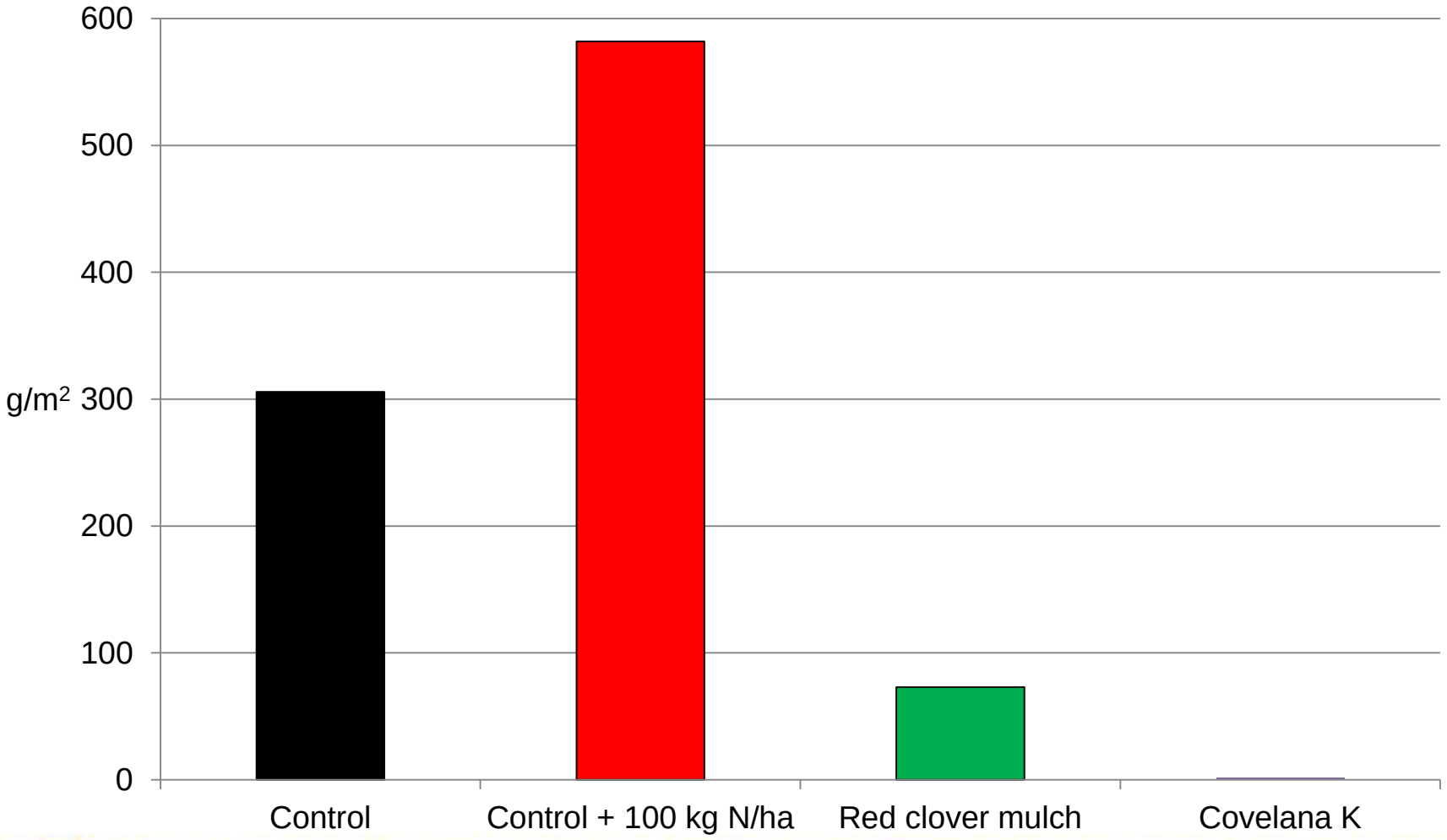
# The influence of soil mulch on marketable yield of celeriac and cabbage (2012)




*- celeriac - mulch from red clover; cabbage - mulch from lucerne

**- celeriac - Covelana K; cabbage - Covelana L

# Effectivnees of soil mulching with Covelana K on the weedness in celeriac cultivation

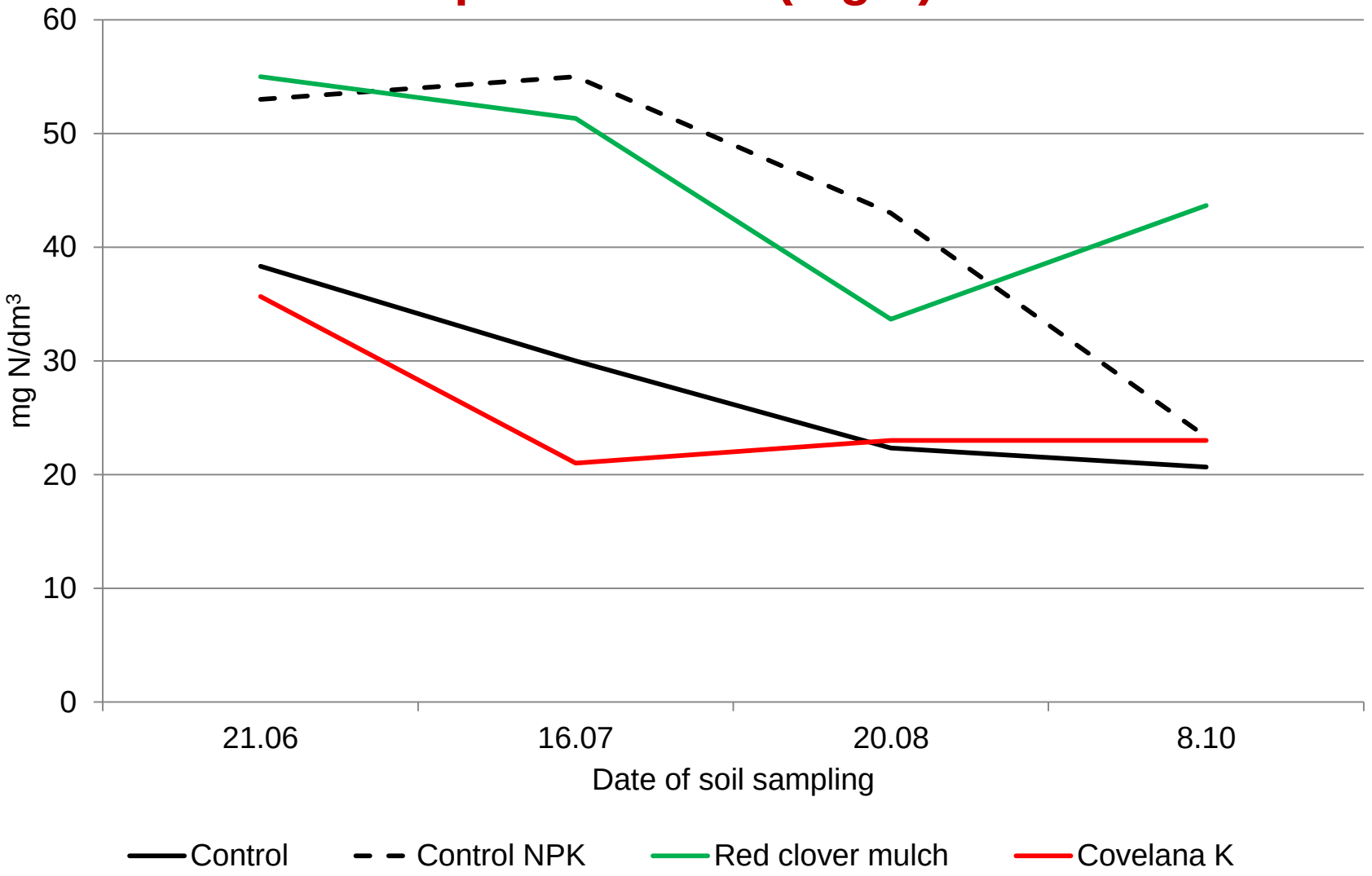


## Weedness 4 weeks after celeriac planting

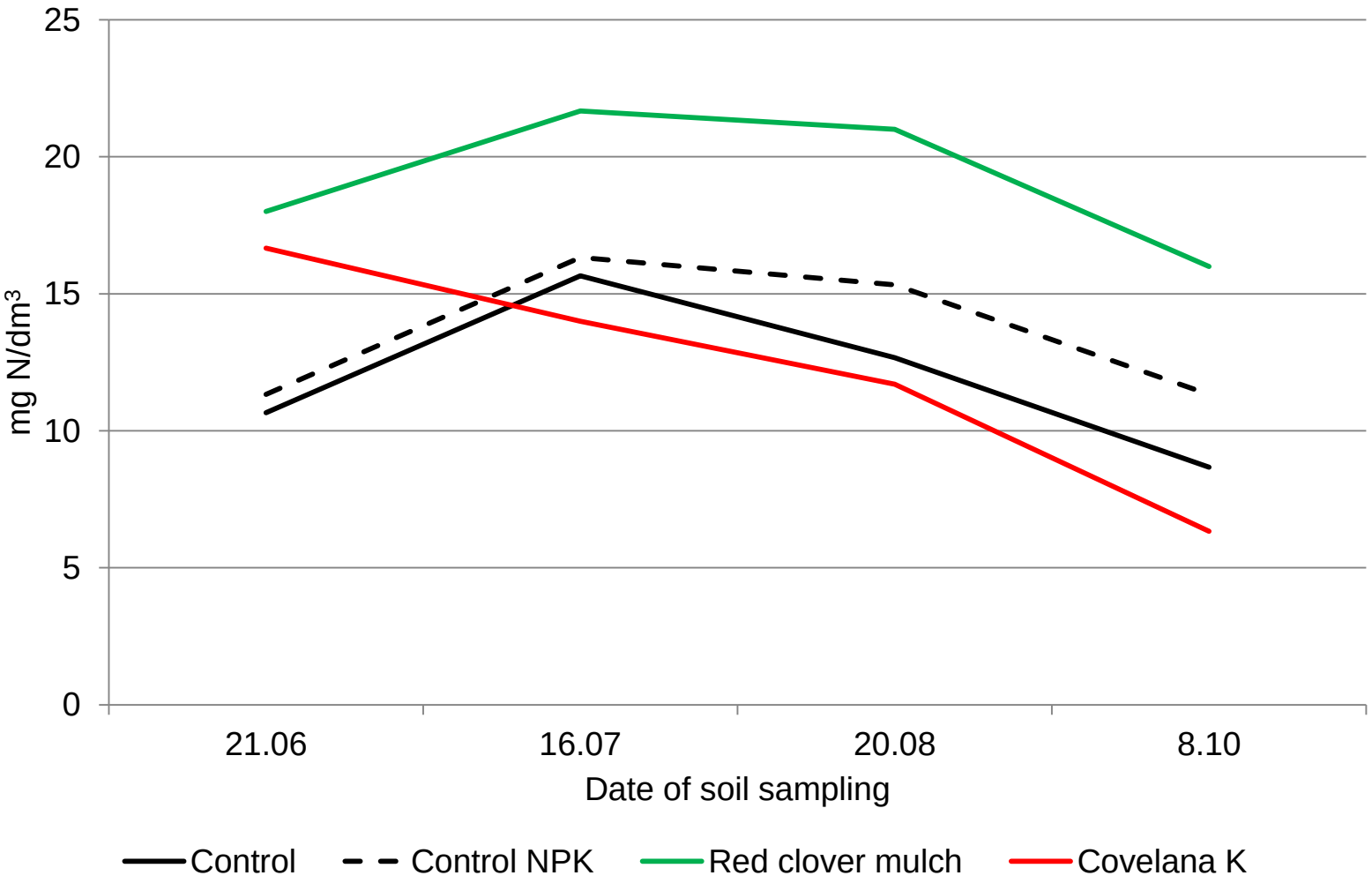
- Mulching with agro-fleece Covelana
- Control not mulched

- 240 – 400 pcs/$m^2$ total weight of weeds 0,60 – 1,5 kg/$m^2$

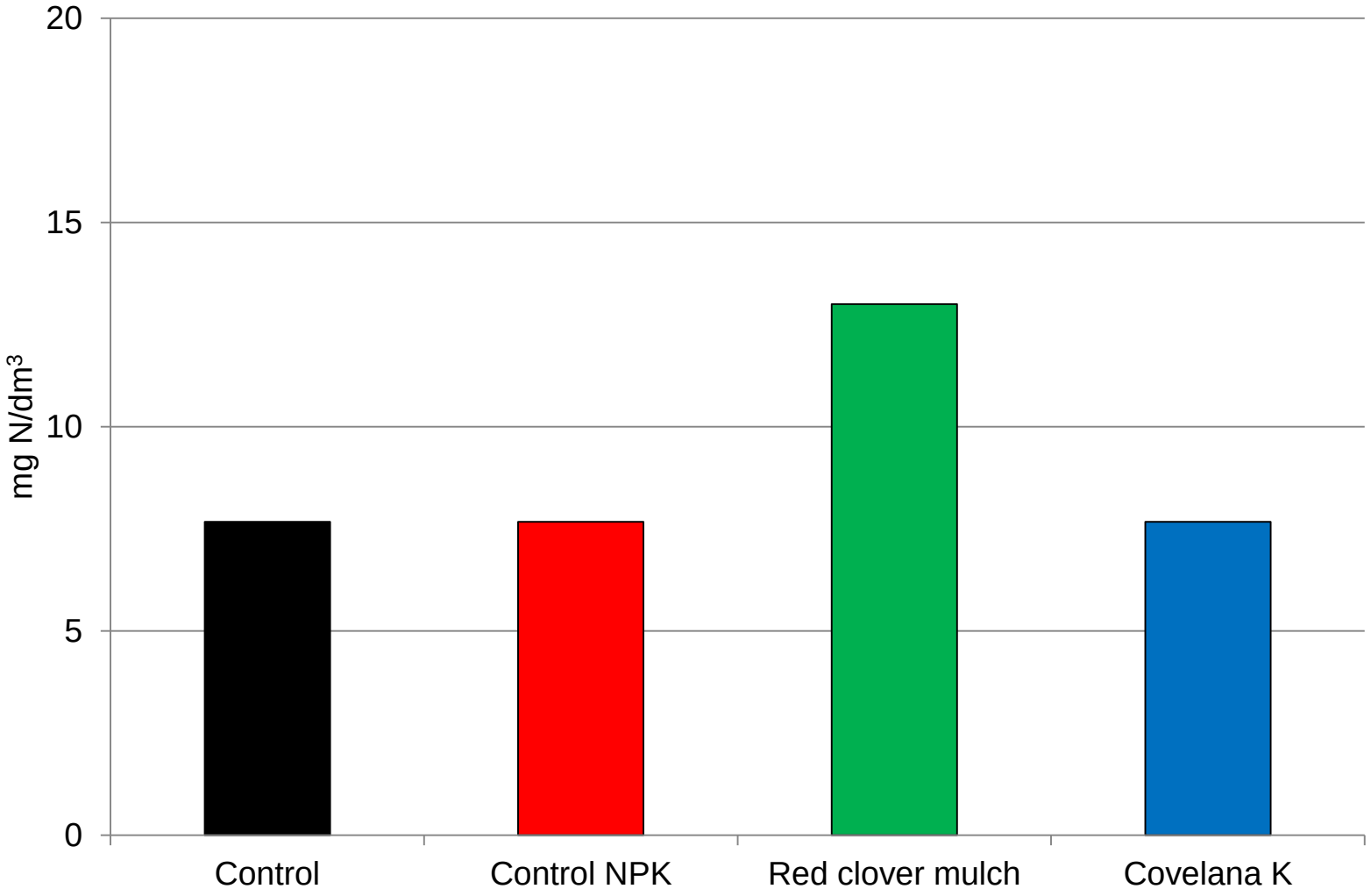
# The influence of soil mulching on N-$NO_3$ content at a depth of 30 cm (mg/L)



# The influence of soil mulching on N-$NO_3$ content at a depth of 60 cm (mg/L)



# The influence of soil mulching on N-$NO_3$ content at a depth of 90 cm, before harvest (mg/L)



## CONCLUSIONS

✓Soil mulching with biodegradable organic fleece had favourable effect on maintenance the soil surface free from weeds within growing period of celeriac.

✓Biodegradable organic fleece Covelana K considerably increased yield and average tuber weight of celeriac to the value comparable with mineral fertilization at dose of 100 kg N/ha.

✓Red clover mulch was most effective for yield enhancing, but less for weed control and later in the season have to be supplemented with hand weeding.

✓Decomposition of red clover mulch biomass gradually released high amounts of available nutrients within vegetation season which could be a potential threat of soil pollution if not exploited by the crop.

## Next

✓Gradual decomposition of organic fleece released considerable amount of easy available nutrients and did not cause any threat of nutrients excess in soil environment.

✓Remains of agro-fleece enriched the soil in organic matter

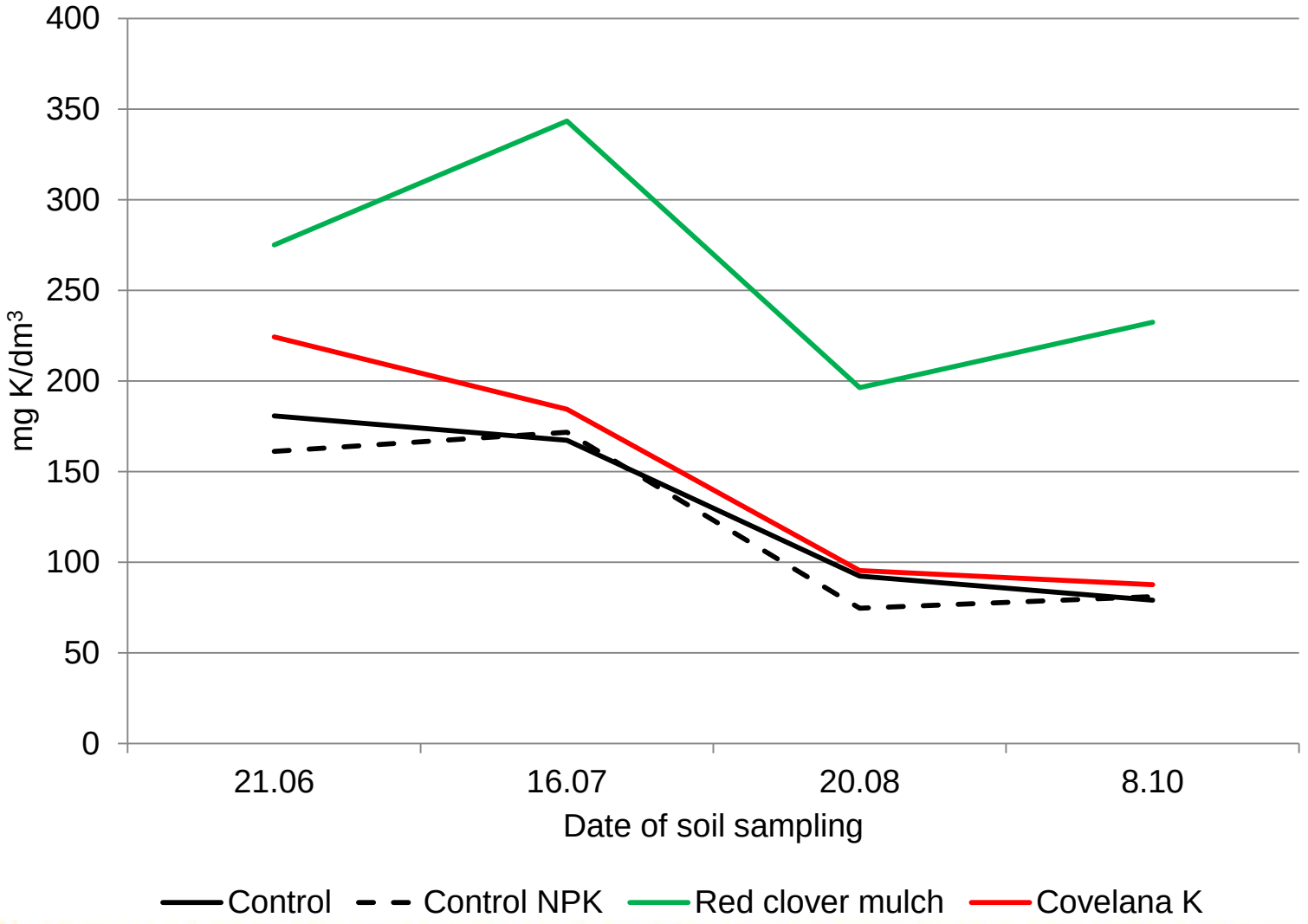
✓Application of organic matter in the form of fleece is useful to improve chemical and physical soil property and soil microorganism activity as well.

✓The use of mineral fertilizers and hericydes can be considerably decreased

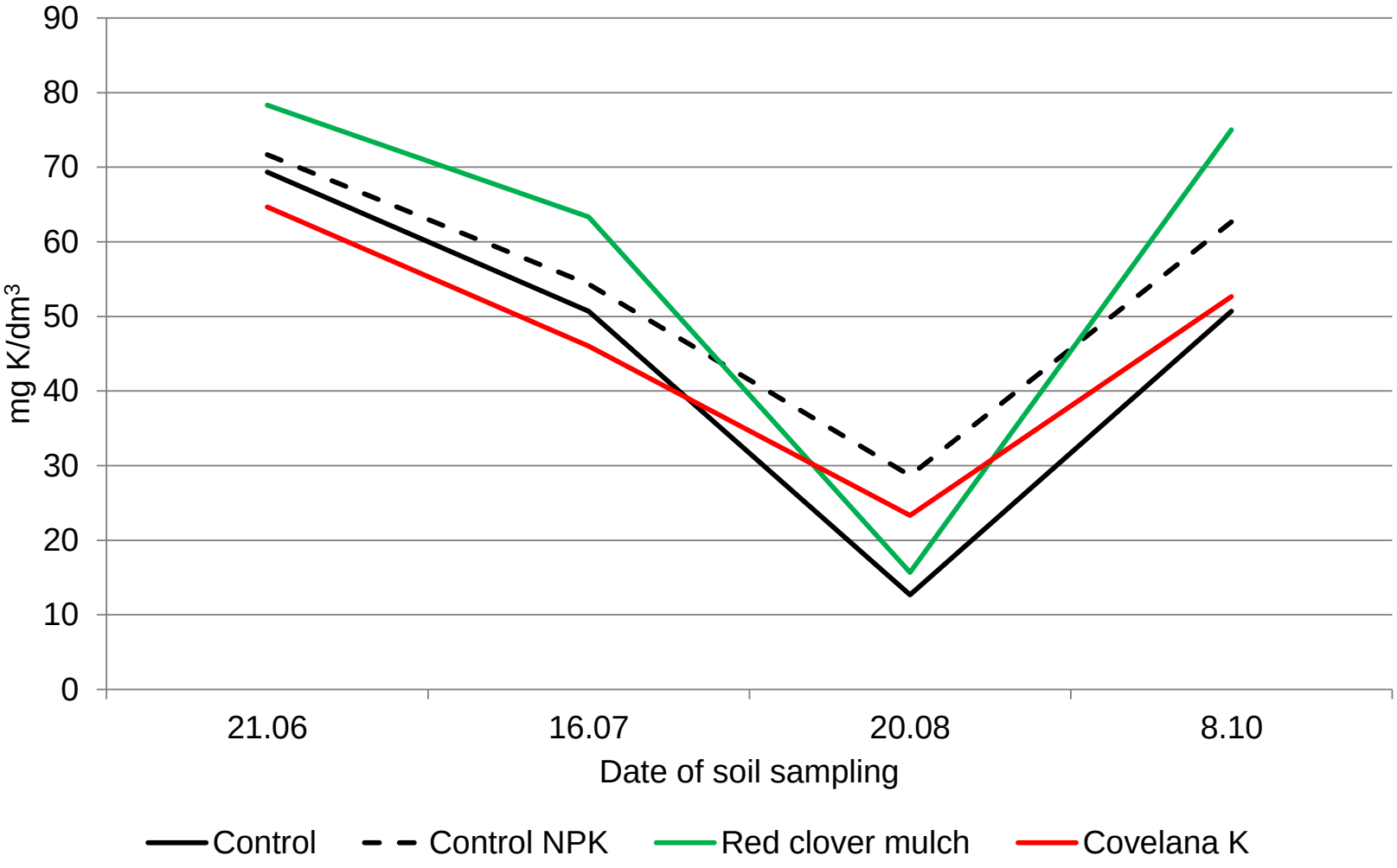
✓The leaching of the nutrients like nitrogen, potassium can be limited


BIO REWIT
THANK YOU

# The influence of soil mulching on K content at a depth of 30 cm (mg/L)



# The influence of soil mulching on K content at a depth of 60 cm (mg/L)



# The influence of soil mulching on K content a depth of 90 cm, before the harvest (mg/L)