Lithuanian Research Centre for Agriculture and Forestry

POTENTIAL FOR UNLOCKING BIOECONOMY IN LITHUANIA: LITHUANIAN AGRO BIOMASS AND ITS USAGE

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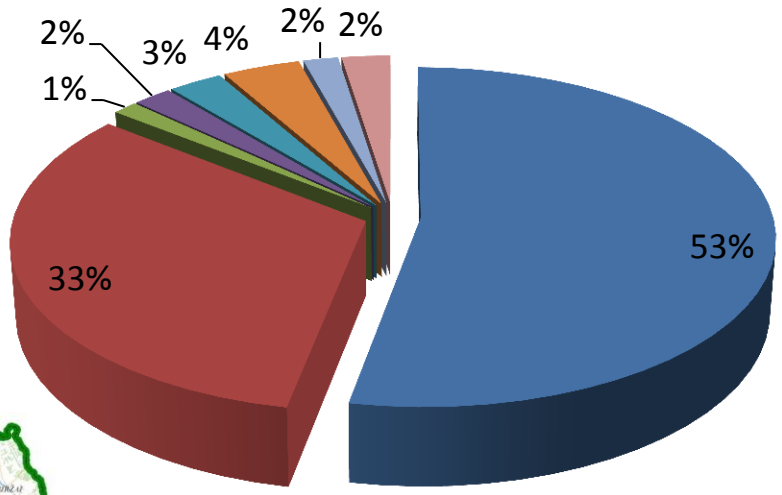
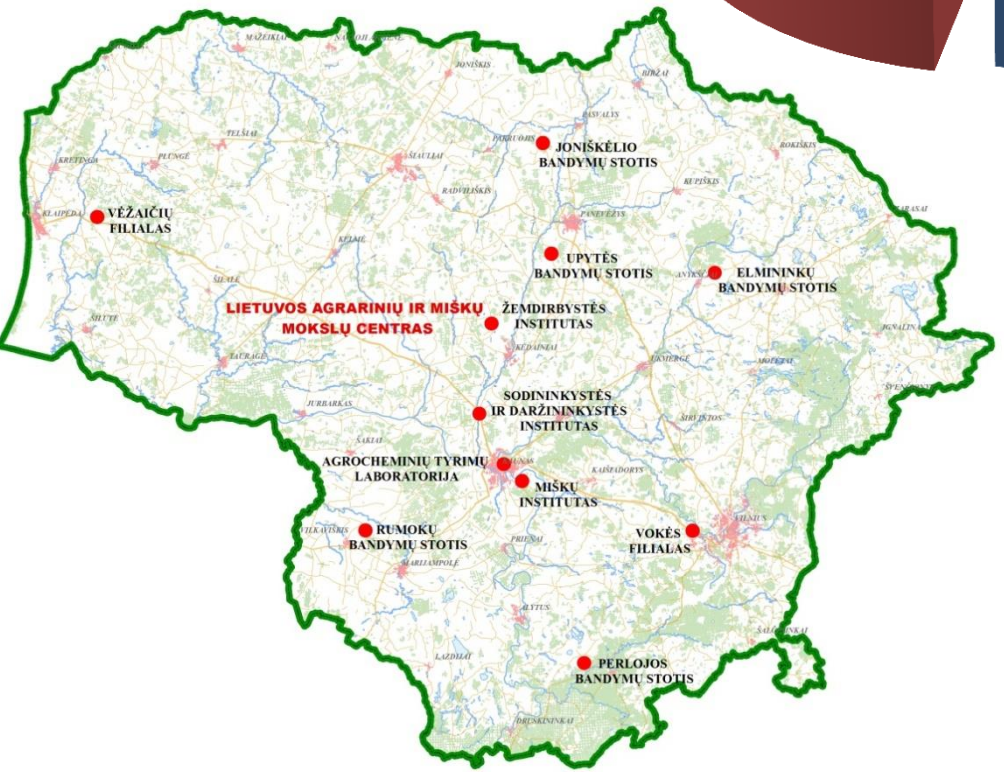
OUTLINE OF THE PRESENTATION

- ✓ Land use of Lithuania
- ✓ Characterization of biomass potential
- ✓ Traditional crops for biomass
- ✓ New energy crops for the increase of biomass potential

LITHUANIA

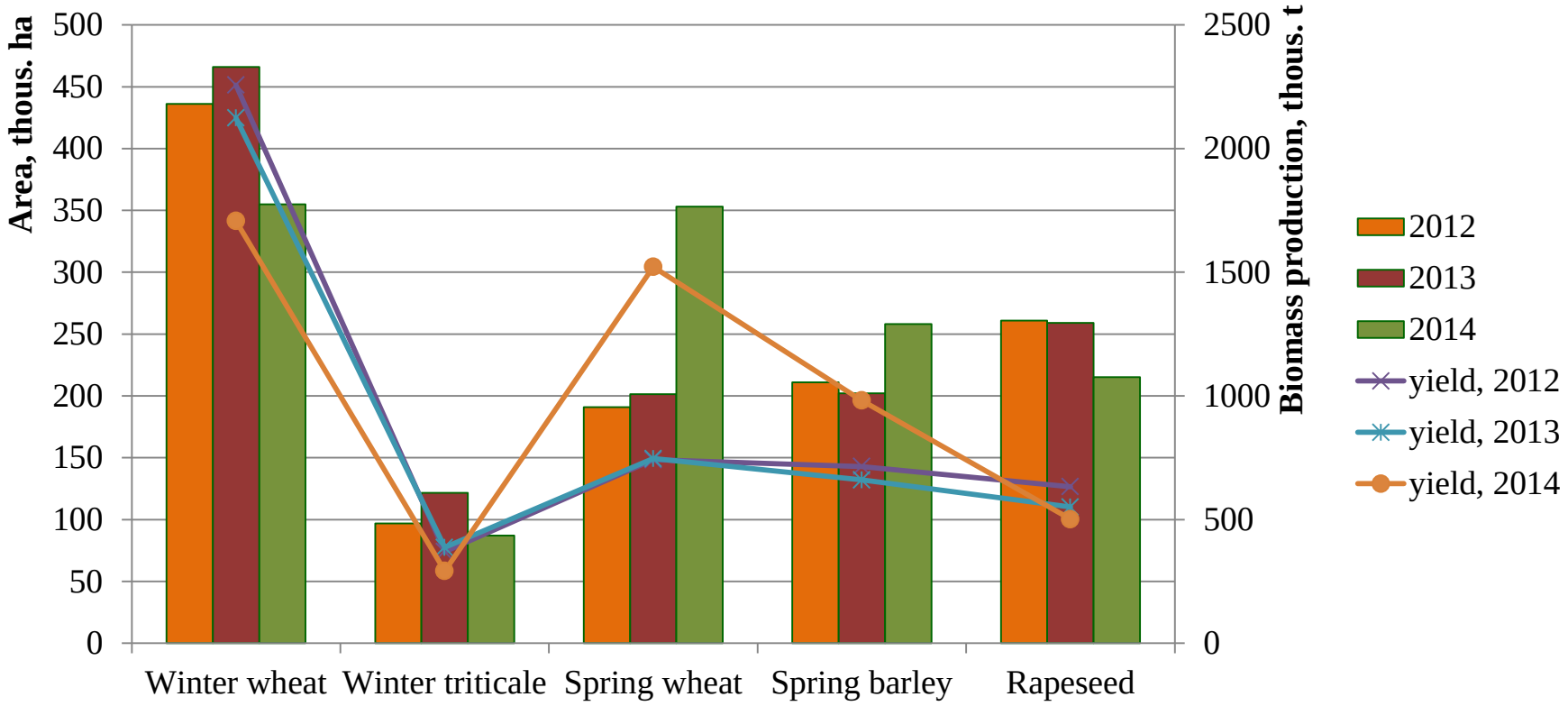


- Agricultural land
- Forest land
- Other wooded land (bushes)
- Roads
- Urban territory
- Water
- Swamps (bogs)
- Other land



Total area - 65 300 km²

CROP AREA AND PRODUCTION IN LITHUANIA



In 2014

Grain export – 596.8 mio EUR (2.4 %)

Grain import – 70.6 mio EUR (0.3 %)

http://osp.stat.gov.lt/web/guest/statistiniu-rodikliu-analize?portletFormName=visualization&hash=d02e3395-fe82-4310-a9e1-054fbd6d6033

THE BIOMASS POTENTIAL AND ITS OPTIMIZATION

- GENETIC POTENTIAL;
- ENVIRONMENTAL POTENTIAL;
- TECHNOLOGICAL POTENTIAL;
- “TECHNOLOGICAL” MISTAKES.

Sugar beet

Sugar beet

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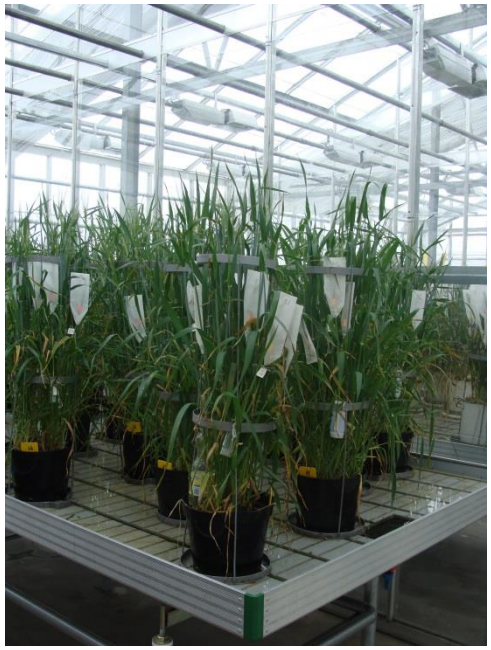
GENETICS AND PLANT BREEDING



In 2009-2013, a total of 36 new varieties were registered:

12 – of cereals,
12 – of grasses,
6 - of flax and linseed,
5 – of legumes,

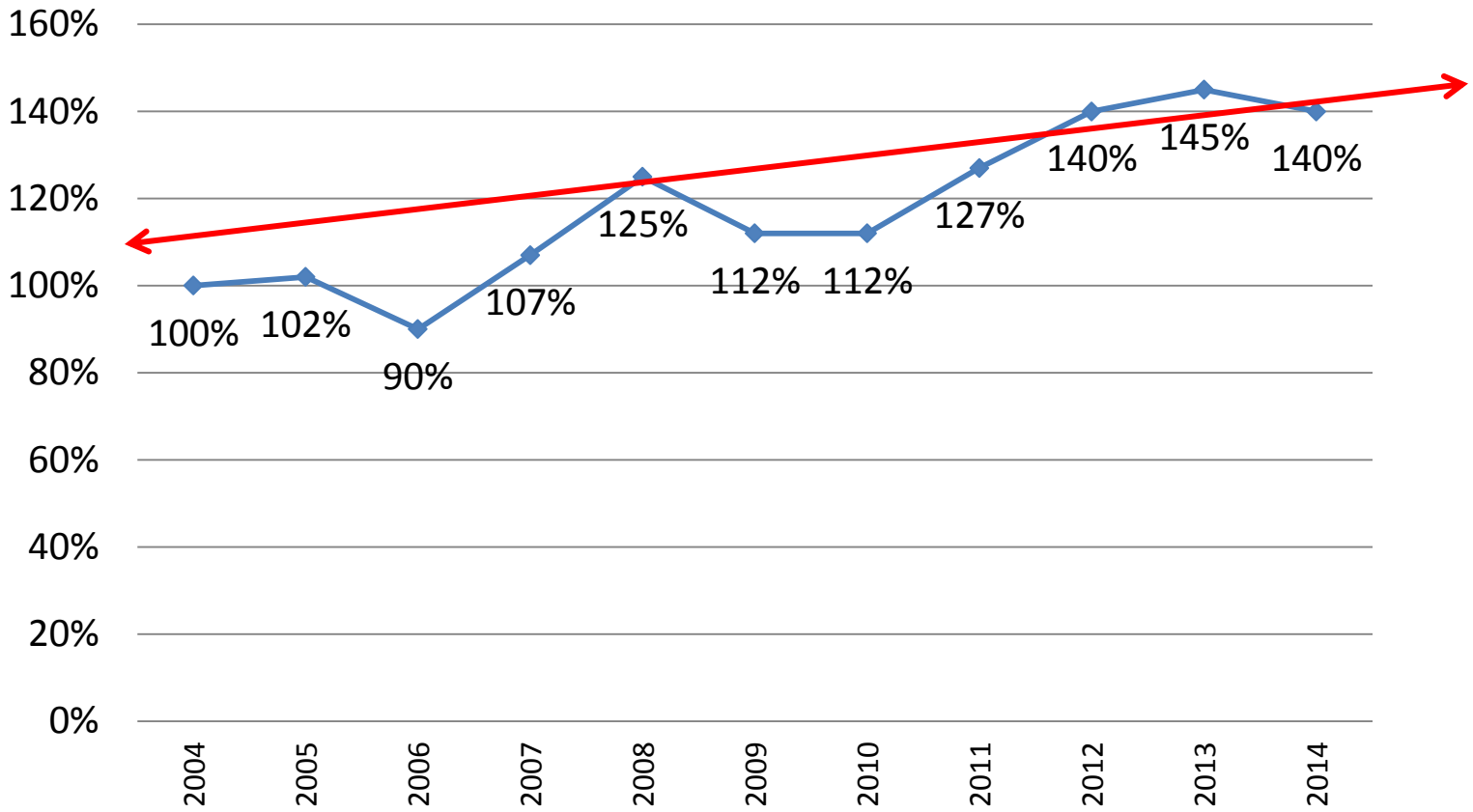
97 field crop varieties

are included in the National Plant Variety List and EU Common Catalogue of Agricultural Plant Varieties.

Many of them are successfully commercialised in Lithuania and in the USA, Canada, Estonia, Latvia and other countries.

THE IMPACT OF WINTER WHEAT BREEDING

the grain yield of new developed varieties over 10 years period increased in 20 % (2004-2014, Kaunas variety testing station)



THE POTENTIAL AND USE OF STRAW

Improvement of soil quality

Other use

Farming

Bioproducts

Feed

Biosolids

Bioliquids

Horticulture

About 1.2 mio.t of straw may be used for bioproducts or bioenergy (about 470 ktne)

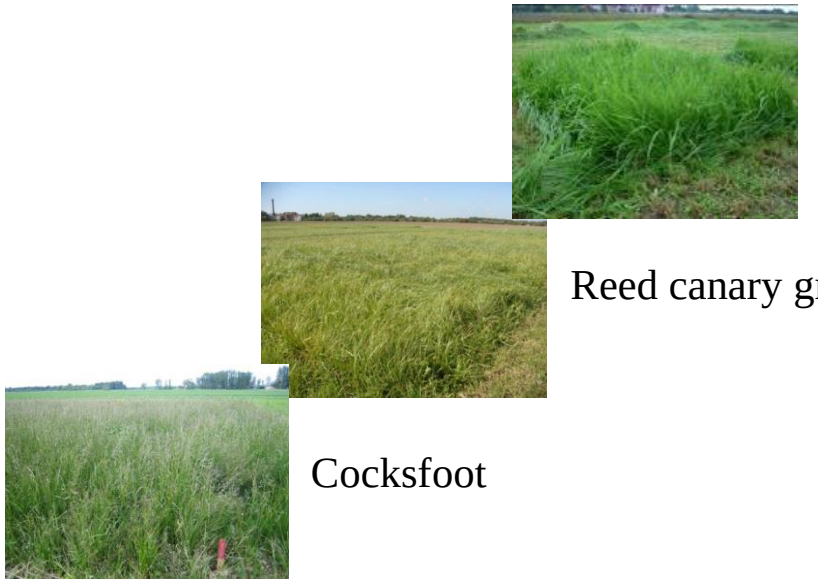
ALTERNATIVE BIOMASS SOURCES IN LITHUANIA

- Traditional annual or perennial grasses;
- Biomass residues;
- Non traditional perennial grasses;
- Other.

TRADITIONAL GRASSES

The most popular grasses:

- Tall fescue
- Reed canary grass
- Cocksfoot
- ....natural grassland



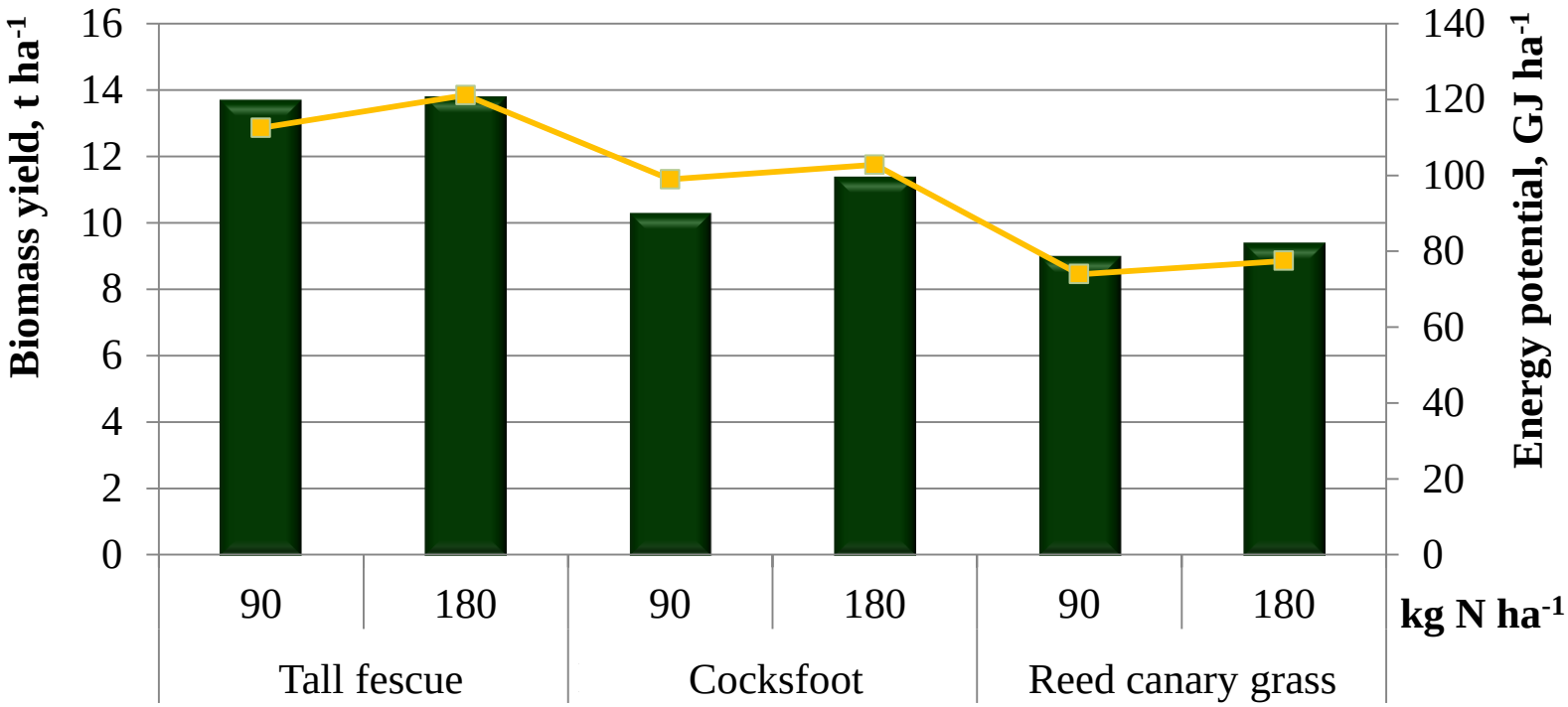
Reed canary grass

Cocksfoot

Tall fescue

Biomass yield, t/ha	3-10
Neutral detergent fiber, %	about 60
Acid detergent fiber, %	about 40
Heating value, MJ/kg	about 17
Ash content, %	from 5 to 9

BIOMASS YIELD AND ENERGY POTENTIAL OF PERENNIAL GRASSES



WHY THERE IS A NEED TO LOOK FOR ALTERNATIVE CROPS?

- Changing industry requirements;
- Changing climate conditions;
- Changing agricultural traditions;
- Other.

WHAT ARE THE MOST IMPORTANT REQUIREMENTS FOR INTRODUCED CROPS?

- High biomass yield;
- Good overwintering abilities;
- Drought tolerance;
- Low input for growing;
- Optimal chemical composition;
- Other.

NON TRADITIONAL CROPS

Sida *(Sida hermaphrodita)*

Pavėsinis kietis
(*Artemisia dubia)*

Miskantas
(*Miscanthus giganteus)*

Geltonžiedžiai legėstai
(*Silphium perfoliatum*)

Plants	Dry matter yield, t ha^{-1}	Energy value, tne
Miscanthus	**11.0**	0.0045
Sida hermafrodita	**14.8**	0.0059
Silphium perfoliatus	**17.2**	0.0069
Artemisia dubia	**24.1**	0.0098
Cannabis sativa	**14.0**	0.0050
***Panicum virgatum* L.**	**12.0**	

FOR THE CONSLUSIONS

Only the strong cooperation of multidisciplinary scientists and business representatives may unlock bioeconomy in our and other countries.

THANK YOU FOR THE ATTENTION

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