The gene bank collections of legumes at the Center for Plant Diversity through the eyes of ecological farming and climate change

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NÖVÉNYI DIVERZITÁS KÖZPONT


By now, the remaining genetic richness of cultivated plants are pressed into the gene banks?

The gene bank collections at the CPD

370 genera
1160 species
51680 accessions

Legume collections at the CPD

PLANT	ACCESSION	PLANT	ACCESSION
common bean	4359	chickpea	1162
runner bean	280	lentil	1075
lima bean	42	fava bean	337
cowpea	298	grass pea	306
mungo bean	27	soybean	765
adzuki bean	10	peanut	101
pea	1227	lablab bean	15

Pea: 1227 acc.

A well „covered” plant in the national legume cultivation.
Ecological farming: in the case of some types it’s conditional.
Winter varieties are necessary to balance the water shortages in the spring.

Field pea

Chickpea: 1162 acc.

Cold, rainy weather lowers yield reliability.
Suitable for ecological farming.
In case the climate turns arid, it may be one of the leading legumes.

The „desi” variety. Less sensitive.

Winter cultivars are also required.

Grass pea: 306 acc.

It is a true „eco plant” because it is not choosy in soil types and water sustenance.

It will take it’s well deserved place once the climate turns arid.

Fava bean: 337 acc.

It’s more of a humid region plant.
In CPD there are landraces that thrive on sandy soils as well.
It’s an insect magnet, so it’s ecological cultivation is conditional.

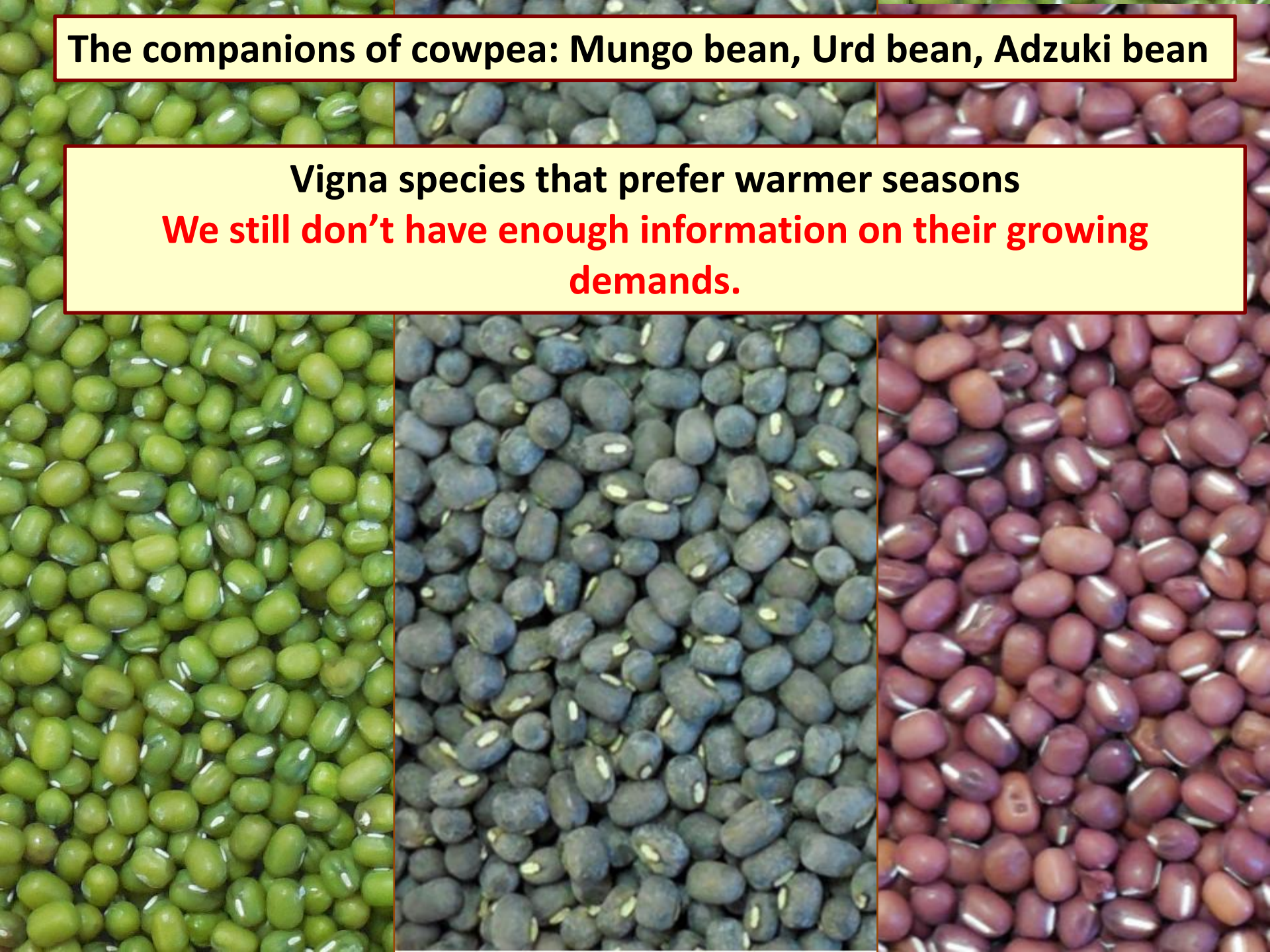
Cowpea: 298 acc.

It has low yield potential in cold and rainy summers.

It's short-day nature is more emphasized.

Suitable eco plant, but the danger is here!

In case of an arid climate change it's advantages will be unconditional.

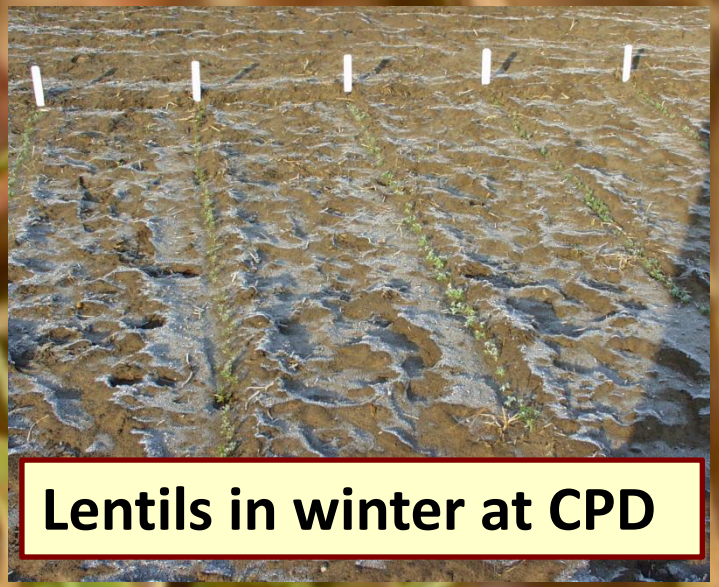


The companions of cowpea: Mungo bean, Urd bean, Adzuki bean

Vigna species that prefer warmer seasons

We still don’t have enough information on their growing demands.

Lentil: 1075 acc.



Lentils in winter at CPD

Yield reliability and ecological cultivation is decent.

Climate change: The winter type may also be an option to satisfy water requirement and to make early harvest possible.


Peanut: 101 acc.
Yields are acceptable on the Hungarian Sandy Hills.
It is still a true „eco” plant.
The climate change should be warm and rainy.

Runner bean: 280 acc.

A short-day plant, which does not advance yield reliability.

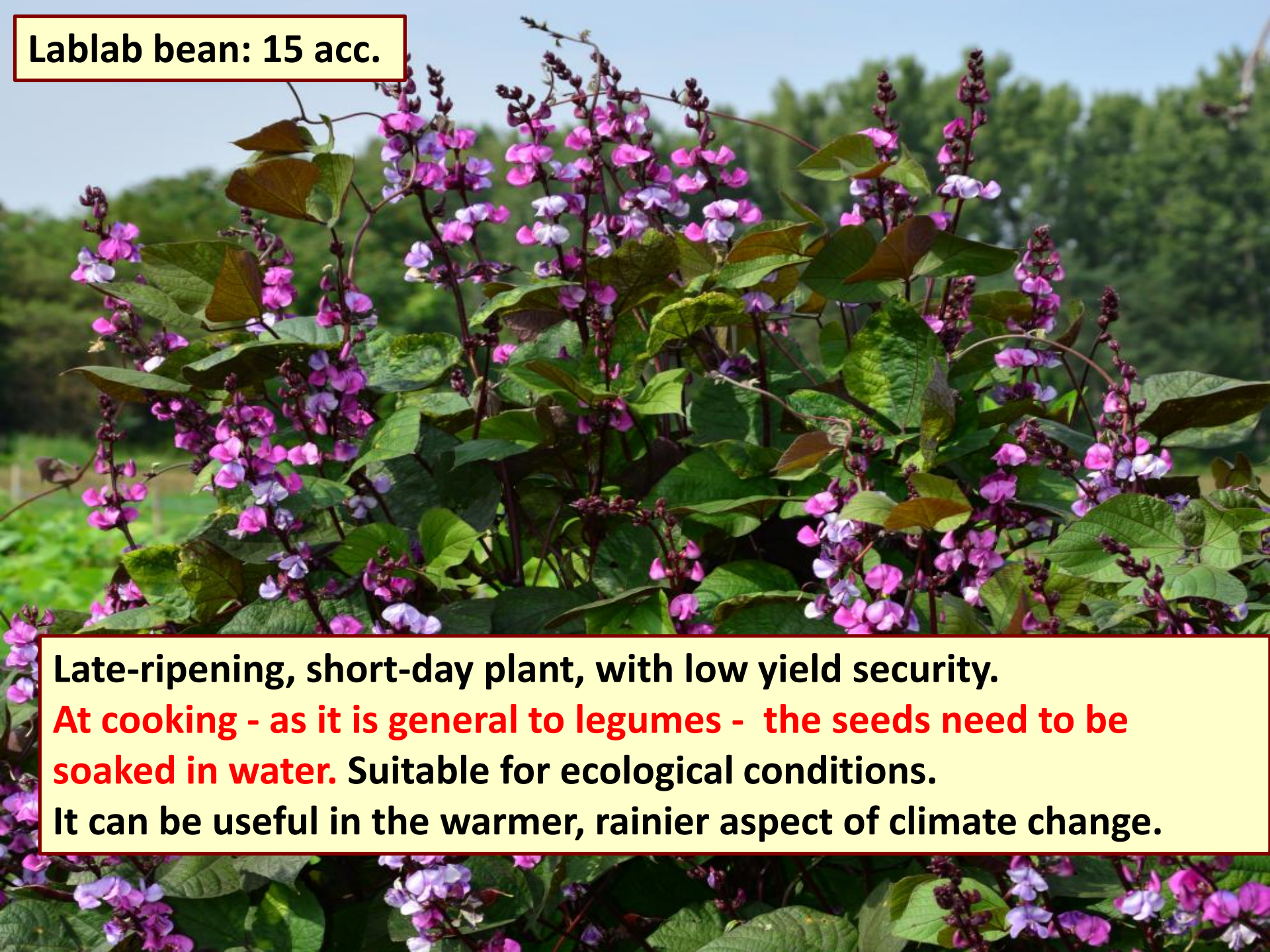
It can be cultivated under ecological conditions.

It’s sensitive to drought, so it might be the bean of warm-humid climate change.

Insect-pollinated, which makes it hard to preserve the varieties.

Lima bean: 42 acc.

It can be short-day, which is bad for yield reliability.
It can be cultivated under ecological conditions.
It may be useful in case of the warm-rainy climate change.



Lablab bean: 15 acc.

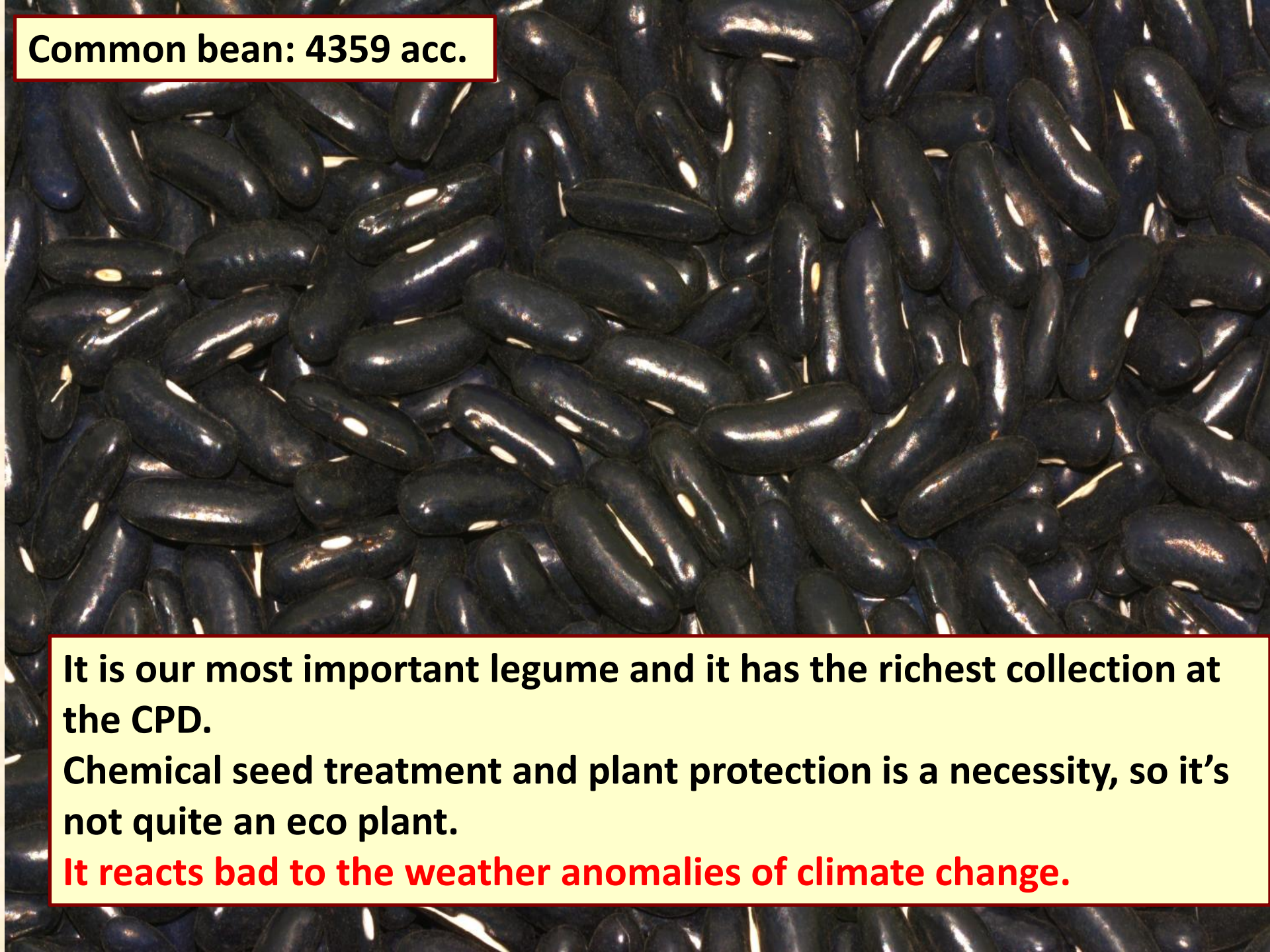
Late-ripening, short-day plant, with low yield security.
At cooking - as it is general to legumes - the seeds need to be soaked in water. Suitable for ecological conditions.
It can be useful in the warmer, rainier aspect of climate change.

It’s a fairly new plant in our country but it’s well represented with certified cultivars.

It’s sensitive to water shortages, and, in some cases to longer daylight.

It can be cultivated even under ecological circumstances.

It’s culinary characteristics are less known in Hungary.



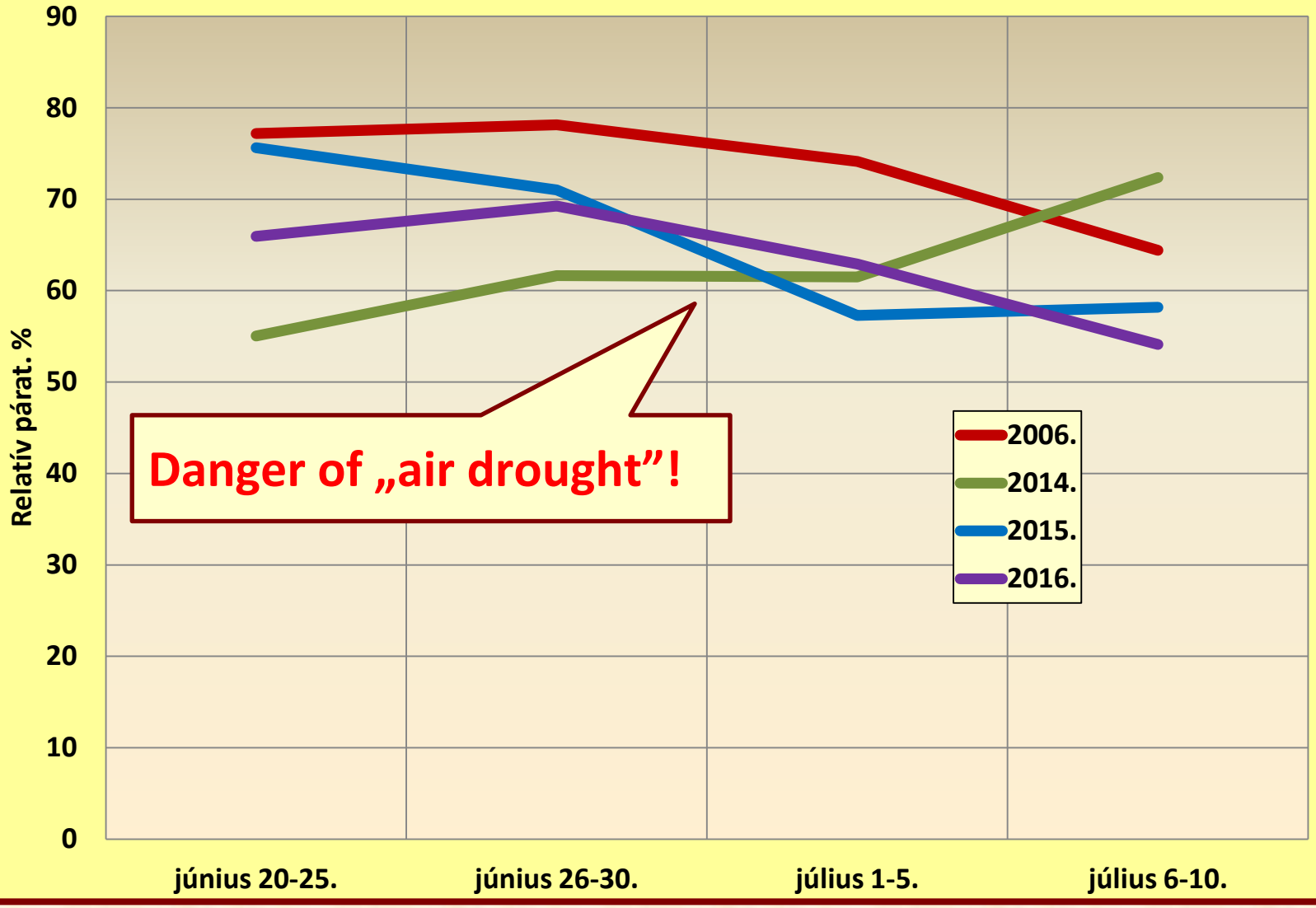
Common bean: 4359 acc.

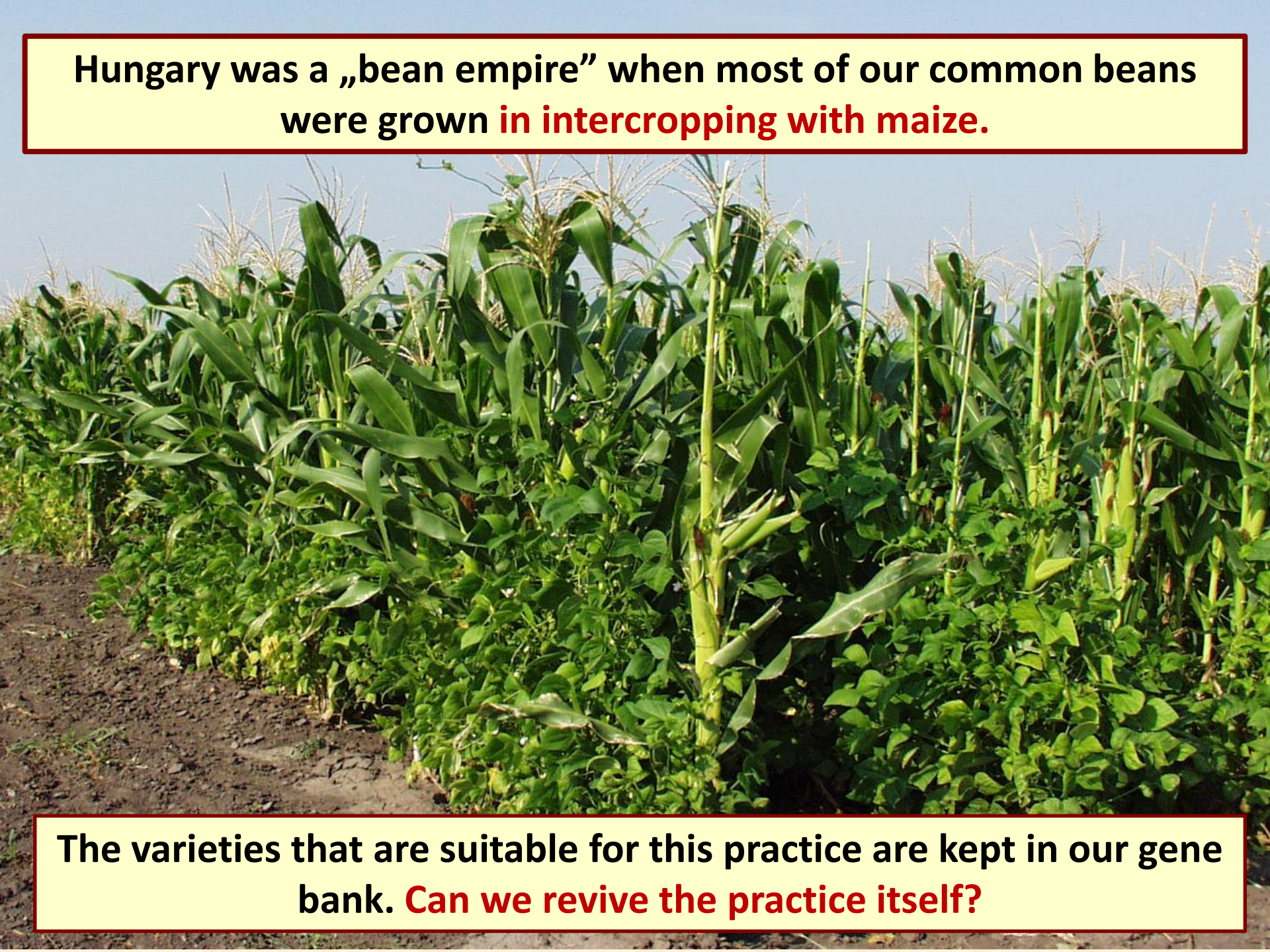
It is our most important legume and it has the richest collection at the CPD.

Chemical seed treatment and plant protection is a necessity, so it's not quite an eco plant.

It reacts bad to the weather anomalies of climate change.

Relative humidity during the flowering of beans in a 4 year term



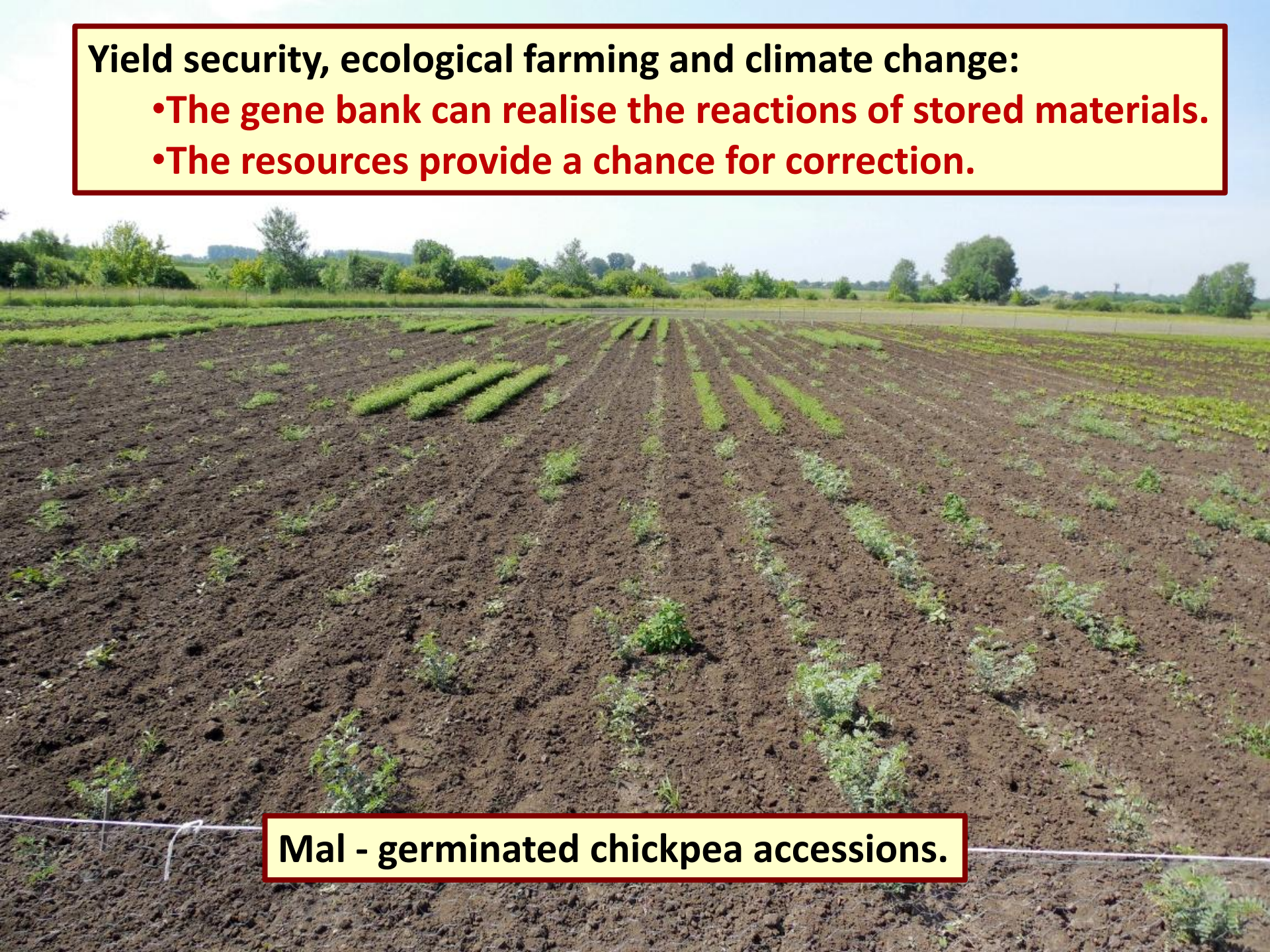


Hungary was a „bean empire” when most of our common beans were grown in intercropping with maize.

The varieties that are suitable for this practice are kept in our gene bank. Can we revive the practice itself?

Yield security, ecological farming and climate change:

- **The gene bank can realise the reactions of stored materials.**
- **The resources provide a chance for correction.**



Mal - germinated chickpea accessions.

The collections at the Center for Plant Diversity, in accordance with the conditions of the international treaties, are freely accessible for every user.

The number of samples provided to farmers and gardeners in 2015:

Plant	Accession
Common bean	401
Pea	166
Lentil	144
Cowpea	267
Chickpea	263
Fava bean	117
Peanut	111