



# *Capsicum baccatum* Genetic Diversity Analysis Reveals Two Major Groups Corresponding to the Western and Eastern South American Distribution



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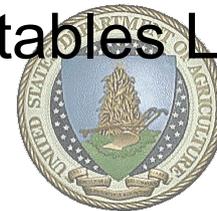
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Food



Feed



Fiber



Fuel



Flowers



Fun



“6F”

Bayer CropScience

Dow AgroSciences

KWS

ENZA ZADEN

BASF  
The Chemical Company

BIOSEED

DSCL  
DEW ENHARAH CONSOLIDATED LTD

RIJK ZWAAN

KeyGene

Ankur  
Seed

D1  
D1 Oils plc

TAKI

Others

PANNAR

SAATEN UNION

Bail.

Vilmorin  
cultivating the taste of life



# *Capsicum* germplasm resources

- 30 species

Domesticated:

- *C. annuum*
- *C. chinense*
- *C. frutescens*
- *C. pubescens*
- *C. baccatum*



# *C. baccatum*

- var. *baccatum*
- var. *praetermissum*
- var. *pendulum*
- var. *umbilicatum*



**var. *pendulum***

**var. *umbilicatum***

# *C. baccatum* - geographic distribution



## Objectives

- To characterize genetic diversity and population structure in the *C. baccatum* USDA/ARS germplasm collection.
- To elucidate the species' potential center of domestication and evolutionary history.
- To provide guidance for genetic conservation programs.

## Materials and methods

- *C. baccatum* accessions (226)

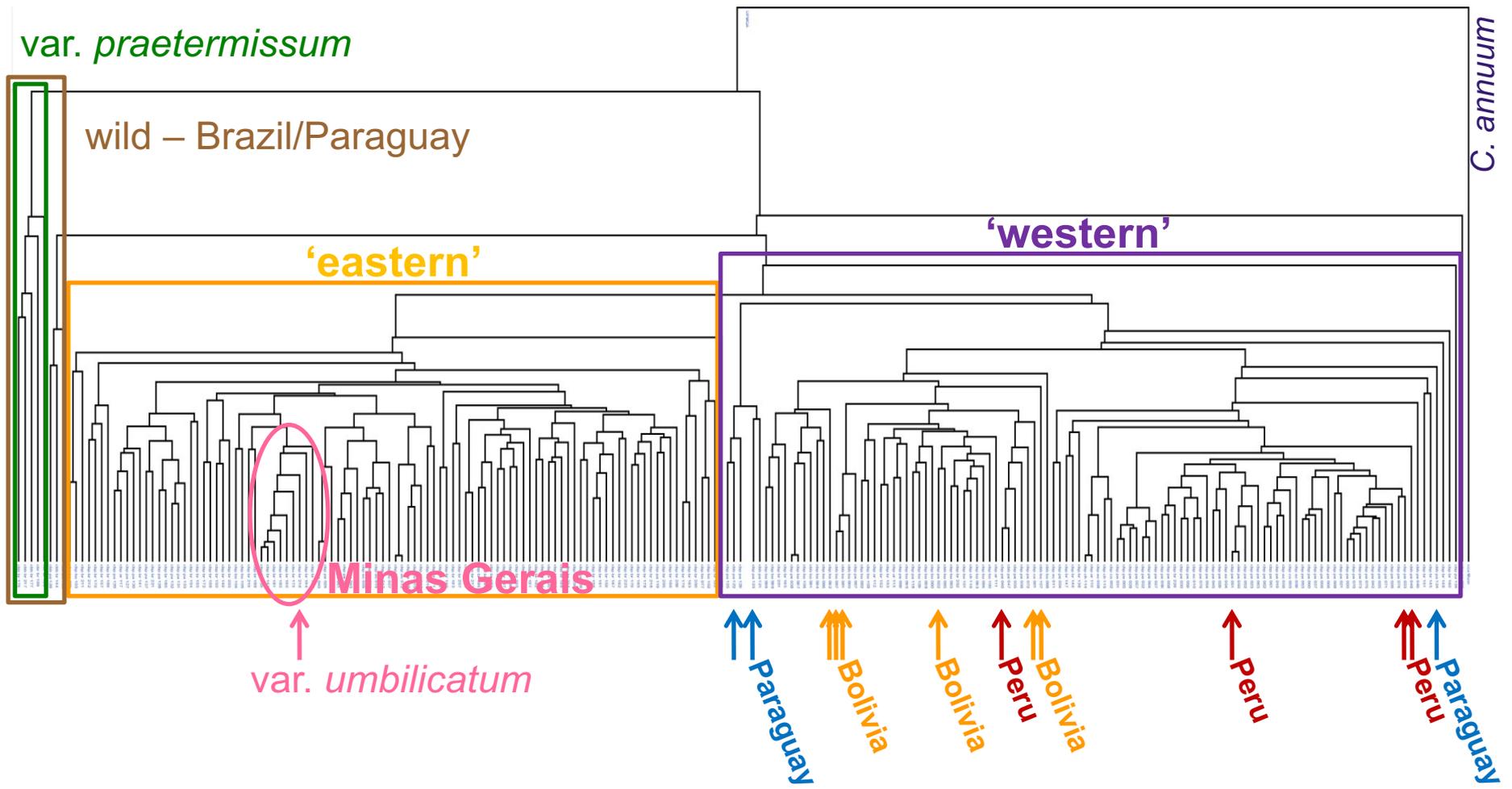
(5 plants per accession)

<i>C. baccatum</i> var. <i>baccatum</i>	20
<i>C. baccatum</i> var. <i>praetermissum</i>	2
<i>C. baccatum</i> var. <i>pendulum</i>	203
<i>C. baccatum</i> var. <i>umbilicatum</i>	1

- AFLP markers (327; two primer combinations)

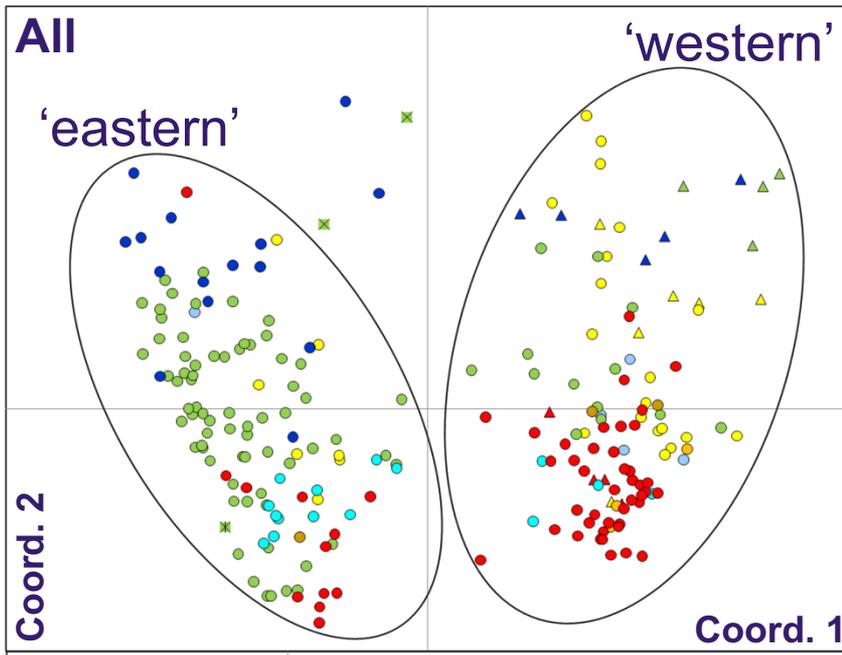
# Distance-based cluster analysis

## UPGMA dendrogram



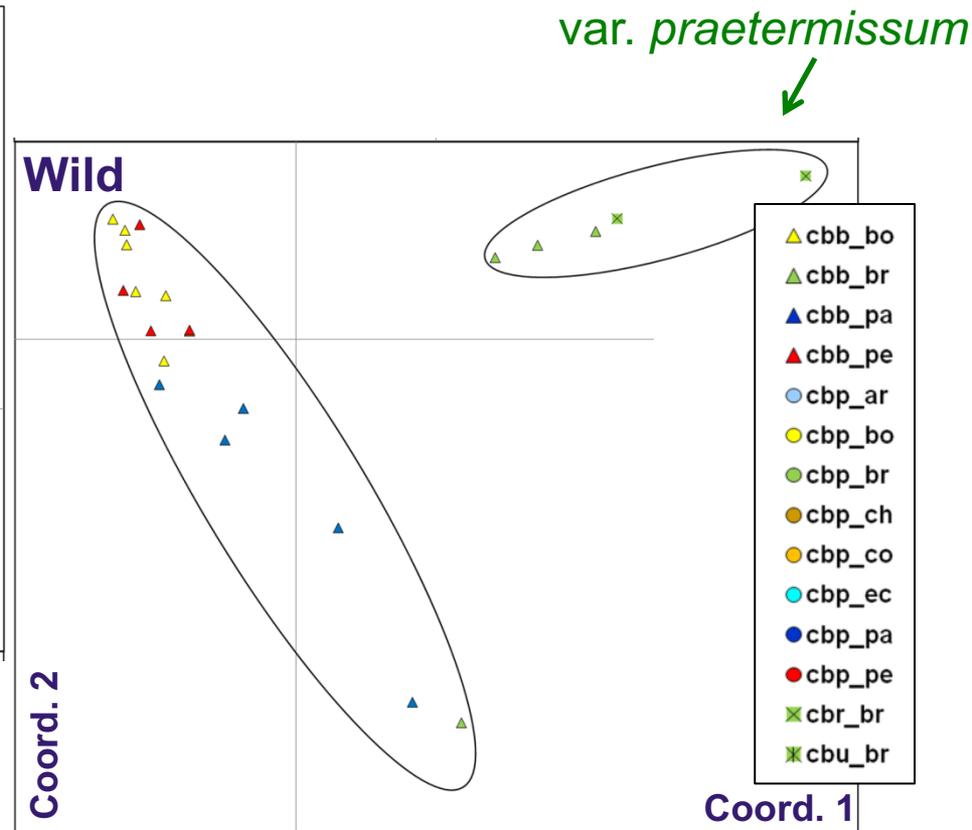
# Distance-based cluster analysis

## Principle Coordinate Analysis (PCoA)



***C. baccatum***

Coord. 1 = 34%, Coord. 2 = 19%

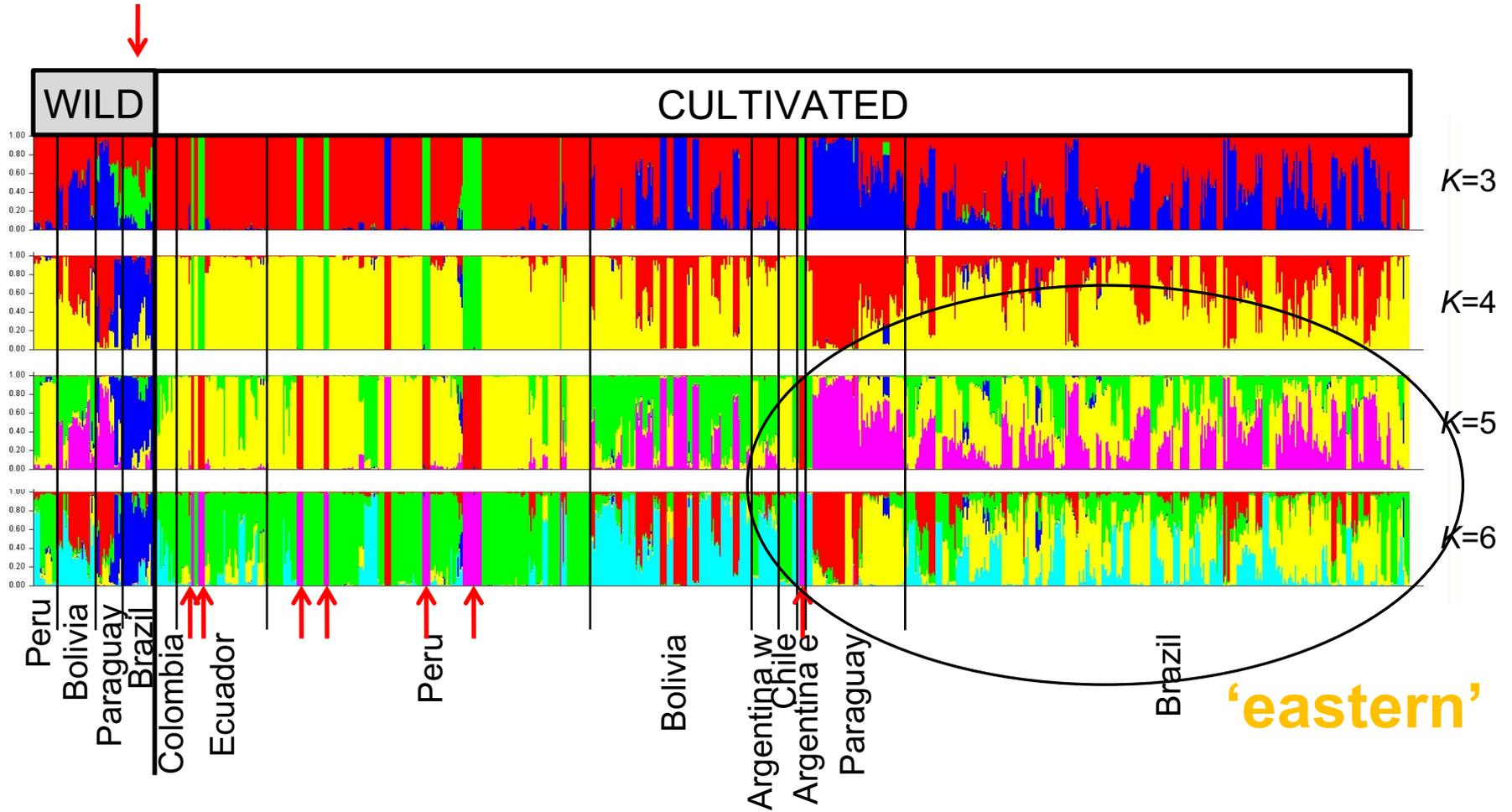


**Wild *C. baccatum***

(*var. baccatum* + *var. praetermissum*)

Coord. 1 = 41%, Coord. 2 = 19%

# Model-based cluster analysis STRUCTURE



## Conclusions

- Multiple domestication events (from Peruvian/Bolivian and Paraguayan wild types)
- Division of the domesticated *C. baccatum* germplasm into a 'western' and an 'eastern' group.
- 'Eastern' group = hybridization product of various 'western' types?
- Reclassification of var. *umbilicatum* into var. *pendulum* OR of var. *pendulum* 'Minas Gerais' cluster into var. *umbilicatum*.
- Reclassification of the entire var. *praetermissum* cluster into var. *praetermissum*.

# Acknowledgements

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**Thank you for your attention!**

**Questions?**