



# Tropentag

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## The Influence of Regional Origin on Cocoa Butter from Colombia: Tumaco - Huila - Santander



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Introduction: Various use of cocoa beans and cocoa butter



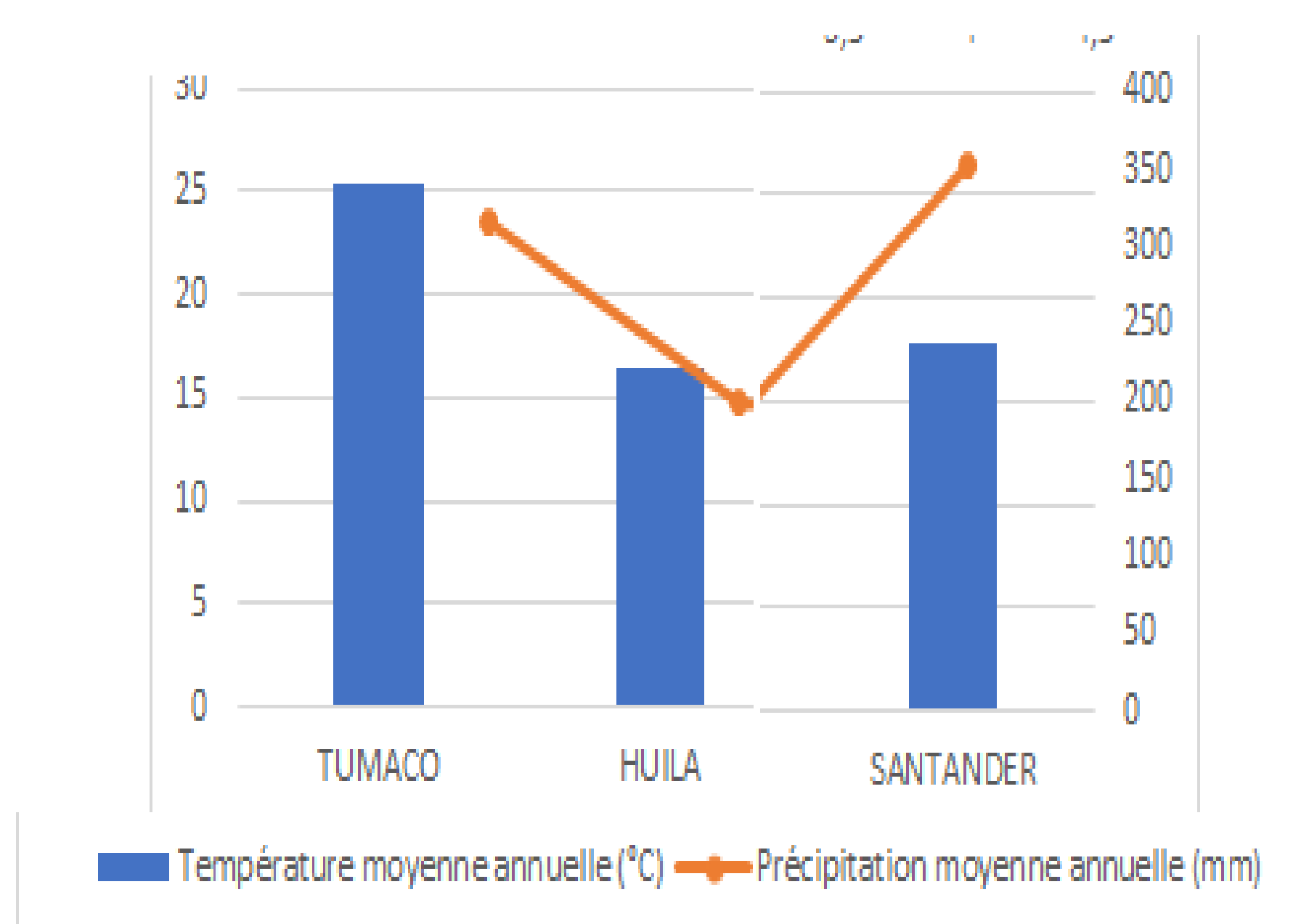
Different varieties of chocolate analyzed

TUMACO (T1)	HUILA (H)	SANTANDER	TUMACO (T2)
85%	70%	(ST) 65%	65%



Origin	Geographical and pedoclimatic characteristics
Tumaco	Municipality of southwestern Colombia, with a tropical climate subject to a strong maritime influence. The soil is mainly composed of alluvial deposits of marine and torrential origin
Santander	Municipality of southwestern Colombia, with a tropical climate subject to a strong maritime influence. The soil is mainly composed of alluvial deposits of marine and torrential origin
Huila	Tropical region composed of savannahs and forests with a small oceanic influence. The soils are mostly sandy loam and clay

T emperature and precipitation per month



Cocoa bean composition and cocoa butter composition

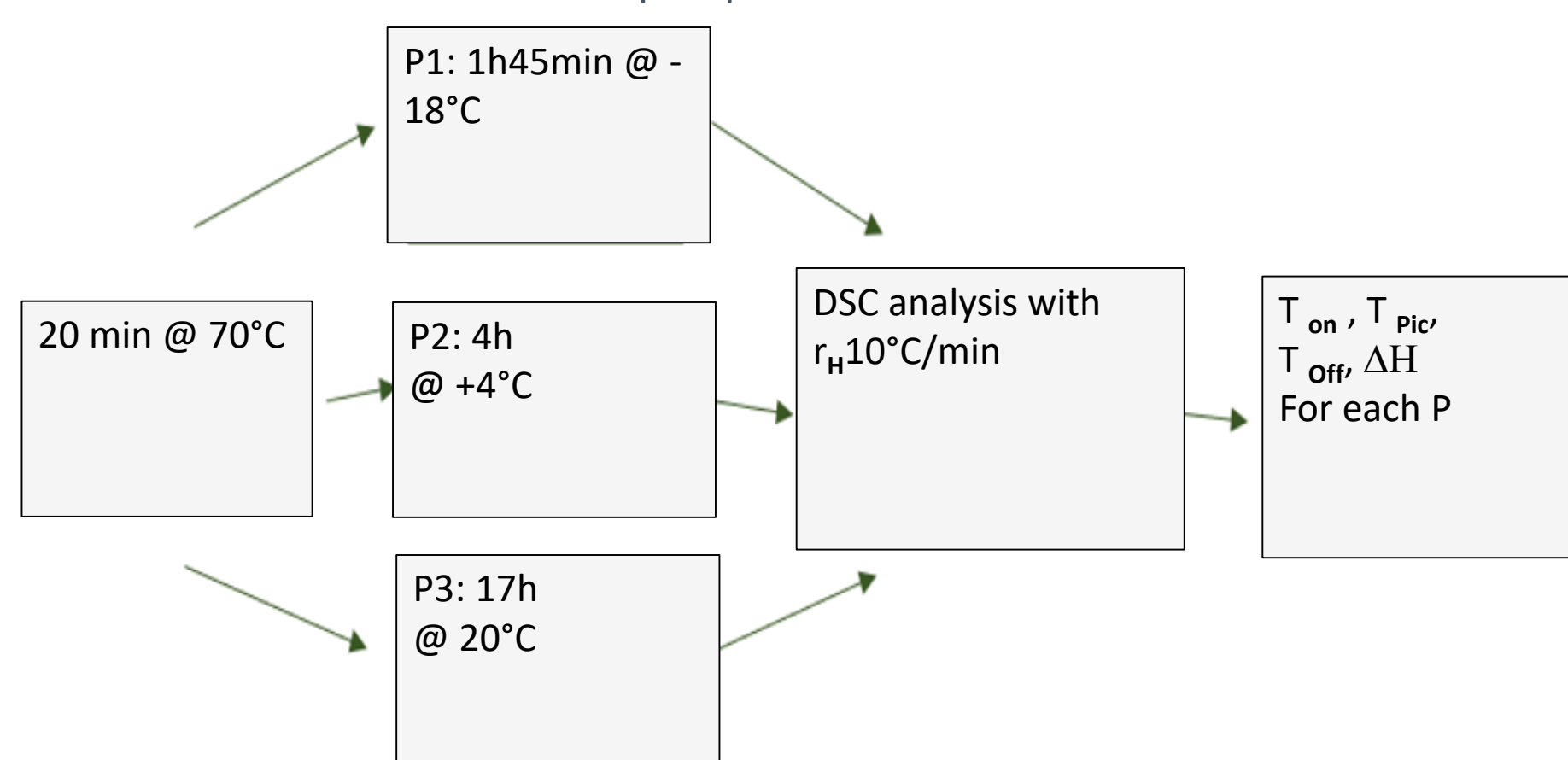
54% Fat cocoa butter (CB)	→	34% oleic acid 33% stearic acid 26% palmitic acid 6% others
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The mean composition for chocolate from Colombia

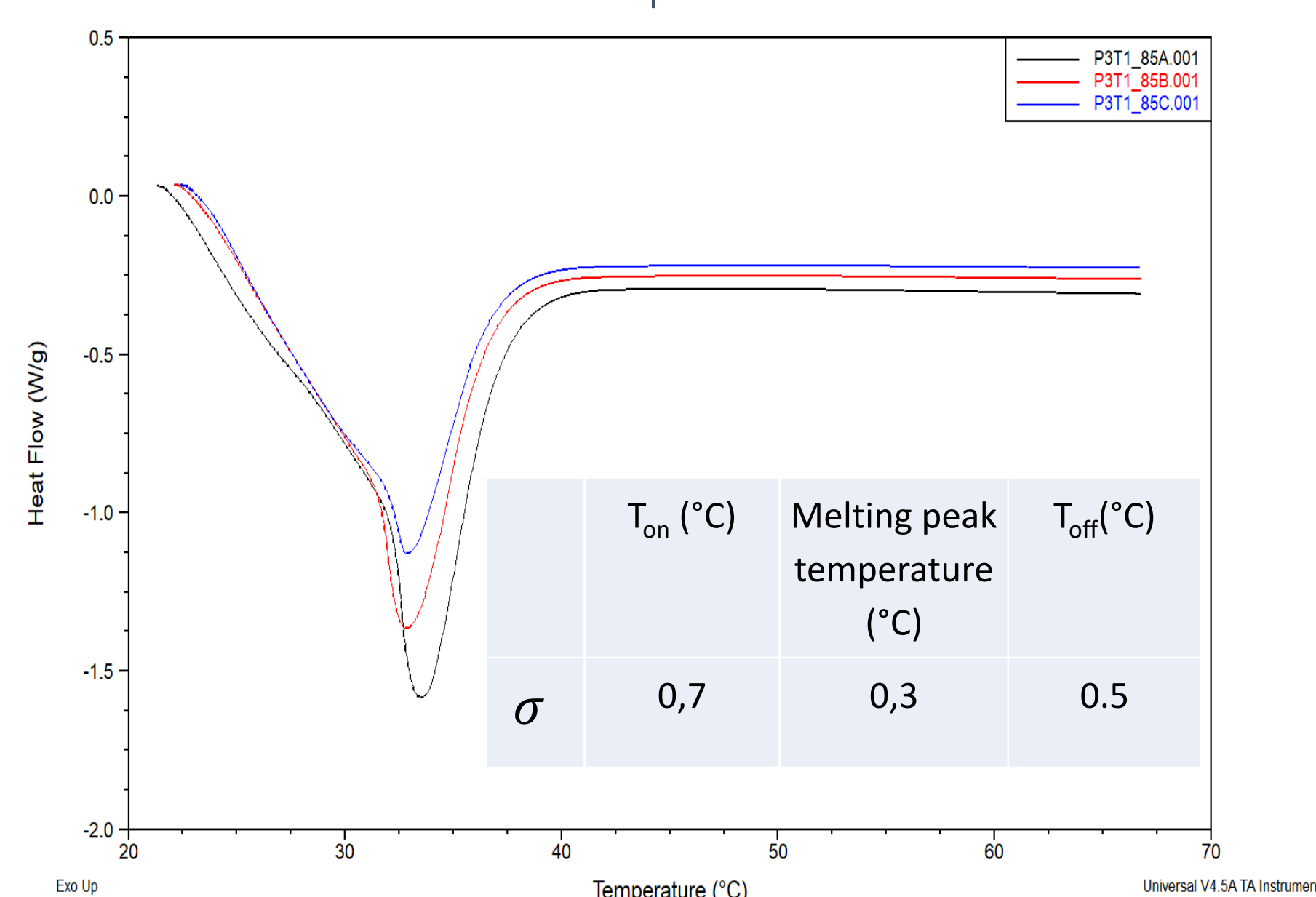
	Colombia
16:0	30
18:1	29
18:0	36
C:20	1

Material and Method: DSC analysis

Three different « tempering » schemes used for sample preparation



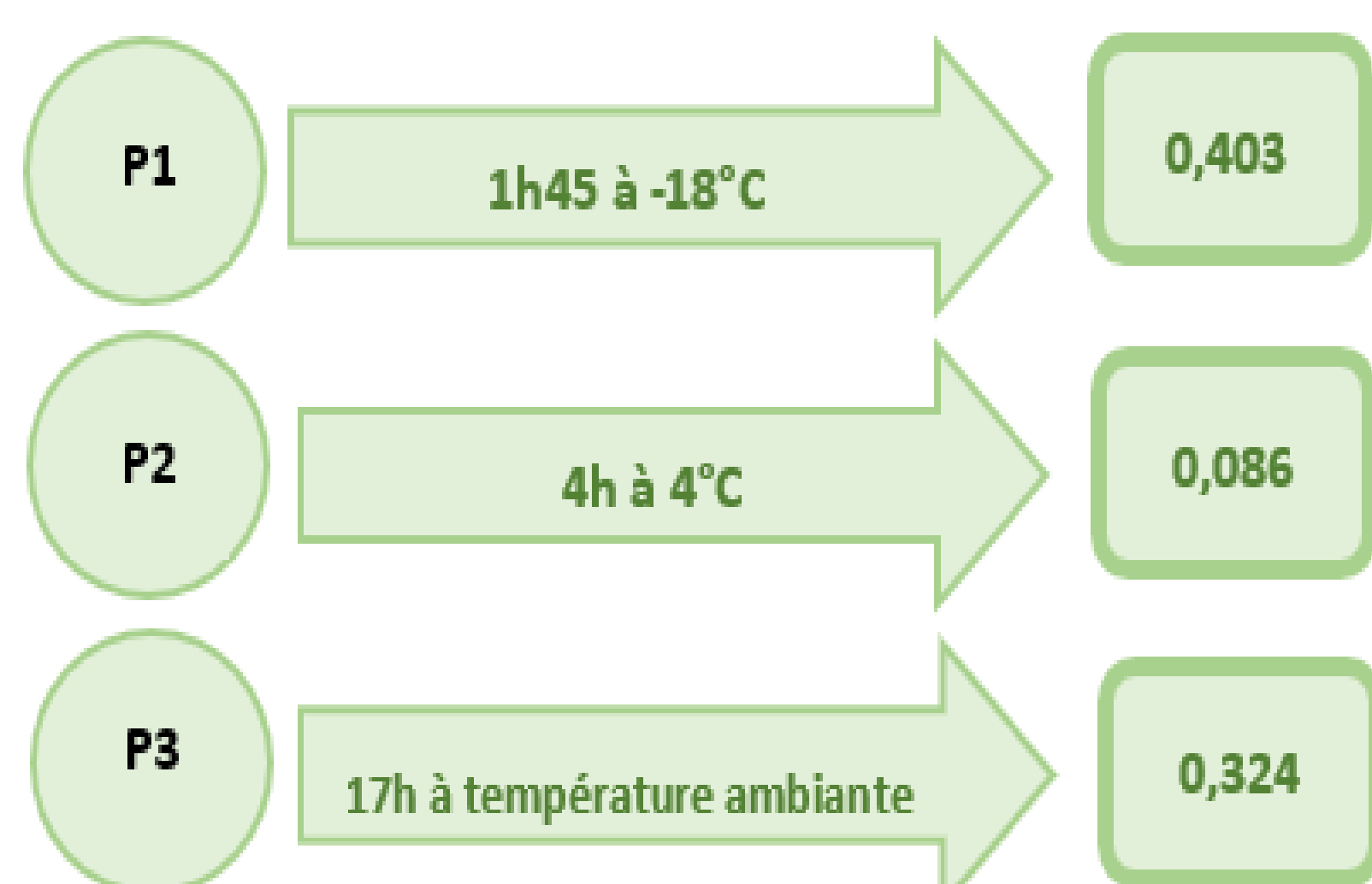
Three repetitions



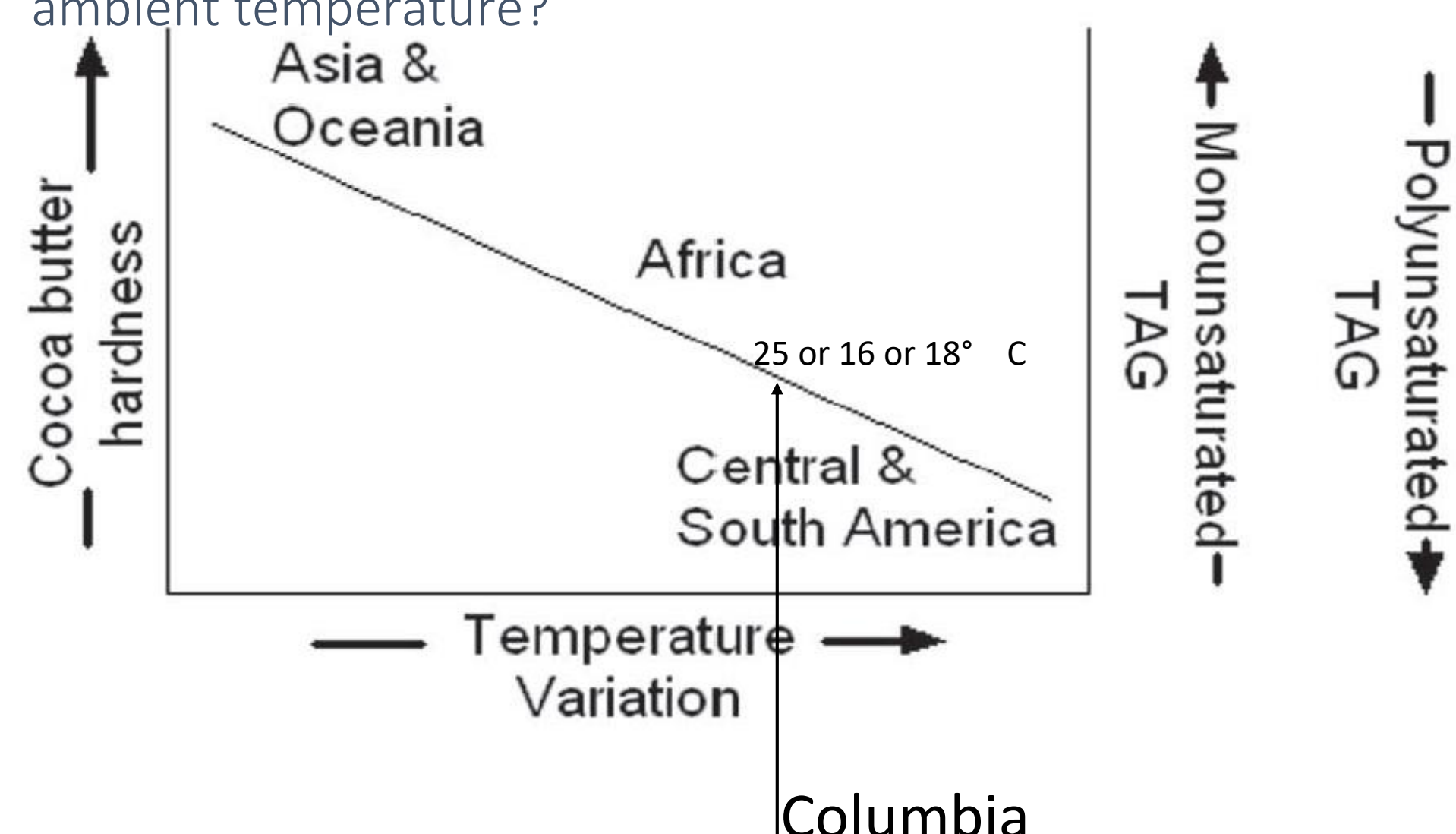
Repetability for enthalpy and T<sub>on</sub>

	Enthalpy (J/g)	T <sub>on</sub> (°C)
T1P3	42,19	33,53
T1P3	37,64	32,81
T1P3	33,62	32,90

Correlation between ambient regional temperature and T<sub>on</sub>



CB behaviour as a function of controlled geographic origin and ambient temperature?



Conclusions

- Easy experiments allow distinctions especially in emerging countries
- Regional origin CB with **known** origin
- Differentiation is possible
- The regional temperatures are calculated for the whole plantation  
We did not take into account « plot temperature » but considered rainfall and soil
- All CB samples are assumed to be mixtures from different **plots** and hence different **trees**
- CB is from **different hybrids**

Outlook

- We managed to receive CB from specific plots – ongoing study
- Cocoa pods from different trees but same hybrid and same plot so with the same temperature and rainfall as well as soil are investigated
- The composition of different CB from different plots but same area will be tested for physico-chemical behaviour and composition
- An estimate of impact for a given hybrid/tree on ambient temperature will be possible