

SOLVENT RETENTION CAPACITY (SRC)

A new way to look into flour quality

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« Final result is, at the minimum,
the sum of efforts of the
individual contributors »



Imagine a 3 runners relay Total Time Analysis

Team	Total Time
Winner	32 sec
Second	33 sec
Third	34 sec
Fourth	35 sec



TOTAL TIME is an indication of the TEAM PERFORMANCE
It tells you **HOW** the team is performing but not **WHY!**

Imagine a 3 runners relay Individual Times Analysis

Team	Total Time	1st Runner	2 nd Runner	3rd Runner
Winner	32 sec	11 sec	11 sec	10 sec
Second	33 sec	11 sec	11 sec	11 sec
Third	34 sec	12 sec	12 sec	10 sec
Fourth	35 sec	9 sec	9 sec	17 sec



INDIVIDUAL RUNNER PERFORMANCE explains TEAM PERFORMANCE

**You can only IMPROVE the TEAM PERFORMANCE by
ACTING on the INDIVIDUAL PERFORMANCE**

RHEOLOGICAL AND FINISHED
PRODUCT LABORATORY
TESTING METHODS TELL YOU

HOW

FLOUR WILL FUNCTION

SRC TELLS YOU

WHY



5 key Drivers for understanding SRC

1. « Quantity » does not mean « quality »

One might require a minimum « quantity » but this will never guarantee « quality » (think about bug infested wheat and protein content!)

2. « Quality » is defined by « Performance »

Performance means : does the flour give a 'good' dough and the dough a 'good' final product. The "good" being different for every one.

3. Flour performance depends mainly on flour 3 main polymers

Gluten (Glutenins), starch (damaged), fibers (pentosans)

4. Rheological tools measure the combined effect of the 3 polymers

We speak about polymer « functionality ».

5. Measuring individual polymer functionality helps better understand dough performance.

It is like going from 2D image to 3D image.

Reminder on the wheat flour

3 main polymers actions :

Protein

Starch (Damaged)

Pentosans

Impact on dough properties

	Proteins	Damaged Starch	Pentosans
Water intake	++	+++	++++
Stiffness	++	++	++
Extensibility	-/+	-	--
Elasticity	++		--
Gas retention	++	-	-- (Insoluble) + (Soluble)
Gas production	No effect	+++	
Volume	Depends	++ (if retention good)	+/-
Colour	-	++++	
Stickiness/viscosity	--	++ (Excess)	+/-
Breakage (biscuit)		++	++
Crispiness (final product)	--	-	-
Shelf Life (Bread)		+	+ (Insoluble)

How to measure polymer Functionnality?

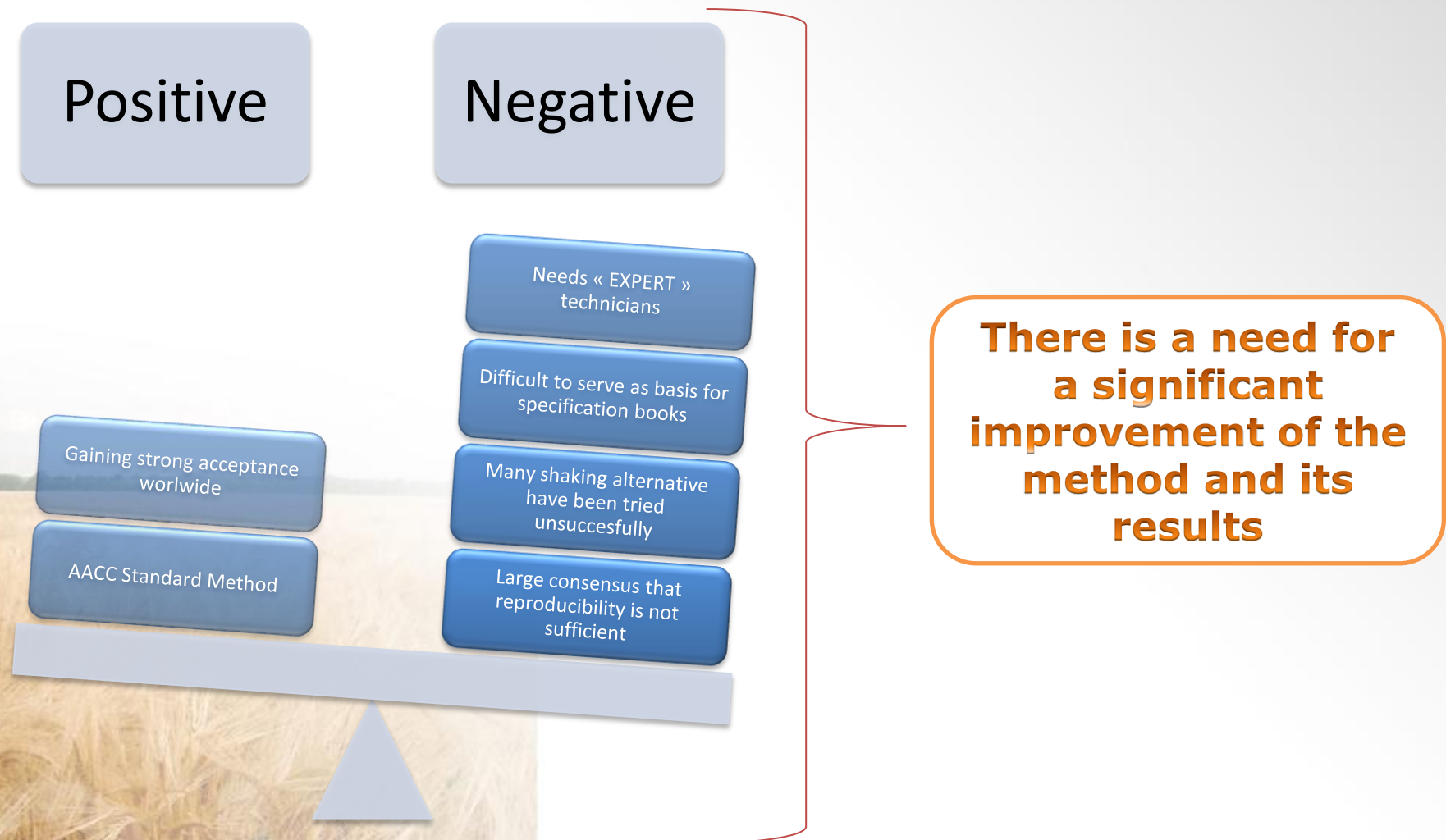


Measuring polymer functionality? a sponge trick!

- Each flour polymer is able to specifically absorb a particular solvent:
 - Sodium Carbonate for Damaged starch
 - Sucrose for Pentosans
 - Lactic Acid for Glutenins
- The principle will be to make flour swell into these solvents.
- Like a sponge, the polymer will absorb its solvent.
- Then we will force the solvent out of the polymer.
- If the polymer has high functionality it will retain a bigger quantity of solvent
 - ***Like when you try to remove water from a sponge, there is always some water « linked » with the sponge.***

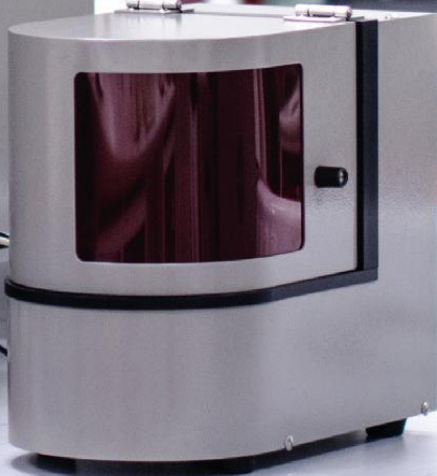


SRC Manual procedure limits the diffusion of the method



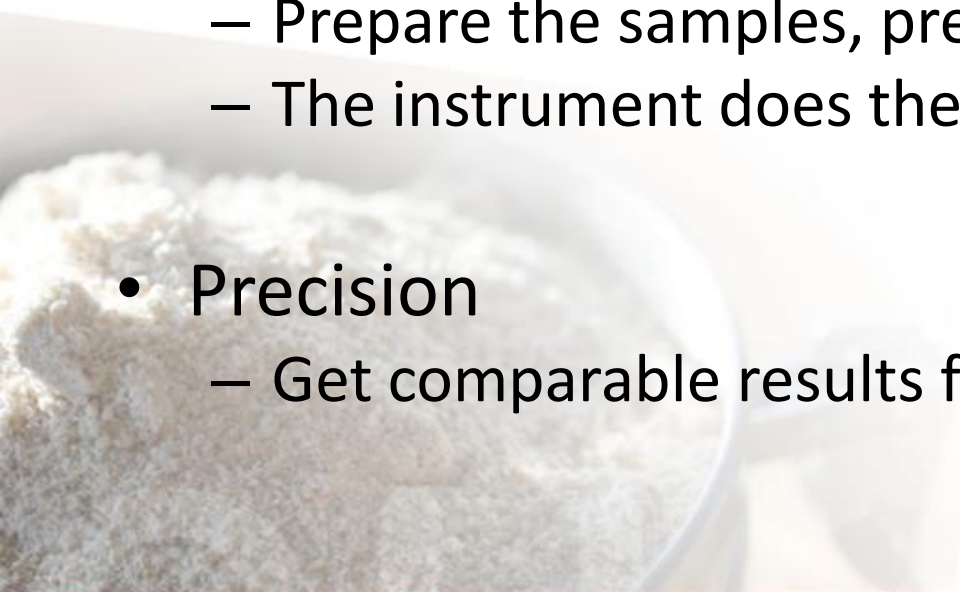
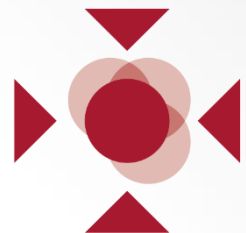
CHOPIN
TECHNOLOGIES

SRC - CHOPIN

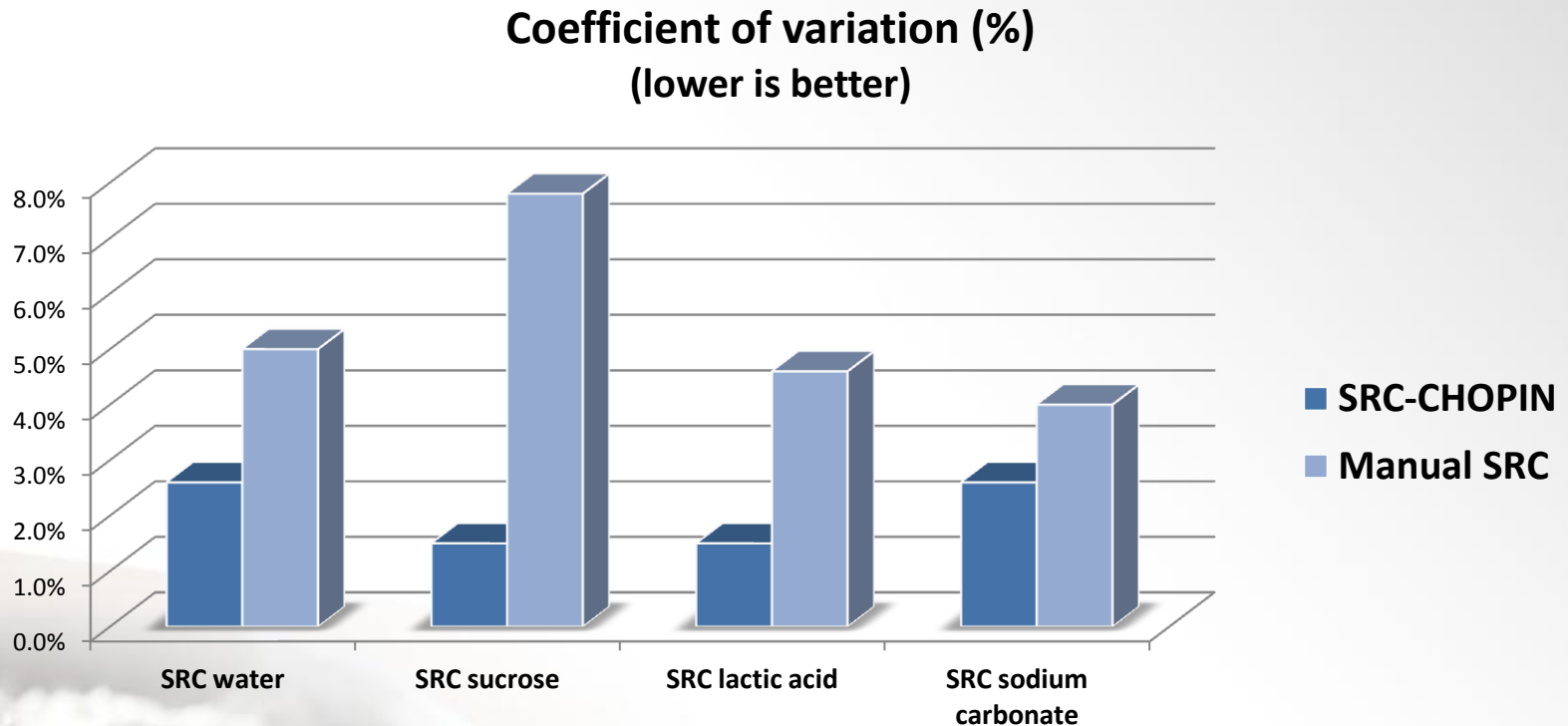


Advantages vs manual method

- Gain in productivity
 - Analyze more samples in a day
 - Reduce operating time by 65%
- Simplicity
 - Prepare the samples, press "start"
 - The instrument does the rest
- Precision
 - Get comparable results from one lab to another

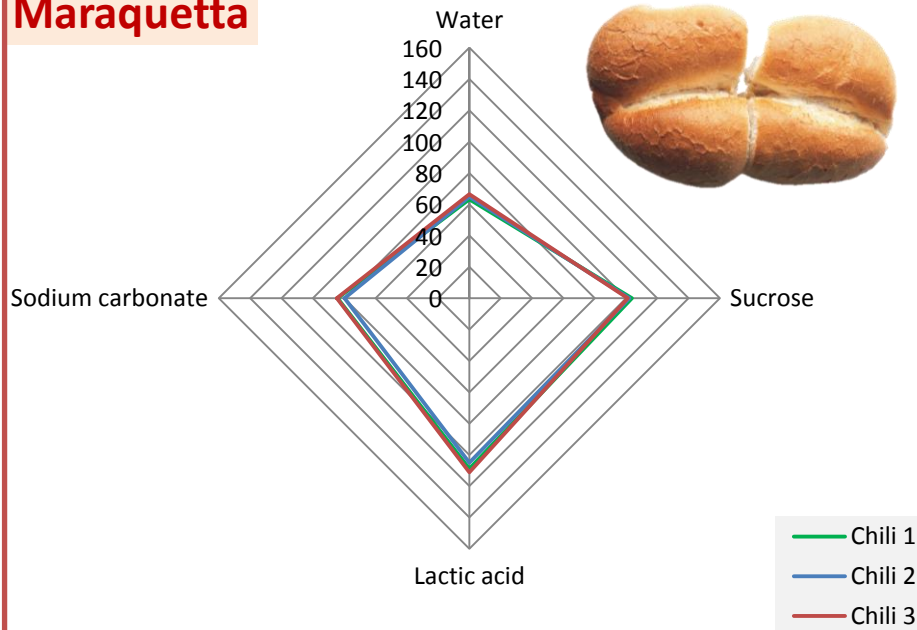


How much more accurate is it?

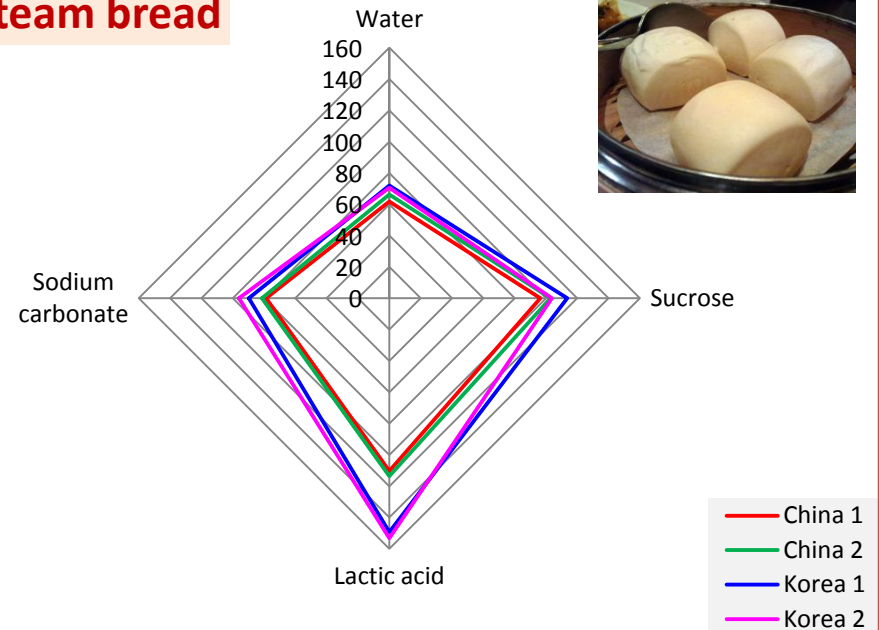


- **SRC-CHOPIN is 3 times more accurate**
- Ring test organized end of 2014 ; results available in 2015

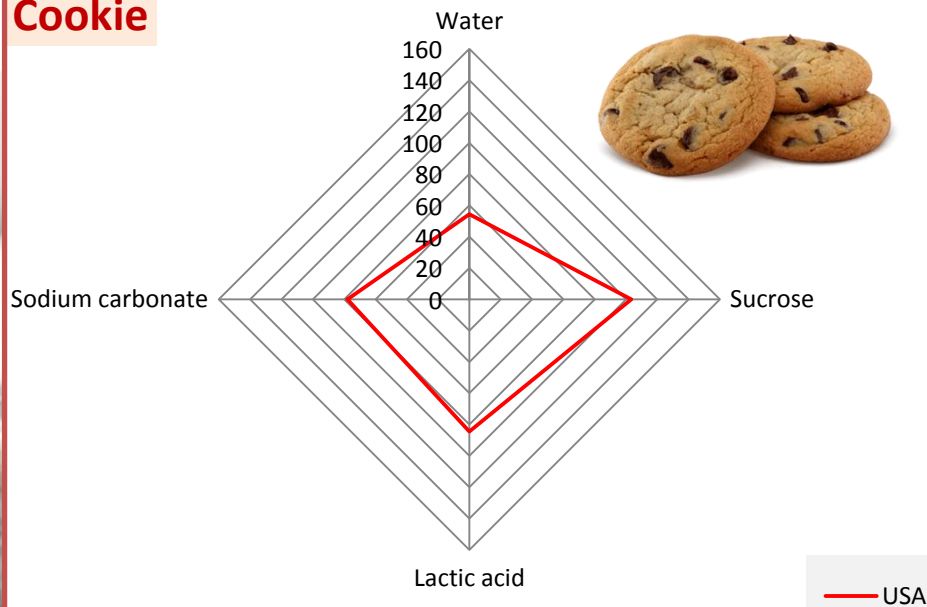
Maraquetta



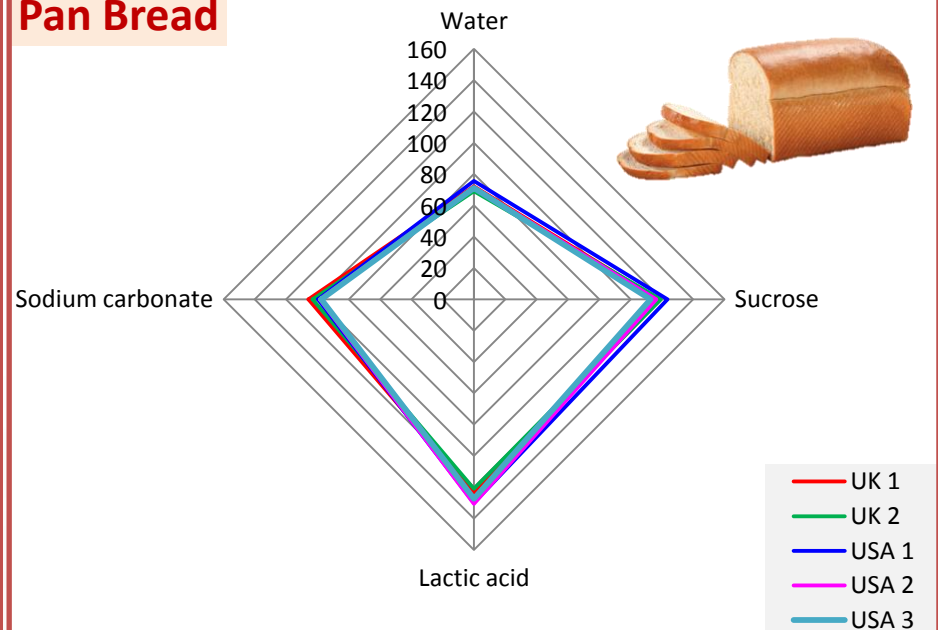
Steam bread



Cookie



Pan Bread



What about the standards?

- Results from SRC-CHOPIN 100% complies with existing AACC 56-11.02 standard
- New AACC official method, including the improved results from SRC-CHOPIN, in 2015



Conclusion

- SRC test measures flour quality and functionality
- SRC is highly beneficial and complementary to quantitative and rheological analyses
- SRC-CHOPIN is the solution for running SRC test easily, efficiently and accurately!



**Thank you
for your attention**

