



# Assessing the impact of self-incompatibility on cocoa trees in Cameroon

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## Objective

Assess the impact of self-compatibility on several agronomical traits of cocoa trees.

In this study, the performances of self-compatible cocoa trees were compared to those of self-incompatible belonging to the same full-sib progenies.

## Material and methods

94 cocoa trees were identified as self-compatible (SC) or self-incompatible (SI) after the assessment of the % of cherelles surviving 14 days after hand-pollination using self-pollen.

These trees belong to nine full sib progenies assessed since 2008 in a trial plot set up in 2005 in the IRAD station of Barombi-kang (Cameroon), which aims at comparing the performances of 26 full-sib progenies.

Female parent	Male parent	Number of trees identified as self-compatible (SC)	Number of trees identified as self-compatible (SC)
UPA 134	SNK 64	1	4
SNK 614	SCA 24	2	2
SNK 625	NA 33	6	13
PA 4	Pound 7	1	1
T 60/887	ICS 89	3	5
SNK 12	PA 150	7	15
T 60/78	T 85/87	4	11
MAN 15/2	T 85/799	1	1
AI/154	T 60/78	3	14
<b>TOTAL</b>		<b>28</b>	<b>66</b>

Genetic origin of the assessed trees

X X X  
 X X X  
 X X X  
 P1 P2 P3

Spatial design



Each progeny is represented by five rows of trees scattered in the plot, in such a way that each assessed cocoa tree (X) is surrounded by two trees issued from the same cross (X) and six trees issued from two other crosses (X and X)

## Results

Trait	Effect of genetic origin (p)	Effect of self-compatibility (p)	S.C trees mean value	S.I trees mean value
Yield earliness (number of pods yielded during 2008-10 period)	0.94	0.3	35	27
<b>Yield (number of pods yielded during 2010-14 period)</b>	<b>0.033</b>	<b>0.017</b>	<b>121.5</b>	<b>100.5</b>
Vigor (trunk circumference) (cm)	0,2	0,7	38.5	37.8
Yield efficiency (yield/vigor) (pods/cm)	0.1	0.36	3,1	2,7
Susceptibility to BP disease (% rotten pods during the 2010-16 period)	0,47	0,42	39.6	38.7
Mean weight of 1 dried bean (g)	0.91	0.91	1,3	1,29
Mean number of beans per pod	<b>0,01</b>	0,76	36.5	36.2
Mean % of flat beans per pod	0.92	0.36	2.6	1.9

Results from a two factor ANOVA

The SC trees were found to yield a significantly higher number of pods than the SI trees.

This finding indicates that self-compatibility can have a positive effect on yield, even in cocoa plots planted with trees from various genetic origins.

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