



Coffee Varieties with Coffee Leaf Rust (CLR) Resistance

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Coffee Leaf Rust (CLR)

Hemileia vastatrix



ICR Archive (2014)



Reunion 2012

Spread of Coffee Leaf Rust (CLR)

1869	Ceylon (now Sri Lanka)
1913	Kenya
1970	Brazil
1976	Nicaragua
1980	El Salvador
1981	Guatemala
1983	Colombia
1986	Jamaica



20 ??

Hawaii

Coffee Leaf Rust (CLR)

Hemileia vastatrix

- Timely Application of Fungicides
- Breeding for Varieties with Coffee Leaf Rust (CLR) Resistance
 - Sustainable approach -
for environment and economics

Coffee with Rust Resistance ?

Coffee Variety	Rust Resistance?	Cupping Quality
Arabica (<i>Coffea arabica</i>)	No	High
Robusta (<i>Coffea canephora</i>)	Yes	Low

Discovery of rust resistance coffee and research

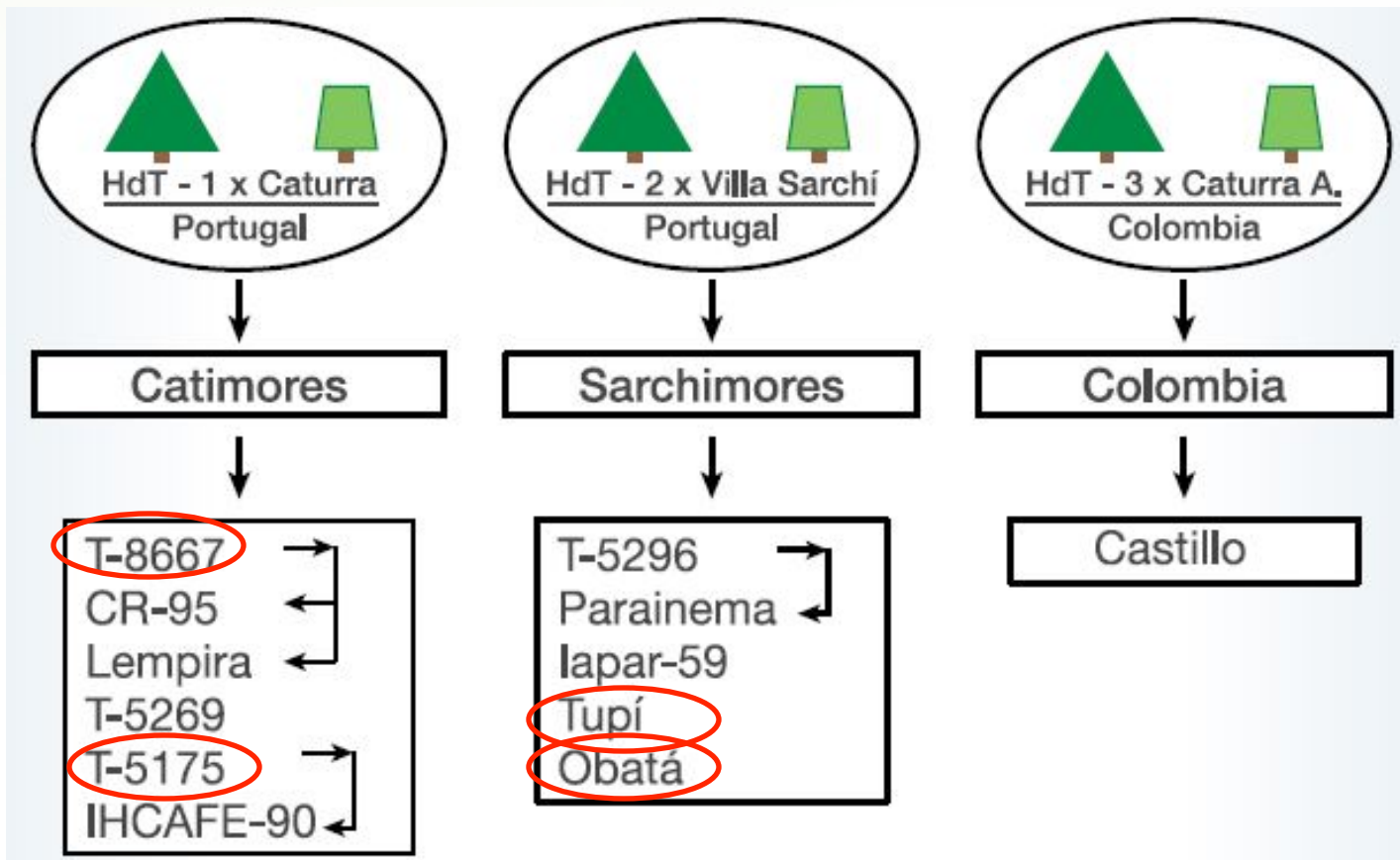
- Hibrido de Timor (HDT) was discovered at ex- Portuguese Colony of Timor (now Timor Lorosae) in 1950s

HDT= natural hybrid of Arabica x Canephora



- Coffee Rust Research Center(CIFC), Portugal
 - ❖ Characterization of more than 45 rust races.
 - ❖ Distribution of CLR resistant hybrids to many countries
 - ❖ Testing of coffee for many races of CLR

Rust resistant varieties derived from Hybrido de Timor (HDT)



http://www.anacafe.org/glifos/index.php/Varietades_resistentes_a_roya

Collection of rust resistant cultivars imported

<i>Cultivar</i>	<i>Breeding Line</i>	<i>Source</i>	<i>Year</i>	<i>Rust</i>	<i>Progeny</i>	<i>Importer</i>
Icatu	?	Brazil	1992	R	Yes	Pioneer Mill Co
Catimor	T-5175	Promecafe, Dr. Osorto, Guatemala	1991	R	Yes	HARC
Catimor	T-8667	Promecafe, Dr. Osorto, Guatemala	1991	R	Yes	HARC
Icatu vermelho	2941	Dr. H. Medina, IAC, Campinas, Brazil	1997	R, horizontal	No	Dan Kuhn CTHAR
Icatu vermelho	LMC4782	Dr. H. Medina, IAC, Campinas, Brazil	1997	R, horizontal	No	Dan Kuhn CTHAR
Catimor	5175	Dr. H. Medina, IAC, Campinas, Brazil	1997	R	No	Dan Kuhn CTHAR
Obata	LMC1669-20	Dr. H. Medina, IAC, Campinas, Brazil	1997	R	No	Dan Kuhn CTHAR
TUPI	LMC1669-33	Dr. H. Medina, IAC, Campinas, Brazil	1997	R	No	Dan Kuhn CTHAR

Hybrids of Catimor x Hawaiian Cultivars

Catimors: T8776, T5175

Hawaiian Cultivars:



X



1999



Typica

Catuai

Mokka

F1 Hybrids



2014

Crosses made for rust resistance

HI cultivars Catimors	Catuai	Typica	Mokka	Other arabica	Total
T-5175	10 ^a (94) ^b	8 (56)	18(377)	7 (58)	
T-8667	18 (133)	2 (12)	10 (104)	11 (77)	
	28	10	28	18	84 (911)

a: F1 Cross #

b: F1 Tree #

Selection of rust resistant varieties with cupping quality

HARC/ HI

Select 20 F1 hybrids
of Catimor x Hawaiian Varieties



Harvest cherries for cupping

Cupping

Make self pollination of top
trees



Plant seeds (F2) of rust resistance
and Good cupping

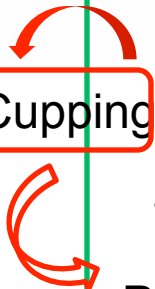
Select top F2 trees
for propagation

CIFC (Coffee Rust Research Center) Portugal

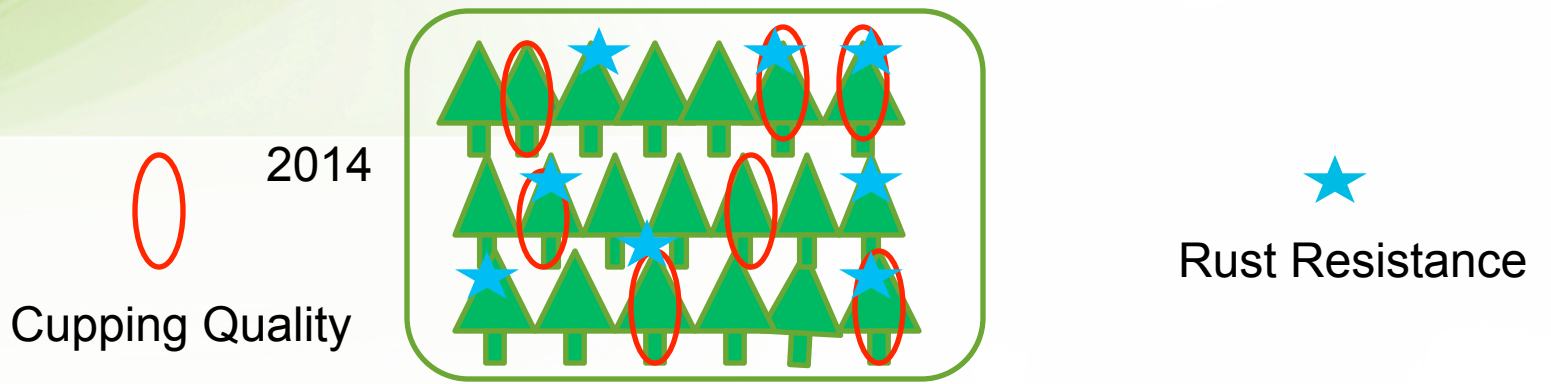
Dr. Varzea, IITC, Portugal
Bioassay for rust resistance

Y1
Test results against 10+ rust
races

Y2
Test results against 10+
rust races



F1: Catimor x HI arabica

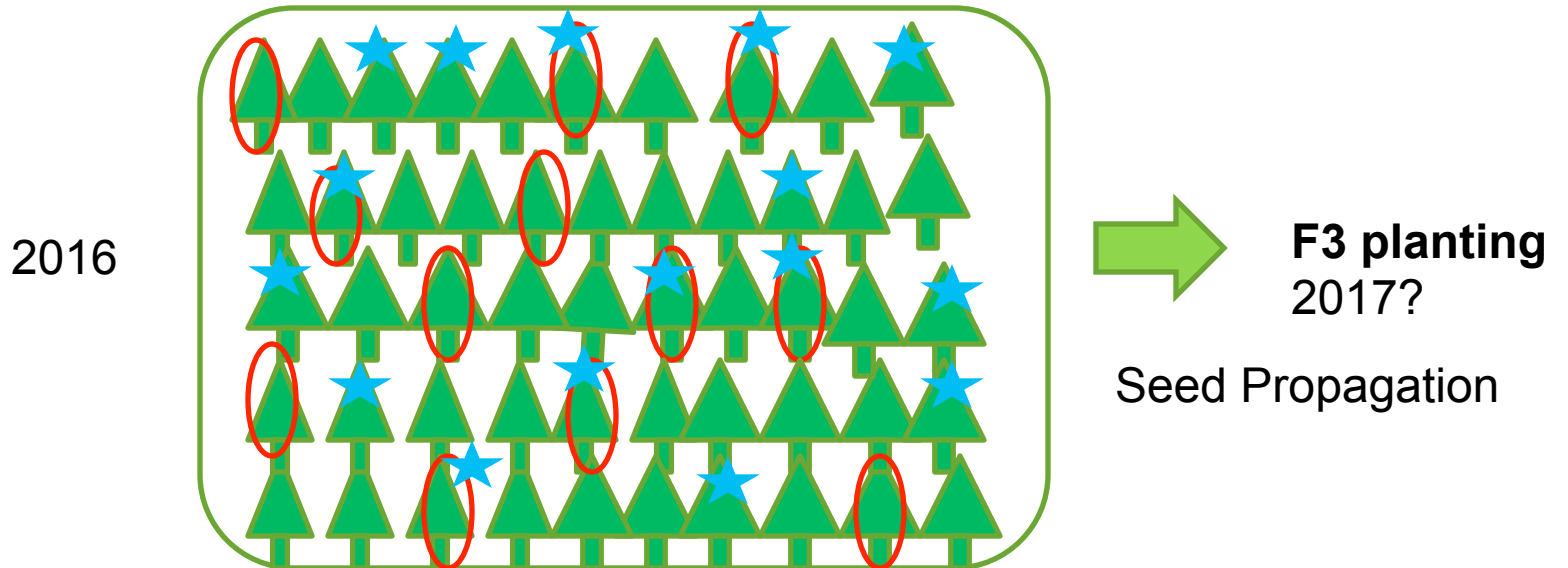


Select trees with cupping quality and rust resistance



F2

Self Pollination to obtain F2



What we can do now

- If you visit coffee growing regions/ fields, wash your clothes, hats, shoes before going coffee fields in Hawaii !
 - Import green coffee under HI regulation !
- Do not import/ plant rust resistant varieties from outside of HI. If you do, separate them from your arabica varieties!

HARC Coffee Research Team and Collaborators

HARC

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