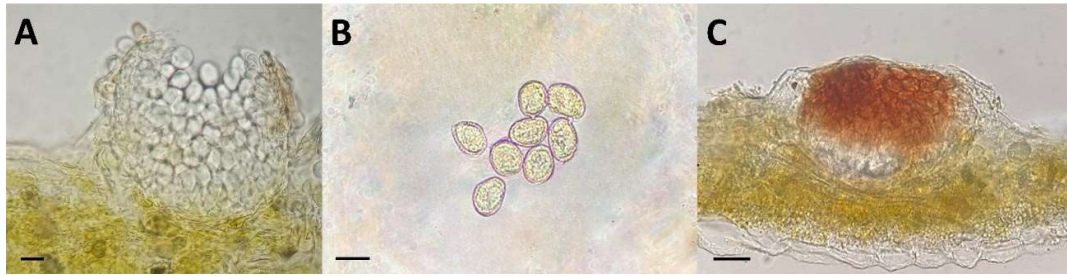
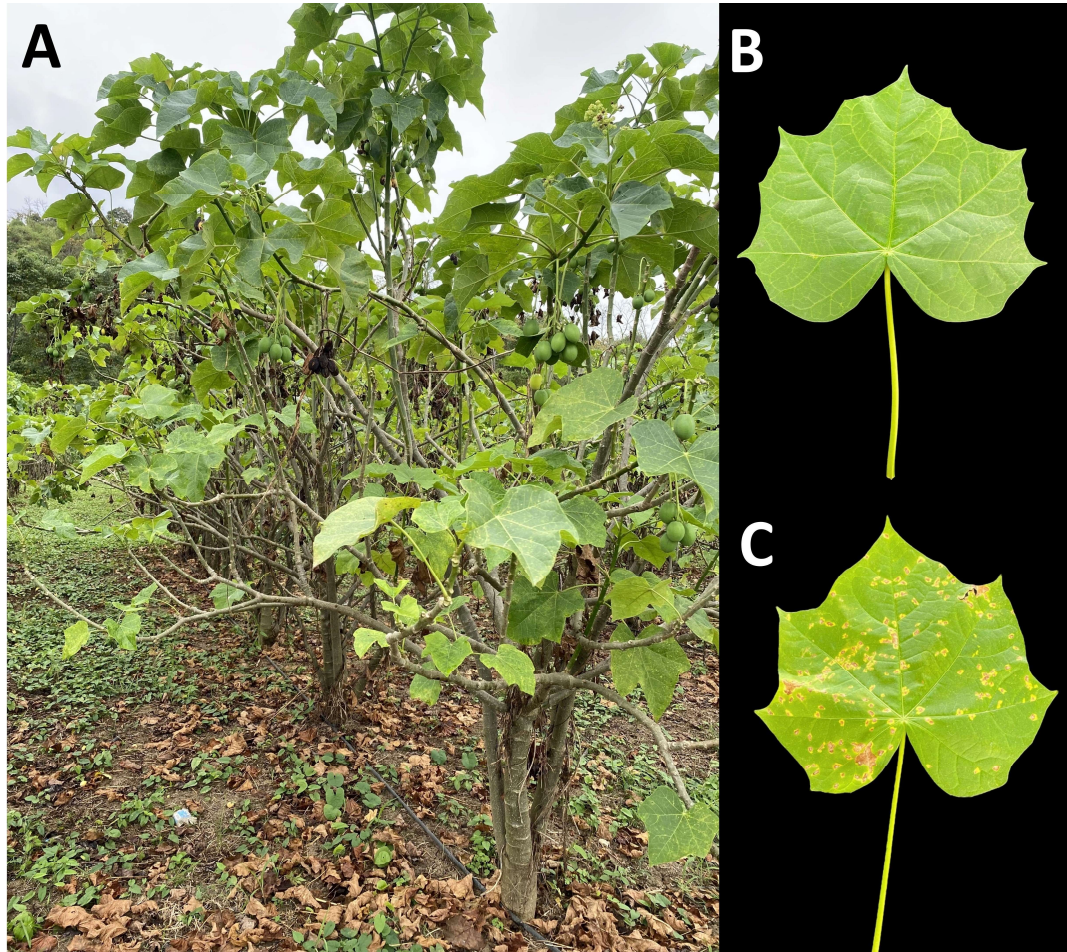


Supplementary Figure S1. Climatic conditions (temperature, precipitation, and dew point) from the La Teodomira experimental campus where was established the experiment of the six physical nuts genotypes, between October-2021 and September-2022. Santa Ana, Manabí, Ecuador.



Supplementary Figure S2. Uredia (A), uredospores (B), telia, and teliospores (C) of *Phakopsora* sp. observed on physical nut (*Jatropha curcas*) leaves of hybrids and promisors genotypes established under field conditions in Lodana, Manabí, Ecuador.



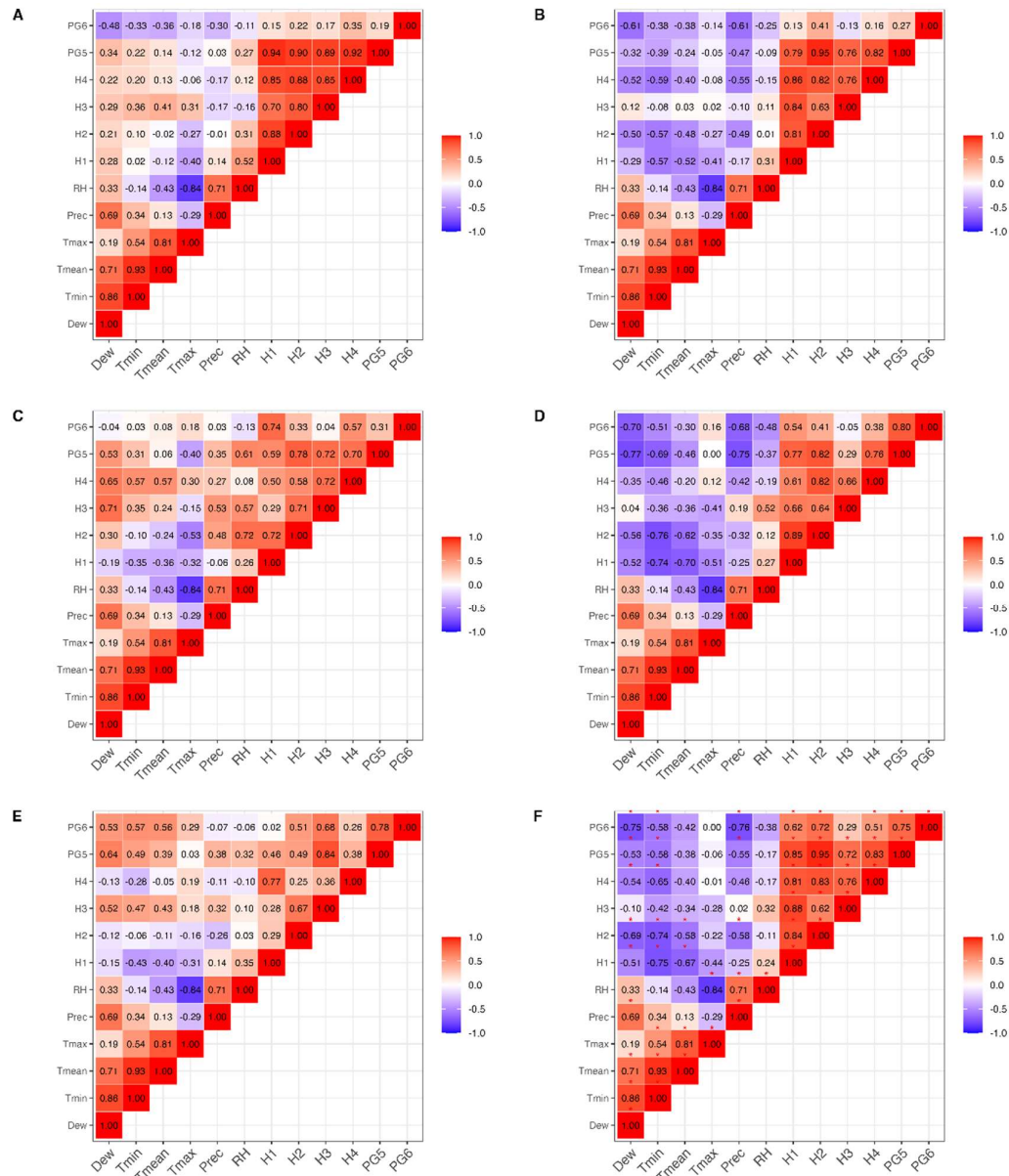
Supplementary Figure S3. Rust symptoms on physical nut (*Jatropha curcas*) leaves of hybrids (JAT 001100, JAT 001103, JAT 001164, and JAT 001165) and promisors genotypes (CP-041 and CP-052) established under field conditions in Lodana, Manabí, Ecuador. A) adult plants. B-C) asymptomatic (B) and symptomatic (C) leaves.

Supplementary Table S1. Productive and oil characteristics of the physic nut hybrids and genotypes promising evaluated in our research. Characteristics of hybrids were provided by JatroSolutions, and those of promising genotypes by Mejía et al. (2015).

Descriptors	Hybrids				Genotypes promising	
	JAT 001100	JAT 001103	JAT 001164	JAT 001165	CP-041	CP-052
Country of origin	India	India	India	India	Ecuador	Ecuador
Weight of 100 fruits	700	750	700	750	315	300
Fruit yield (t ha ⁻¹ per year)	4.5 - 6.0	3.6 - 4.9	2.0 - 2.5	2.7 - 3.5	1.5	1.4
Oil content	37	37	38	38	53	38

Supplementary Table S2. Physical characteristics (soil type and pH: hydrogen ionic potential) and chemical (OM: organic matter, N: Nitrogen, P: Phosphorus, K, Potassium, Ca: Calcium, Mg: Magnesium, H: Hydrogen, Mn: Manganese, Co: Cobalt, and Z: Zinc) from the La Teodomira experimental campus where was established the experiment of the six physical nuts genotypes. Santa Ana, Manabi, Ecuador.

Soil	pH	OM	N	P	K	Ca	Mg	H	Mn	Co	Z
		%	mg kg ⁻¹		cmol kg ⁻¹		mg kg ⁻¹				
Clay loam	7.5	0.90	0.04	17.4	1.06	15.25	5.27	26.7	5.55	2.19	<2.60



Supplementary Figure S4. Correlation heat maps between meteorological variables and rust severity (%) (A, C, and E) and number of lesions cm² (B, D, and F) on physical nut (*Jatropha curcas*) leaves of the lower (A and B), middle (C and D), and upper (E and F) canopy in hybrids (JAT 001100, JAT 001103, JAT 001164, and JAT 001165) and promising genotypes (CP-041 and CP-052) established under field conditions in Lodana, Manabí, Ecuador. The color scale ranges from -1 to 1, indicating negative (blue) to positive (red) correlations. A darker hue represents a stronger magnitude of correlation, with 1 or -1 being the strongest positive or negative correlation, respectively. White indicates no correlation.