

(6a) Fusarium Research Option A: Improved quarantine and surveillance measures to avoid spread of Fusarium TR4	
Countries	29 (11 African countries, 10 Asian countries, 8 LAC countries) where Fusarium is either already present or will very likely spread in the near future if no major intervention occurs.
Cultivar groups considered	6 AAA Cavendish, other AAA, EAH AAA, AAB Plantain, other AAB, and ABB in all African, Asian and LAC countries included
Current and likely future spread	Although Fusarium TR4 is already present in some countries, we assume that the production area currently affected is zero percent in all countries since there are no reliable figures about the actual spread. The estimation of the likely future spread of the disease was made separately for each cultivar group and country by applying a 'Foc scale' that we developed. We assumed that 100% of the banana production area in the included countries is susceptible to Foc.
Benefits: - Increase in yield - Reduction in postharvest losses	100% (Yield loss avoided through containment and reduced spread) No effect
Production and other costs	Production costs: no effect Costs of establishing quarantine system: \$50/ha in year 5 for countries with high importance to banana and in year 10 for countries with low importance to banana Costs of maintaining quarantine system: \$5/ha/year prior to Foc arrival, \$10/ha/year after Foc arrival
Adoption ceiling	Given that quarantine and surveillance measures are executed at the national level, we assumed that all farmers "adopt" or benefit from the technology once the country implements the quarantine scheme. This translates into an adoption ceiling of 100% of the (future) area affected by Fusarium across all countries. This translates into 2-51% of the total national production area .
Research period	5 years
Technology release	The technology will be available in 8 years in all included countries (5 years of research and 3 more years until technology is released to farmers)
Time from first adoption until estimated adoption ceiling will be reached	10 years
Probability of success (up-take of technology)	80%
R&D costs	US\$16.24 million
Additional country-level costs	US\$16.24 million (matched 1:1 with R&D costs)
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Country	Production Area ('000 ha)	Area threatened by/susceptible to Foc (% of production area)	Current estimated spread of Foc (% of production area)	Spread of Foc in 25 years (% of threatened area)	Adoption Ceiling (% of area affected in 25 years)	Adoption Ceiling (% of production area) (At _{max})	Years to First Adoption (t ₀)	Years to reach maximum adoption (At _{max})	Yield Increase (%)	Reduction in Post-harvest Losses (%)	Change in Input Costs (%)	Probability of Success (up-take of technology) (%)
Brazil	498.45	100	0	2.24	100	2.24	8	10	100	0	0	80
Burundi	371.05	100	0	14.69	100	14.69	8	10	100	0	0	80
Cameroon	184.41	100	0	14.80	100	14.80	8	10	100	0	0	80
China	398.19	100	0	50.81	100	50.81	8	10	100	0	0	80
Colombia	461.43	100	0	3.77	100	3.77	8	10	100	0	0	80
Congo, D.R.	391.62	100	0	15.46	100	15.46	8	10	100	0	0	80
Costa Rica	61.22	100	0	3.77	100	3.77	8	10	100	0	0	80
Côte d'Ivoire	411.19	100	0	11.94	100	11.94	8	10	100	0	0	80
Ecuador	266.88	100	0	3.77	100	3.77	8	10	100	0	0	80
Ghana	191.75	100	0	12.79	100	12.79	8	10	100	0	0	80
Guatemala	50.55	100	0	3.93	100	3.93	8	10	100	0	0	80
India	1,858.28	100	0	7.09	100	7.09	8	10	100	0	0	80
Indonesia	320.03	100	0	28.63	100	28.63	8	10	100	0	0	80
Kenya	80.49	100	0	7.82	100	7.82	8	10	100	0	0	80
Malaysia	56.82	100	0	14.92	100	14.92	8	10	100	0	0	80
Mexico	86.31	100	0	2.23	100	2.23	8	10	100	0	0	80
Mozambique	27.86	100	0	38.41	100	38.41	8	10	100	0	0	80
Myanmar	65.43	100	0	37.72	100	37.72	8	10	100	0	0	80
Nicaragua	14.46	100	0	1.00	100	1.00	8	10	100	0	0	80
Nigeria	455.55	100	0	3.77	100	3.77	8	10	100	0	0	80
Pakistan	31.98	100	0	50.45	100	50.45	8	10	100	0	0	80
PNG	45.18	100	0	21.17	100	21.17	8	10	100	0	0	80
Peru	120.83	100	0	2.24	100	2.24	8	10	100	0	0	80
Philippines	391.88	100	0	50.80	100	50.80	8	10	100	0	0	80
Rwanda	343.64	100	0	4.61	100	4.61	8	10	100	0	0	80
Tanzania	537.68	100	0	21.49	100	21.49	8	10	100	0	0	80
Thailand	132.08	100	0	38.01	100	38.01	8	10	100	0	0	80
Uganda	1,866.25	100	0	3.77	100	3.77	8	10	100	0	0	80
Vietnam	102.17	100	0	50.77	100	50.77	8	10	100	0	0	80

Source: Strategic Assessment of Banana Research Priorities report