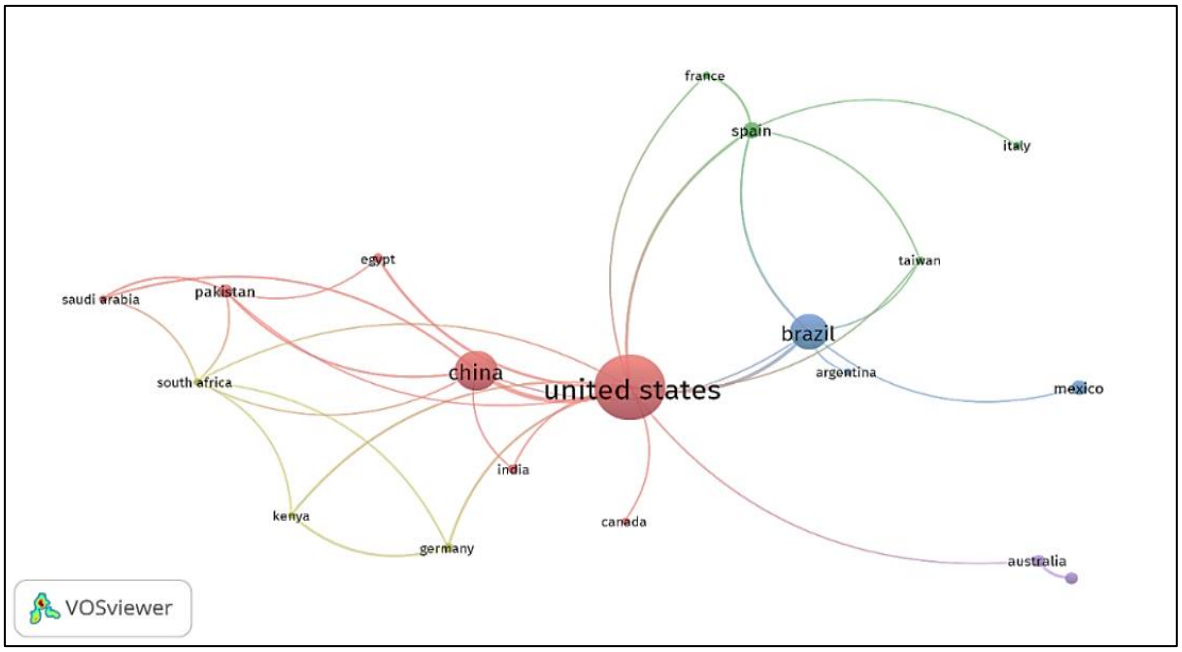
Supplementary Material 1

The literature search is based on the consultation of the Scopus database based on an extensive systematic literature review and meta-analysis of the topic discussed. The search strategy was based on three steps as follows:

1. The following terms and expressions were used in the title search: TITLE (*Huanglongbing* OR HLB OR "yellow dragon").
2. The search was applied by keywords and *abstract*: TITLE-ABS-KEY (*economic* OR *impact* OR *prospective* OR *amazon*).
3. The third step was limited to the period 2010–2023, and no linguistic limitations were applied.

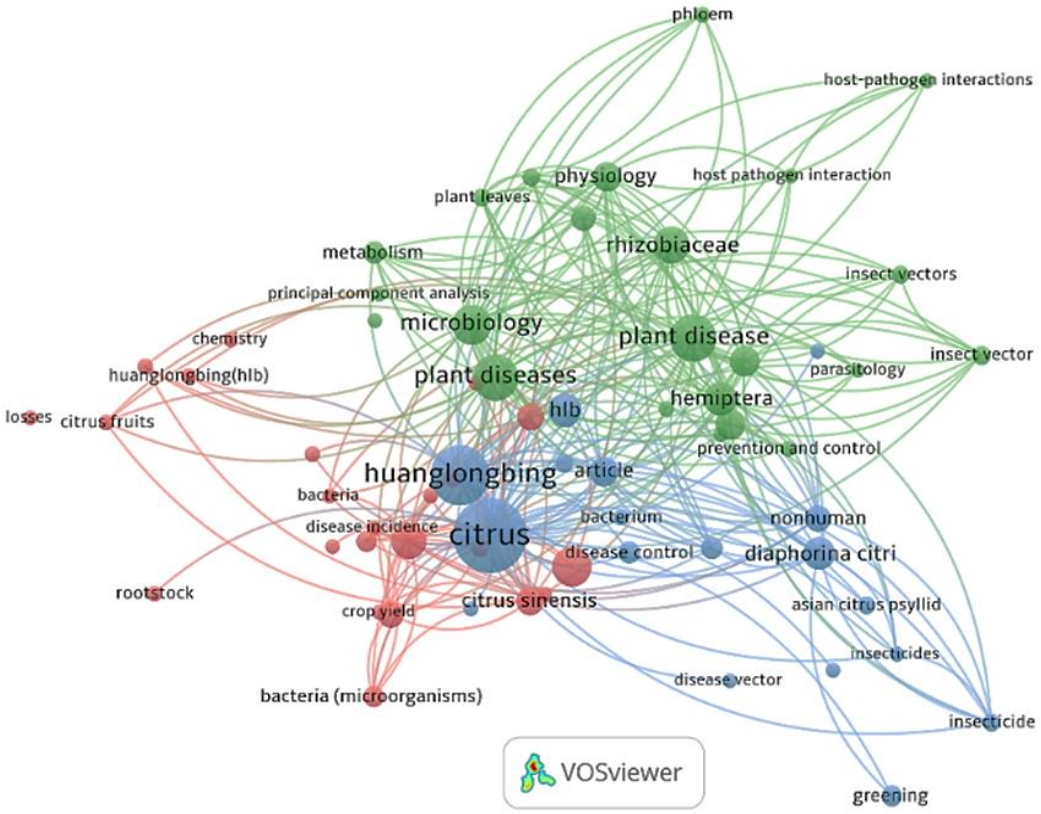
After refining the search query, 100 most cited publications were analyzed to determine if they were relevant to the searched topic.

Thirty-four countries contributed to the scientific research on *Huanglonbing*, it is observed that the authors from the United States of America (n = 35) were the most productive, followed by China (n =16), Brazil (n = 13) and Spain (n =10). MS1-Figure 1 is a network visualization map of research collaboration between countries (n = 34) with a minimum contribution of five articles. As shown by the thickness of the connecting line and the size of the nodes, the United States of America is the country with the most collaboration worldwide. It is noteworthy that both the United States of America, China and Brazil are large citrus producing countries and seriously affected by *Huanglongbing* disease.



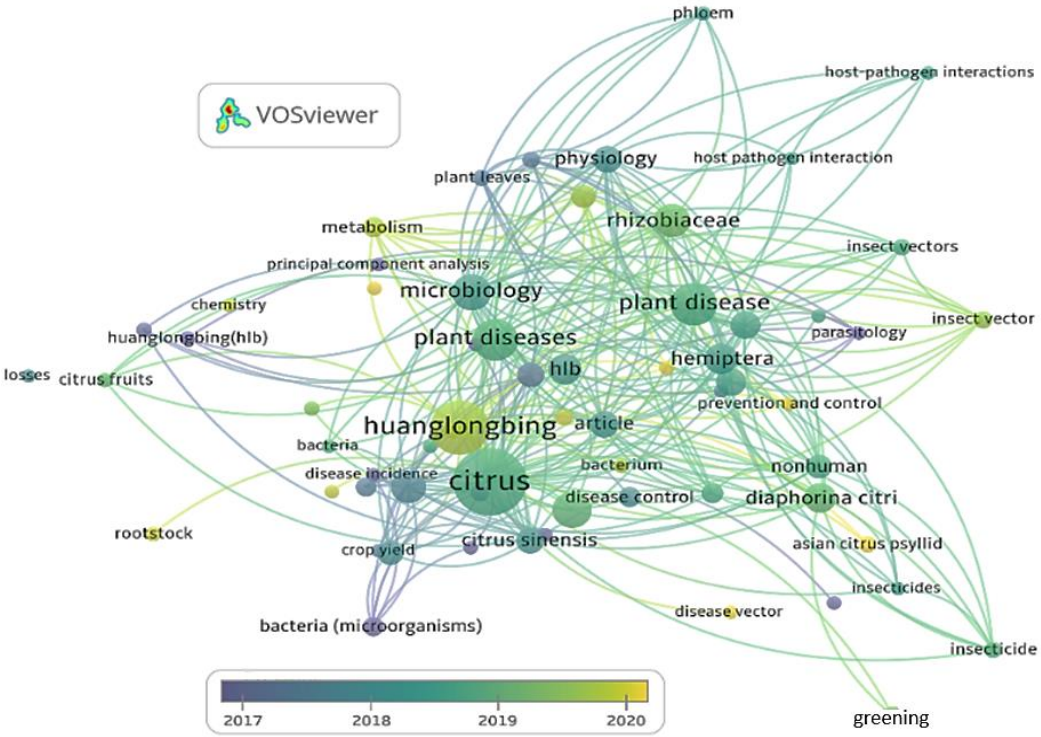
MS1-Figure 1. Research collaboration visualization map by country.

The co-occurrence network evaluates the number of articles in which the terms (keywords) appear simultaneously in titles or summaries in order to identify lines of research studied. As shown in MS1-Figure 2, 64 terms were detected (with minimum occurrences of a term in titles and abstracts greater than five) and were classified into three clusters. The most frequent terms on the map include those related to (a) the links of *Huanglongbing* and citrus (red), (b) *Huanglongbing* and the insect vector (green), and finally, (c) *Huanglongbing* and disease control (blue).



MS1-Figure 2. Map of clusters based on the analysis of the terms that appear in the titles or summaries.

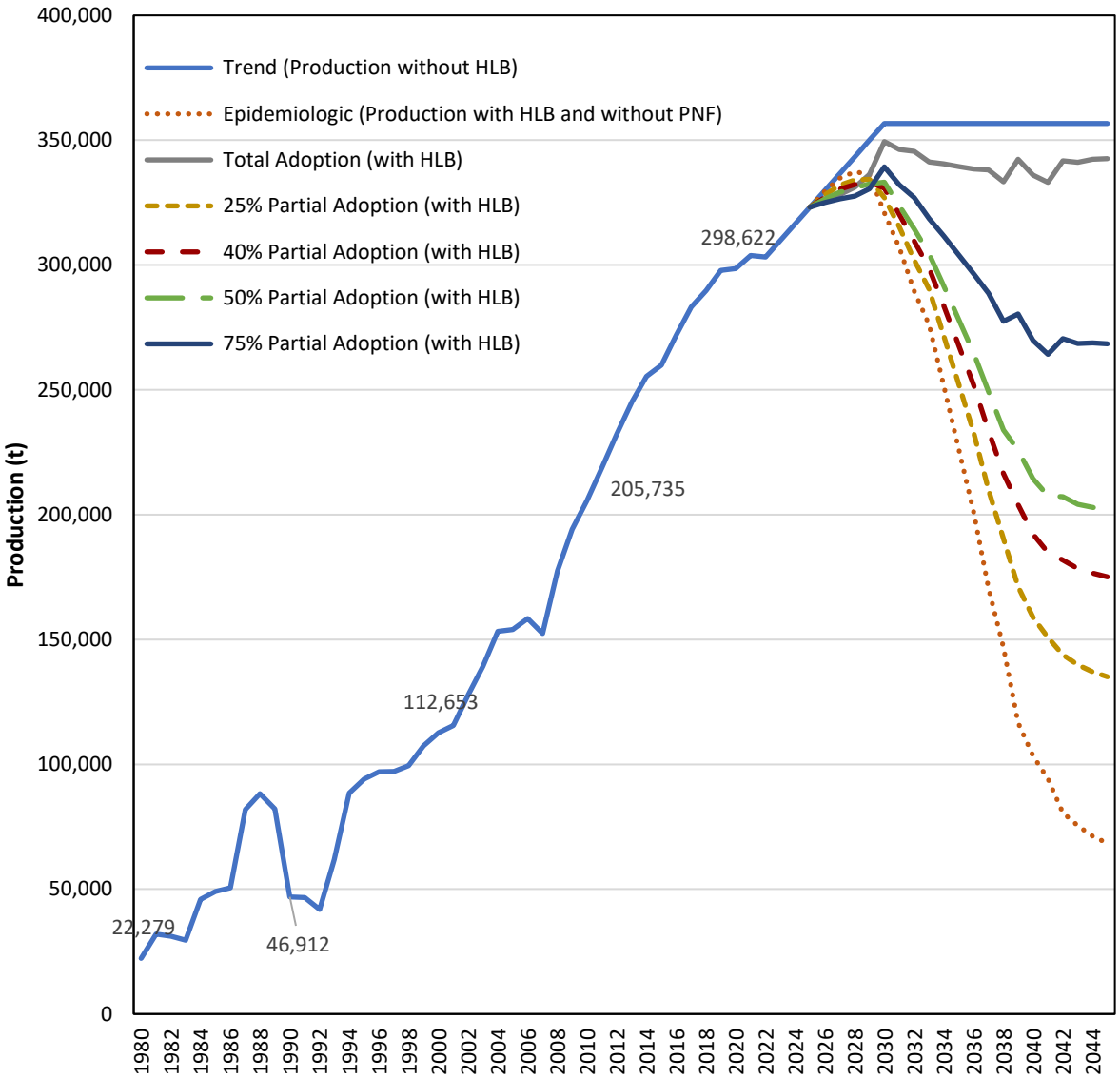
MS1-Figure 3 shows each term based on its average frequency in all retrieved publications. The yellow color corresponds to the terms that appeared most recently, while the blue signifies the earliest appearances. Until 2018, the field focused on the links between "*Huanglongbing*, parasitology, and microorganisms." The research on "prevention and control" is more recent, emerging after 2018.



MS1-Figure 3. Network visualization map of the analysis of terms in titles according to frequency of appearance.

Supplementary Material 2

The simulation considers that due to the entry of the HLB disease into the Central Jungle, policy and growers choose to keep production stable with reference to the year 2030, due to the damage and higher costs they must face due to the disease, which is shown in MS2-Figure 1 and Table MS1, even if production is kept stable by 2030, in the government's view, the benefit/cost (B/C) indicators of all scenarios are greater than the TSD of 8%, so the public intervention would be equally beneficial.



MS2-Figure 1. Production of oranges (t, 2026–2045) in Junin. In the trend scenario (without HLB), epidemiological scenario (with HLB), total adoption scenario (with HLB and PNF), and various scenarios with HLB and adoption partial of the PNF by the producers (at 25%, 40%, 50% and 75% of the total), keeping production constant until 2030.

MS2-Table 1

Cost-benefit analysis (CBA) of Junín oranges. constant production scenarios 2030, loss of wages and unrealized profits due to production reduction by the HLB, simulation at high costs (thousands of S/ and thousands of US$), accumulated 2026–2045 and NPV to 2026

BENEFITS AND COSTS		Epidemiologic (S/)	25% (S/)	40% (S/)	50% (S/)	75% (S/)	Total adoption (S/)	Total adoption (US$) (*)
I. Benefits								
A. Production value		1 168 680.80	1 280 486.90	1 347 570.50	1 392 293.00	1 504.099.00	1 653 344.70	449 278.44
B. Production loss		53 816.50	442 010.40	374 926.80	330 204.40	218 398.30	69 152.70	18 791.48
C. Employment reduction		626 623.70	501 331.70	426 156.50	376 039.80	250 747.80	81 385.30	22 115.57
C.1. Production days		215 403.80	172 334.30	146 492.60	129 264.80	86 195.30	27 976.40	7 602.29
C.2. Rest of chain wages		167 565.80	134 061.40	113 958.80	100 557.00	67 052.60	21 763.30	5 913.94
C.3. Unrealized benefit		243 654.00	194 936.00	165705.10	146 217.90	97 499.80	31 645.60	8 599.34
D. Total loss	D = B + C	1 180 440.20	943 342.10	801 083.30	706 244.10	469 146.10	150 537.90	40 907.05
E. Benefit (losses avoided B scenario)			237 098.00	379 356.80	474 196.00	711 294.00	1 029 902.20	279 864.73
II. Costs								
F. Government Peru (Gov.)			25 781.00	26 296.60	27 070.00	29 648.10	32 226.20	8 757.12
G. PROCITRUS			5 024.20	5 024.20	5 024.20	5 024.20	5 024.20	1 365.27
H. Gov. + PROCITRUS	H = F + G		30 805.10	31 320.80	32 094.20	34 672.30	37 250.40	10 122.39
I. Growers (additional costs)			38 483.50	52 197,90	57 434.30	56 852.50	24 513.60	6 661.30
J. Total costs	J = H + I		69 288.60	83 518.60	89 528.50	91 524.70	61 764.00	16 783.68
K. Net costs	J = H + I		69 288.60	83 518.60	89 528.50	91 524.70	61 764.00	16 783.68
L. Net losses avoided (avoided - costs)			167 809.40	295 838.20	384 667.60	619 769.30	968 138.20	263 081.05
M. Ratio B/C Growers			6.16	7.27	8.26	12.51	42.01	
N. Ratio B/C (Gov. PROCITRUS, Growers)			3.42	4.54	5.30	7.77	16.67	
Ñ. Ratio B/C Government			9.20	14.43	17.52	23.99	31.96	
O. Ratio B/C Gov. + PROCITRUS			7.70	12.11	14.78	20.51	27.65	

(*) The conversion from soles (S/) to US dollars (US$) is with reference to the exchange rate of S/ 3.68 per US$ 1 dated 8 Nov. 2023. Source: BCRP (2023).