

Musa acuminata

Tissue culture protocol profile built from the published literature



Family	Musaceae
Common names	dwarf banana; banana; dessert bananas; sweet banana; Cavendish banana; Chinese banana; Edible Banana; Edible banana
Authority	Musa acuminata Colla, 1820
Literature scanned	16 Oct 2026

VERIFIED RECORDS 9 3 from full text	PAPERS 8 2014 - 2023	EVIDENCE Limited 8 protocols graded	GRADE A / B / C 0 / 1 / 7 A = 3+ papers agree
---	--	---	---

Every figure below was extracted from a published sentence by a rule-based reader, re-derived by a second independent reader, and kept only if both agreed. Unclear sentences were skipped, not guessed. Check the cited paper and validate on your own material before relying on any protocol.

Key findings

- No verified data yet for: callus induction, somatic embryogenesis.

Recommended workflow

1	Surface sterilization Evidence C 0.1% HgCl ₂ · 30 s 1 paper. Reported by a single paper; treat as a lead to check, not an established protocol.
2	Shoot regeneration & multiplication Evidence C Medium not stated with 8 mg/L BAP. Median response 100%, 34 days 1 paper. Reported by a single paper; treat as a lead to check, not an established protocol. Hormone balance: cytokinin only.
3	Rooting Evidence C Medium not stated with 0.5 mg/L TDZ 1 paper. Reported by a single paper; treat as a lead to check, not an established protocol. Hormone balance: cytokinin only.
4	Acclimatization Evidence B Not specified substrate; survival 98% 2 papers. Two independent papers report this protocol.

Surface sterilization

#	Grade	Steps	Aseptic	Papers
1	C	0.1% HgCl ₂ · 30 s	-	1
2*	C	1% NaOCl · 10 min	-	1

Rank 1 evidence [3]: "The infected banana fruit tissue portions were cut into small pieces of 1.0 cm², surface sterilized with 0.1% mercuric chloride for 30 s, subsequently washed with sterile distilled water three times and dried over blotting paper."

Shoot regeneration & multiplication

#	Grade	Growth regulators	Explant	Medium	Outcome	Papers
1	C	BAP 8 mg/L	-	-	100%; 34 d	1
2*	C	TDZ 0.25 mg/L	-	-	13.7 shoots/explant	1

Rank 1 evidence [1]: "Treatment of 8 mg/l BAP resulted in the highest shoot percentage up to 100%, the fastest shoots appearance at 34.00 days after planting and the longest shoot reached 2.83 cm with 2.33 shoots counted on half-to-half cutting type."

Rooting

#	Grade	Growth regulators	Explant	Medium	Outcome	Papers
1	C	TDZ 0.5 mg/L	-	-	optimum reported, no figure	1

Rank 1 evidence [2]: "For all intents and purposes, TDZ (0.5 mg L⁻¹) was recorded to be the optimum formulation in terms of the highest simultaneous shoot and root formation that was corroborated further by matrix plot analysis."

Acclimatization

#	Grade	Substrate	Survival	Papers
1	B	Not specified	98% (96-100)	2
2	C	Sand + vermiculite	75%	1
3	C	Soil	100%	1

Rank 1 evidence [4]: "In vitro plants were acclimatized successfully at 30 mg L⁻¹ of copper sulphate with 100% survival."

Rank 1 evidence [5]: "The plantlets were hardened successfully in the greenhouse with 96% survival rate."

Typical growth regulator doses

One value per paper. Range = interquartile range with 3+ papers, otherwise min-max.

Shoot regeneration & multiplication

Regulator	Papers	Typical range, mg/L	Median	Most common
BAP	1	8 - 8 (min-max)	8	8
TDZ	1	0.25 - 0.25 (min-max)	0.25	0.25

Rooting

Regulator	Papers	Typical range, mg/L	Median	Most common
TDZ	1	0.5 - 0.5 (min-max)	0.5	0.5

Points to double-check

- Surface sterilization - close competitor: 1% NaOCl · 10 min (1 paper).
- Shoot regeneration & multiplication - close competitor: medium not stated with 0.25 mg/L TDZ (1 paper).

References for quoted evidence

- [1] Isda M, Elvianis E, Fatonah S (2020) Shoot induction on several cutting types of corm of shrimp banana (*Musa acuminata* Colla) through in vitro culture. Jurnal Biologi UNAND. doi:10.25077/jbioua.8.1.20-28.2020
- [2] Tsama Subrahmanyeswari, Saikat Gantait, Sutanu Sarkar, et al. (2022) Accelerated mono-phasic in vitro mass production of banana propagules and their morpho-cyto-genetic stability assessment. South African Journal of Botany. doi:10.1016/j.sajb.2022.02.011
- [3] Dhakshinamoorthy D, Sundaresan S, Iyadurai A, Subramanian KS, Janavi GJ, Paliyath G, Subr (2020) Hexanal Vapor Induced Resistance against Major Postharvest Pathogens of Banana (*Musa acuminata* L.).. The plant pathology journal. doi:10.5423/ppj.oa.03.2019.0072
- [4] Elyazid DMA, Salama AM, Zanaty AFME, et al. (2021) In Vitro Propagation and Acclimatization of Banana Plants: Antioxidant Enzymes, Chemical Assessments and Genetic Stability of Regenerates as a Response to Copper Sulphate.. Plants (Basel, Switzerland). doi:10.3390/plants10091853
- [5] Hrahsel L, Basu A, Sahoo L, et al. (2014) In vitro propagation and assessment of the genetic fidelity of *Musa acuminata* (AAA) cv. Vaibalhla derived from immature male flowers.. Applied biochemistry and biotechnology. doi:10.1007/s12010-013-0637-9

How to read this report

- Summaries combine different papers. Media, explants, genotypes and culture conditions differ, so trends are associations, not controlled comparisons.
- Grades reflect how many independent papers agree, not how good the science is. Always read the cited sentence and its paper.
- Papers without open-access full text are read from abstracts only, so some protocols will be missing.
- * close competitor: score within 15% of the leader. Doses are in mg/L after unit conversion.