

Abelmoschus esculentus

Tissue culture protocol profile built from the published literature



Family Malvaceae
Common names okra; lady's fingers; lady's-fingers; quiabo; Antsigini gombo; Giambo; Lady's-Finger; Ochro
Authority Abelmoschus esculentus Moench, 1794
Literature scanned 16 Oct 2026

VERIFIED RECORDS**9**

2 from full text

PAPERS**7**

2012 - 2026

EVIDENCE**Limited**

9 protocols graded

GRADE A / B / C**0 / 0 / 9**

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**

5% NaOCl · 10 min

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 0.8 mg/L TDZ. 27 shoots per explant

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 2 mg/L IBA. Median response 79%

1 paper. Reported by a single paper; treat as a lead to check, not an established protocol. Hormone balance: auxin only.

4**Acclimatization****Evidence C**

Soil substrate; survival 100%

1 paper. Reported by a single paper; treat as a lead to check, not an established protocol.

Surface sterilization

#	Grade	Steps	Aseptic	Papers
1	C	5% NaOCl · 10 min	-	1
2*	C	1% NaOCl · 15 min	-	1
3	C	20% commercial bleach · 10 min -> 10% commercial bleach · 10 min	-	1

Rank 1 evidence [3]: "Initially, the seeds were disinfected in a 5% sodium hypochlorite solution for 10 min, then rinsed several times with tap water and once with distilled water."

Shoot regeneration & multiplication

#	Grade	Growth regulators	Explant	Medium	Outcome	Papers
1	C	TDZ 0.8 mg/L	-	-	27 shoots/explant	1
2	C	IBA 1 + NAA 0.5 mg/L	shoot tip	-	optimum reported, no figure	1
3	C	BAP 2 mg/L	-	-	optimum reported, no figure	1
4	C	Kinetin 0.5 mg/L	-	MS	optimum reported, no figure	1

Rank 1 evidence [1]: "Results: The highest number of multiple shoots (27.04 shoots) was obtained with 0.8 mg/L TDZ."

Rooting

#	Grade	Growth regulators	Explant	Medium	Outcome	Papers
1	C	IBA 2 mg/L	-	-	79%	1

Rank 1 evidence [2]: "Healthy and strong roots (79%) were obtained on media containing 2.0 mgL-1 IBA and 100 mgL-1 AC."

Acclimatization

#	Grade	Substrate	Survival	Papers
1	C	Soil	100%	1

Rank 1 evidence [1]: "Regenerated plantlets were successfully transferred to soil, with a 100% survival rate and no differences in morphology or growth characteristics compared to control plants."

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	2 - 2 (min-max)	2	2
IBA	1	1 - 1 (min-max)	1	1
Kinetin	1	0.5 - 0.5 (min-max)	0.5	0.5
NAA	1	0.5 - 0.5 (min-max)	0.5	0.5
TDZ	1	0.8 - 0.8 (min-max)	0.8	0.8

Rooting

Regulator	Papers	Typical range, mg/L	Median	Most common
IBA	1	2 - 2 (min-max)	2	2

Points to double-check

- Surface sterilization - close competitor: 1% NaOCl · 15 min (1 paper).

References for quoted evidence

- [1] Melvin A. Daniel, Soosaimanickam Maria Packiam, Veeramuthu Duraipandiyan (2023) In vitro Regeneration of Multiple Shoots in Abelmoschus esculentus (L.) Moench (Okra) via Apical Shoot Meristem Culture. Current Biotechnology. doi:10.2174/0122115501261522231013100629
- [2] Hafiz Muhammad Rizwan, Muhammad Irshad, Bizhu He, et al. (2020) Role of reduced nitrogen for induction of embryogenic callus induction and regeneration of plantlets in Abelmoschus esculentus L.. South African Journal of Botany. doi:10.1016/j.sajb.2020.01.016
- [3] Arefi S, Khara J (2025) Protective role of Salicylic acid and sodium nitroprusside foliar application against copper stress in okra (Abelmoschus esculentus).. Scientific reports. doi:10.1038/s41598-025-17608-8

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.