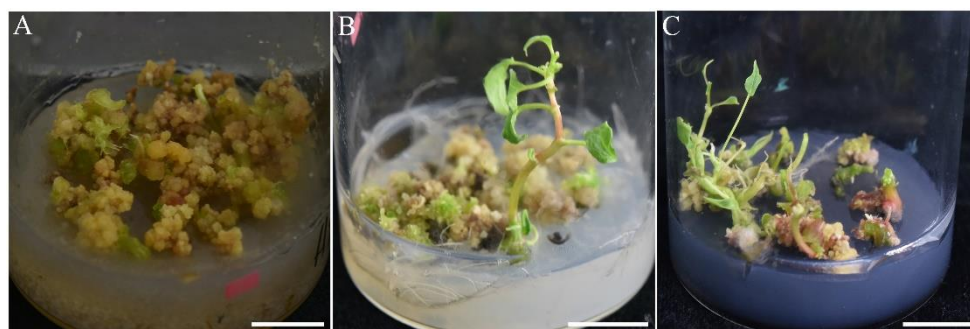


Supplementary :

Figure S1. Proliferation of embryogenic callus, germination of somatic embryos and plant regeneration of *Fagopyrum esculentum*.



(A) Proliferation of embryogenic callus and germination of somatic embryos on MS basal medium containing 1.0 mg l⁻¹ 6-BA and 0.5 mg l⁻¹ TDZ with 15 % potato puree; (B) somatic embryo-derived plant on MS basal medium; (C) somatic embryo-derived plant on MS basal medium containing 0.5 mg l⁻¹ active carbon. Scale bar: (A, B, C) 1 cm.

Table S1. Callus induction frequencies of cotyledon and hypocotyl explants on the initial cultural media.

Media	Total number of explants cultured		Frequency of explants with calli produced (%)	
	Cotyledon	hypocotyl	Cotyledon	hypocotyl
MS	60	70	23.33±0.38 fg	8.57±0.22 h
MS + 0.5 mg l ⁻¹ 2,4-D + 0.5 mg l ⁻¹ 6-BA	48	56	77.08±0.32 d	39.29±0.25 d
MS + 0.5 mg l ⁻¹ 2,4-D + 1.0 mg l ⁻¹ 6-BA	54	63	79.63±0.22 cd	38.10±0.29 d
MS + 0.5 mg l ⁻¹ 2,4-D + 1.5 mg l ⁻¹ 6-BA	54	70	85.19±0.26 bcd	38.57±0.21 d
MS + 0.5 mg l ⁻¹ 2,4-D + 0.5 mg l ⁻¹ KT	60	63	21.67±0.34 g	14.29±0.29 gh
MS + 0.5 mg l ⁻¹ 2,4-D + 1.0 mg l ⁻¹ KT	54	70	35.19±0.26 ef	20.00±0.31 fg
MS + 0.5 mg l ⁻¹ 2,4-D + 1.5 mg l ⁻¹ KT	60	70	30.00±0.25 efg	17.14±0.25 fgh
MS + 1.0 mg l ⁻¹ 2,4-D + 0.5 mg l ⁻¹ 6-BA	48	72	93.75±0.18 ab	56.94±0.29 c
MS + 1.0 mg l ⁻¹ 2,4-D + 1.0 mg l ⁻¹ 6-BA	60	80	100.00±0.00 a	78.75±0.21 b
MS + 1.0 mg l ⁻¹ 2,4-D + 1.5 mg l ⁻¹ 6-BA	54	80	100.00±0.00 a	72.50±0.25 b
MS + 1.0 mg l ⁻¹ 2,4-D + 0.5 mg l ⁻¹ KT	48	72	37.50±0.25 e	22.22±0.40 ef
MS + 1.0 mg l ⁻¹ 2,4-D + 1.0 mg l ⁻¹ KT	60	64	33.33±0.26 ef	26.56±0.35 de
MS + 1.0 mg l ⁻¹ 2,4-D + 1.5 mg l ⁻¹ KT	54	80	29.63±0.28 efg	13.75±0.31 gh
MS + 2.0 mg l ⁻¹ 2,4-D + 0.5 mg l ⁻¹ 6-BA	60	80	100.00±0.00 a	97.50±0.13 a
MS + 2.0 mg l ⁻¹ 2,4-D + 1.0 mg l ⁻¹ 6-BA	60	72	100.00±0.00 a	100.00±0.00 a
MS + 2.0 mg l ⁻¹ 2,4-D + 1.5 mg l ⁻¹ 6-BA	54	80	100.00±0.00 a	100.00±0.00 a
MS + 2.0 mg l ⁻¹ 2,4-D + 0.5 mg l ⁻¹ KT	60	80	81.67±0.23 cd	95.00±0.16 a
MS + 2.0 mg l ⁻¹ 2,4-D + 1.0 mg l ⁻¹ KT	60	80	88.33±0.26 bc	96.25±0.15 a
MS + 2.0 mg l ⁻¹ 2,4-D + 1.5 mg l ⁻¹ KT	54	80	94.44±0.17 ab	93.75±0.17 a
MS + 4.0 mg l ⁻¹ 2,4-D + 0.5 mg l ⁻¹ 6-BA	54	72	100.00±0.00 a	95.83±0.17 a
MS + 4.0 mg l ⁻¹ 2,4-D + 1.0 mg l ⁻¹ 6-BA	60	80	100.00±0.00 a	97.50±0.13 a
MS + 4.0 mg l ⁻¹ 2,4-D + 1.5 mg l ⁻¹ 6-BA	60	72	100.00±0.00 a	100.00±0.00 a
MS + 4.0 mg l ⁻¹ 2,4-D + 0.5 mg l ⁻¹ KT	60	72	100.00±0.00 a	100.00±0.00 a
MS + 4.0 mg l ⁻¹ 2,4-D + 1.0 mg l ⁻¹ KT	54	80	100.00±0.00 a	100.00±0.00 a
MS + 4.0 mg l ⁻¹ 2,4-D + 1.5 mg l ⁻¹ KT	60	64	100.00±0.00 a	100.00±0.00 a

The callus induction frequency was evaluated after 30 days of culture. Data within a column followed by different letters indicates significant differences according to the Duncan's Multiple Range Test at $p < 0.05$ level.

Table S2. Effects of concentrations of NAA or IAA on proliferation of embryogenic callus and germination of somatic embryos.

Media	Proliferation times of embryogenic callus	Mean numbers of germinating somatic embryos
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ	3.32±0.26 b	1.80±0.58 c
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 0.5 mg ^l ⁻¹ IAA	3.76±0.48 ab	3.40±0.51 bc
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 1.0 mg ^l ⁻¹ IAA	3.84±0.25 ab	3.20±0.58 bc
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 1.5 mg ^l ⁻¹ IAA	4.32±0.19 ab	5.20±0.66 a
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 0.5 mg ^l ⁻¹ NAA	3.83±0.48 ab	2.40±0.51 bc
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 1.0 mg ^l ⁻¹ NAA	4.24±0.36 ab	2.80±0.66 bc
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 1.5 mg ^l ⁻¹ NAA	4.67±0.24 a	4.20±0.37 ab

The proliferation times of embryogenic callus and mean numbers of germinating somatic embryos were evaluated after subculture for 20 days. Data within a column followed by different letters indicates significant differences according to the Duncan's Multiple Range Test at $p < 0.05$ level.

Table S3. Effects of mashed bananas, or potato puree concentrations on proliferation of embryogenic callus and germination of somatic embryos.

Media	Proliferation times of embryogenic callus	Mean numbers of germinating somatic embryos
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ	3.32±0.26 d	1.80±0.58 d
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 5 % mashed bananas	4.58±0.18 abc	6.80±0.86 c
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 10 % mashed bananas	4.72±0.21ab	6.60±0.93 c
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 15 % mashed bananas	3.81±0.30 cd	12.20±0.80 b
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 5 % potato puree	4.52±0.24 bc	7.40±0.51 c
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 10 % potato puree	4.85±0.24 ab	12.00±0.95 b
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 15 % potato puree	5.45±0.45 a	18.00±0.71 a

The proliferation times of embryogenic callus and mean numbers of germinating somatic embryos were evaluated after subculture for 20 days. Data within a column followed by different letters indicates significant differences according to the Duncan's Multiple Range Test at $p < 0.05$ level.

Table S4. Effects of ABA concentrations on proliferation of embryogenic callus and germination of somatic embryos.

Media	Proliferation times of embryogenic callus	Mean numbers of germinating somatic embryos
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 15 % potato puree	5.45±0.45 b	18.00±0.71 a
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 15 % potato puree + 0.5 mg ^l ⁻¹ ABA	5.45±0.28 b	1.20±0.37 b
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 15 % potato puree + 1.0 mg ^l ⁻¹ ABA	6.96±0.15 a	0.80±0.37 b
MS + 1.0 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ TDZ + 15 % potato puree + 1.5 mg ^l ⁻¹ ABA	6.66±0.45 a	0.20±0.20 b

The proliferation times of embryogenic callus and mean numbers of germinating somatic embryos were evaluated after subculture for 20 days. Data within a column followed by different letters indicates significant differences according to the Duncan's Multiple Range Test at $p < 0.05$ level.

Table S5. Plant regeneration of *Fagopyrum esculentum* by somatic embryogenesis on different cultural media.

Media	Number of somatic embryos cultured	Percentage of somatic embryo-derived plant (%)
MS	33	75.75±0.04 a
MS + 0.5 mg ^l ⁻¹ active carbon	26	71.25±0.04 ab
MS + 1 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ KT	27	56.00± 0.04 bc
MS + 1 mg ^l ⁻¹ 6-BA + 0.5mg ^l ⁻¹ IAA	26	52.00±0.09 bc
MS + 1 mg ^l ⁻¹ 6-BA + 1.0mg ^l ⁻¹ IAA	22	41.00±0.09 c

MS + 1 mg ^l ⁻¹ 6-BA + 1.5mg ^l ⁻¹ IAA	31	38.25±0.10 c
MS + 1 mg ^l ⁻¹ 6-BA + 0.5mg ^l ⁻¹ NAA	26	50.75±0.06 c
MS + 1 mg ^l ⁻¹ 6-BA + 1.0mg ^l ⁻¹ NAA	28	46.25±0.04 c
MS + 1 mg ^l ⁻¹ 6-BA + 1.5mg ^l ⁻¹ NAA	33	39.00±0.03 c
MS + 1 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ IAA + 0.5 mg ^l ⁻¹ active carbon	31	49.75± 0.08 c
MS + 1 mg ^l ⁻¹ 6-BA + 0.5 mg ^l ⁻¹ NAA + 0.5 mg ^l ⁻¹ active carbon	29	46.50±0.07 c

The percentage of somatic embryo-derived plant after culture for 40 days. Data within a column followed by different letters indicates significant differences according to the Duncan's Multiple Range Test at $p < 0.05$ level.