

GENERAL PROCEDURES OF MUTANT INDUCTION
AND THEIR SEQUENTIAL EVALUATION*
(Seed propagated & self-pollinated species)

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- A. Mutagen treatment dose is to be obtained from published information/ through preliminary radiosensitivity studies. Treatment of as large number seeds as possible.
- B. M_1 generation: Should be grown under (a) close spacing, (b) low input conditions, (c) early/late sowing. Seeds of every individual M_1 plant should be collected for growing in the M_2 generation.
- C. M_2 generation: (a) Should be space planted under optimum growing conditions specified for the crop under investigation, (b) parental cultivar should be grown after every 10 lines, (c) constant observation of the plants is required and selection is to be carried out at the appropriate time of expression of the character in question.
- D. Evaluation:
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| 1. Inheritance & screening test (ST):
(M_3)
(Experimental farm) | Probable number of lines: About 200
Replication: None
Plot size: Single or double row of 5 m length
Location: One
Check: One after every 10 lines |
| 2. Observation test (O.T.):
(M_4)
(Experimental farm) | Probable number of lines: About 20
Replication: None
Plot size: 8-row plots of 5 m length
Location: One
Checks: (i) One standard/mother after every five/ten plots depending on spacings between rows.
(ii) Resistant and susceptible check should be included where applicable. |
| 3. Preliminary yield trial (PYT):
(M_5)
(Experimental farm) | Probable No. of lines: About 15 including check
Replication: 3 (minimum)
Plot size: 8-row plots of 5 m length
Location: Two |

* Presented in the FAO/IAEA Interregional Training Course on the Induction and Use of Mutations in Plant Breeding, Seibersdorf, Austria, 12-23 October 1987.

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| 4. | Advanced yield trial
(AYT):
(M ₆)
(Experimental farm) | Probable No. of strains: About 5
Replication: 4 (minimum)
Plot size: 5 x 5 m
Location: More than two |
| 5. | Regional yield trial
(RYT):
(M ₇)
(Experimental farm) | Probable No. of strains: About 5, local check
must be included
Replication: 4 (minimum)
Plot size: 5 x 5 m
Location: Many |

Application should be submitted to National Seed Board for release.

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| 6. | Zonal yield trial (ZYT):
(M ₈)
(Farmer's plot) | Probable No. of strains: 2 maximum + 1 local
standard variety
Replication: None
Plot size: 5 x 5 m (minimum)
Location: Many - representing all major
zones of the country |
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Agronomic trial (AT): (Experimental farm)	Optimization of irrigation, fertilizer & spacing requirement, seed rate, sowing date, etc.
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- * Some of the agronomic studies will have to be started from AYT and will continue through RYT, ZYT and AT.
- * Pathological and entomological screening should be started from F₃/M₃. However, in specific cases it may start from F₂/M₂. Quality testing should start in M₄.
- * Application to National Seed Board should be submitted prior to agronomic trials in various zones of the country so that they can evaluate the materials under farmers conditions.