



NATIONAL PERFORMANCE TRIALS(NPTS)

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Presented at:

The Seed Production Course, SEMIS, University of Nairobi, 26th – 31st May, 2014

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(www.kephis.org)



Introduction

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- KEPHIS is mandated to:
 - - Grant proprietary rights on plant varieties
 - - Maintain an index of existing plant varieties
 - - Regulate introduction of new plant varieties
- KEPHIS regulates introduction of new plant varieties, with two key functions:

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Introduction Cont...



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- Conducting tests for Distinctness, Uniformity and Stability (DUS) to establish variety identity for purposes of grant of Plant Breeder's Rights (PBR) and release for commercialisation
- Undertaking National Performance Trials (NPT) on new crop varieties to determine their adaptability for purposes of release for commercialisation

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National Performance Trials (NPTs)



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- A variety
 - end-product of lengthy breeding process
 - ultimate goal = improvement
- Task of national seed program
 - regulate production & supply of new varieties
 - with better adaptability
 - greater potential for yield & agronomic traits
 - for enhanced profitability to farmers

National Performance Trials Cont...



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- Tests are conducted to determine the Value for Cultivation & Use (VCU) of new varieties, where:
 - candidates are grown & observed alongside existing varieties (checks/controls)
 - in single trial on several locations within target agro-ecological zone
 - tests for minimum 2 seasons
 - superior candidates released



National Performance Trials Cont...

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- Conducted to determine the adaptability of a variety in different ecological zones in Kenya
- Factors examined are:
 1. Yield
 2. Time to maturity
 3. Standability
 4. Disease/pest incidence
 5. Tolerance to abiotic stresses (drought, frost)
 6. Lodging
- The candidate variety should perform similar to or better than the check variety

Purpose of NPT



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- To determine their adaptability
- To determine value for cultivation and use (VCU)
- For the purposes of release for commercialisation

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Growing of NPTs

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- Candidates are grown & observed alongside existing varieties (checks/controls)
- in single trial on several locations within target agro-ecological zones
- Tests done for minimum 2 seasons

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Steps involved in Planning of Growing Trials (NPT)

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a. Site identification

- Several representative locations
- Experimental field:
 - uniform fertility & terrain
 - free from shade, stumps, anthills, rocks
 - minimal slope
 - known history

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Steps involved in Planning of Growing Trials (NPT) cont'd...

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b. Land Preparation

- Good seedbed gives a better crop stand
- Seedbed - uniform, level, desirable tilth
- 20-40 % soil moisture most ideal for land preparation.

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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c. Submission of Seed

- Set deadline for seed submission
- Adequate, good quality seed
- As per number (e.g. maize, beans) or weight (e.g. small cereals) required
- Standard submission form

Steps involved in Planning of Growing Trials (NPT) cont'd...



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d. Seed Counting & Packaging

- Breeder packages seeds in suitable packets by site & replicate
- Each packet - seed for one plot, labeled:
 - Crop
 - Kit (test zone)
 - Site name
 - Site number
 - Plot number
 - Entry number
 - Replicate number

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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e. Check Varieties

- Selected by the NPTC
- Links performance of candidate with that of released, widely cultivated varieties
- At least one check for each VCU category e.g. maturity
- Included should provide adequate range of parameter

Steps involved in Planning of Growing Trials (NPT) cont'd...



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Experimental Design

- Design based on No. of entries
- Three replicates - minimum
- RCBD - up to 12 entries
- Alpha-lattice - more than 12 entries
- Randomization – centrally, site by site
- Restricted randomization where necessary e.g. maize OPVs vs hybrid
- All entries assigned codes

Steps involved in Planning of Growing Trials (NPT) cont'd...



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Field Layout

- Plots sequenced in left to right orientation
- Plot shape preferably rectangular
- Field layout - serpentine
- For sloppy sites, replicates & crop rows run along contours

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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Agronomic Management

- Timeliness & due diligence in all operations:
 - Sowing
 - Fertilizer – type, rate, regime
 - Thinning
 - Weeding
 - Pest/disease control
 - Harvesting
- Border/guard rows - same treatment as plots
- Ensure security of trial

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Collection

- Yield - most important parameter
- Other parameters also assessed
 - 📖 field observations
 - 📖 laboratory analysis
- Field observations supplemented with notes on various events, activities, factors, etc

Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Collection cont'd ...

a. General Rules to Observe

- Avoid guesswork
- Always read instructions carefully before planting & before recording data
- Record directly into the data sheet
- Use discretion to reach decision in case of problem
- Avoid changing data collecting personnel

Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Collection cont'd...

b. Sampling

- Necessary for characters requiring observation of individual plants
- Representative sample – covering whole range of conditions
- Select sample objectively, avoid bias

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Collection cont'd...

c. Data Recording

□ Using standard data sheet bearing (basic) information on:

- Site name
- Site number
- Replicate numbers
- Block number (depending on design)

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Collection cont'd...

c. Data Recording(cont'd)

- Plot number
- Entry name
- Entry number
- Entry type (e.g. OPV, hybrid)
- Source/owner of entry
- Status of entry (candidate or check)
- Other crop-specific data to collect

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Collection cont'd...

d. General VCU Data

1. Name of person recording data
2. Date of planting
3. Days to emergence (50% seedlings emerged)
4. Stand count at thinning
5. Days to 50% flowering
6. Pest scores
7. Disease scores
8. Lodging scores - RL, ST
9. Plant height

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Steps involved in Planning of Growing Trial (NPT) cont'd...



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Data Collection cont'd...

d. General VCU Data(cont'd)

10. Maturity dates

11. Stand count at harvest

12. Harvest data:

- grain yield
- number of ears/heads harvested
- pod load
- tillering ability
- moisture content
- rots, etc

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Entry

- Done immediately after recording in the field
- Errors checked when corrections are still possible
- Standard datasheet in all sites - ease of data management & analysis

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Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Analysis

➤ Analysis & presentation of data – 3 stages:

1. Within site

➤ Data for each site summarized to provide

- entry means

- estimates of precision for the site

Steps involved in Planning of Growing Trials (NPT) cont'd...



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Data Analysis (cont'd)

3. Over years

- Entry means summarized on a table classified by entries & No. of testing years
- Table displays
 - estimates of individual entry performance
 - combined precision in all sites over years
- Basis of VCU (release) decisions

National Performance Trials Committee(NPTC)



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Functions of the NPTC

- Oversee the conduct of performance trials
- Review performance trials protocols, guidelines and minimum number of candidate varieties to constitute a performance trial
- Evaluate performance trials report & make recommendations to the release committee
- Review applications for performance trials
- Provide feedback to the applicants on performance of their entries in the performance trials
- Develop rules for the conduct of meetings
- Invite applicants who had candidate plant varieties in the trials to attend trials committee meetings



Data Reporting & Decisions

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- Secretariat (KEPHIS) presents analyzed data to NPTC
- NPTC makes recommendations to be discussed by NVRC
- Decision-making procedures
- Objective
- Consistent
- Based on clear criteria & standards set for each crop, agroecology or technology



Data Reporting & Decisions cont'd...

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□ Recommendations by NPTC includes:

- Varieties for full release
- Varieties to be continued
- Varieties withdrawn

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National Variety Release Committee (NVRC)



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□ Functions of the NVRC

- Consider the report of the NPTC and its recommendations
- Consider the DUS report
- Approve and release qualifying varieties
- Determine fees for any application under these regulations
- Moderate on any disputes relating to these regulations
- Provide advice on policies and procedures on performance trials

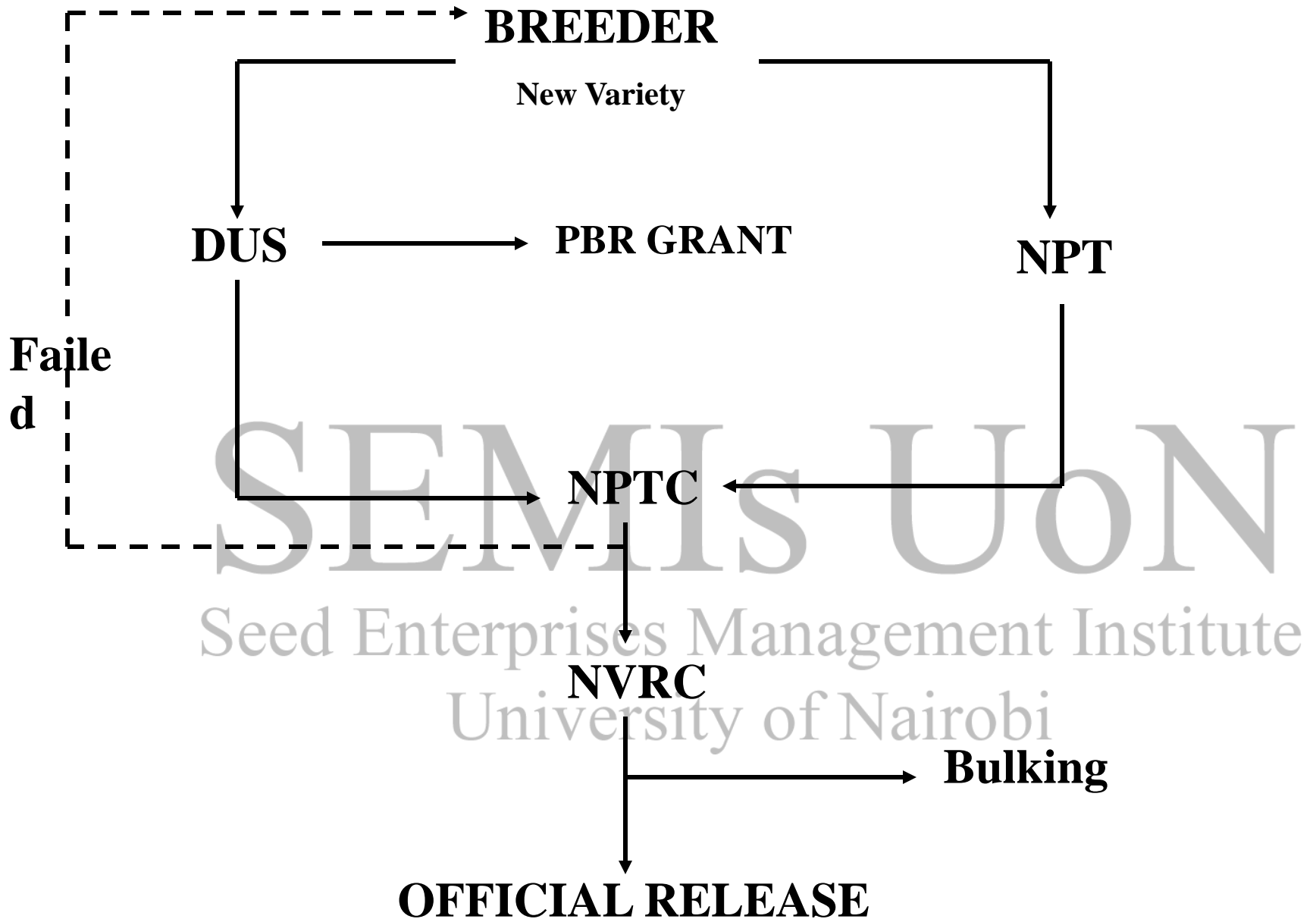


Gazettment of Release Varieties

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- KEPHIS to publish the names of the released varieties in the Gazette within 14 days of the Release Committee
- KEPHIS to update and publish the National Variety List annually in the Gazette
- KEPHIS to maintain a Register of all applications for performance trials and any exemptions granted

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END



□ THANK YOU

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