

PARTICIPATORY APPROACH TO WOODFUEL WOODLOT ESTABLISHMENT



B.D. OBIRI

E. OPUNI FRIMPONG

T. PEPRAH

R. ADJEI

K. ASUMADU

FSD KINTAMPO

OBJECTIVE

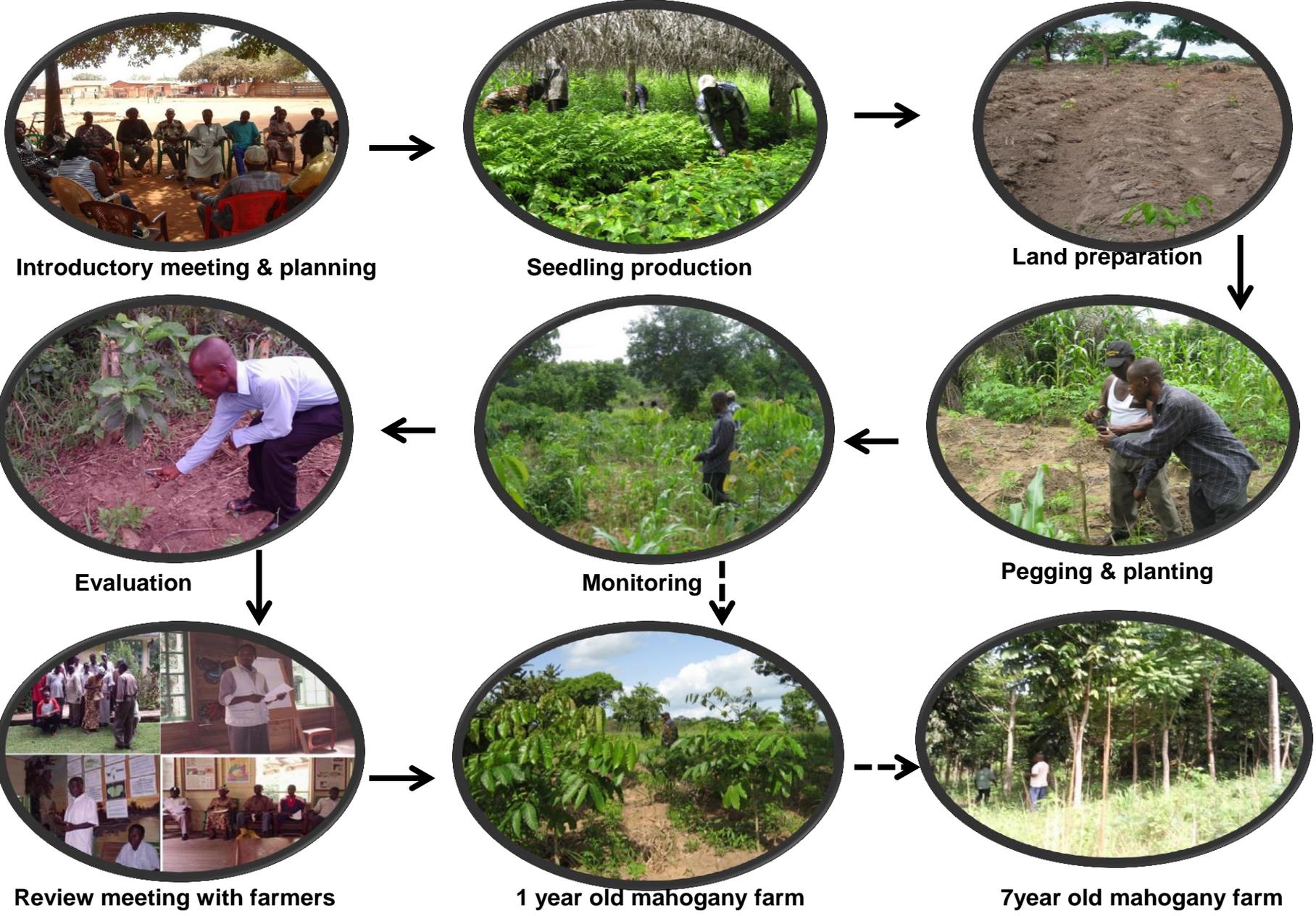
- DEVELOP DEMONSTRATION WOODFUEL WOODLOTS USING HIGHLY PRODUCTIVE SPECIES WITH COMMUNITIES

PARTICIPATORY PROCESS

<u>Activity</u>	<u>Time of operation</u>
• Introductory community meetings	January-February
• Preparation/planning	March-April
• Establishment	June-July
• Monitoring	Monthly visits
• Evaluation	End of season/later in the season

LANDSCAPE RESTORATION:

PARTICIPATORY PROCESS FOR INTEGRATING TREES INTO CROPLANDS



Introductory meetings

☐ January/February

Community meetings to:

- Introduce project
- Establish rapport
- Enroll volunteer farmers



Preparation/planning

☐ February-March

- Meeting enrolled farmers
- Clarifying project components
- Provision of material incentives
- Enrolled farmers prepare land
- Field visits to assess suitability of fields

Demo plots recruitments

Farmer & plot X'tics

☐ Over 100 farmers recruited in six villages

❖ KINTAMPO NORTH

- BABATOKMA
- ATTAKURA
- GOLUMPKE
- POTOR

❖ NKORANSA

- NKRANKA
- DROMA KUMA
- DROMA KESE

☐ Maize and yam intercropping

Preparation/planning

☐ February-June

- Acquire desired tree species seeds
- Nursery production at FORIG AND IN COMMUNITIES WITH A NURSERY MANAGER
- Distribute planting materials/seedlings

NURSERY

1. *Anogeissus leiocarpus* (Kane)
2. *Pterocarpus erinaceus* (Rose wood- Krayie)
3. *Khaya senegalense*
4. *Azadrachta indica* (Neem)
5. *Senna siamea*
6. *Acacia mangium* and *Acacia cracicarpa* (APSD, ATEBUBU)
7. *Terminalia ivorensis*

Seed collection

NURSERY PRODUCTION



GERMINATION STUDIES & NURSERY

- Baseline, species screening and on-farm experiments



NURSERY PRODUCTION

No.	Type	Species	Major use	Quantity
1	Indigenous	<i>Khaya senegalensis</i>	Timber, Woodfuel	9,500
2		<i>Pterocarpus erinaceus (rosewood)</i>	Woodfuel, Timber	460
3		<i>Anogeissus leiocarpus</i>	Woodfuel, Timber	200
4	Exotics	<i>Senna siamea</i>	Woodfuel	3,600
5		<i>Azadrachta indica</i>	Woodfuel, medicinal	500
6		<i>Acacia mangium</i>	Wood fuel	2,300
7		<i>Acacia cracicarpa</i>	wood fuel	4,120
8		<i>Mangifera indica</i>	Fruit	1,000
Total				21,680

FIELD ESTABLISHMENT: APPROACH

❑ FARMER MANAGED ON FARM EXPERIMENTS

1. Seedling supply
2. Systematic planting plot by plot with farmers
3. Farmer & researcher monitor
4. Farmer and/or researcher evaluate
5. Researcher take data
6. Pay for labour or provide incentives (Cutlasses & Boots)

Conveying seedlings to the field



Seedling distribution to farmers for planting on farms



Seedling conveyance to farms

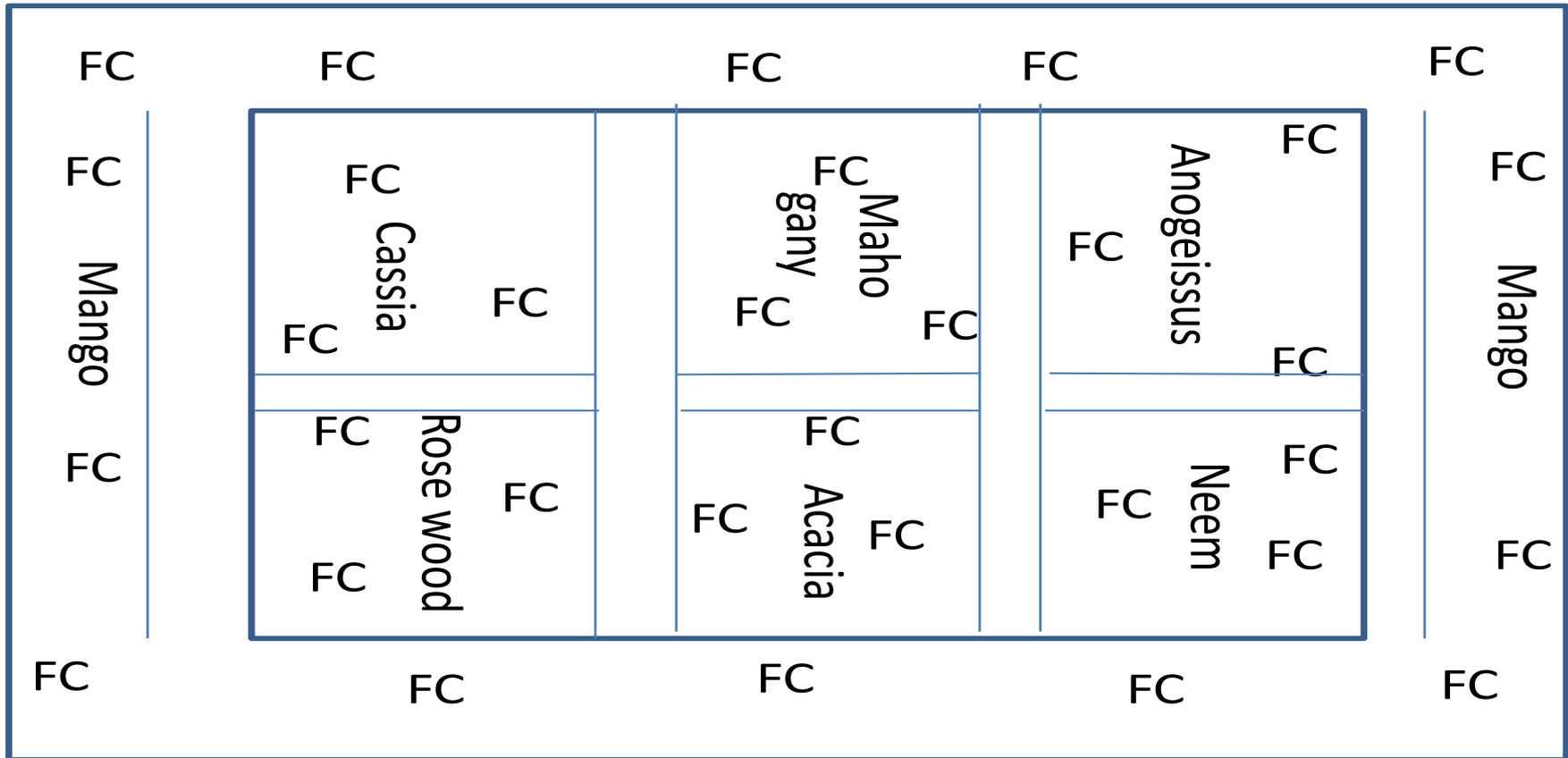


Field Establishment: Considerations

□ June-August

- Plot size: Approximate 1 acre (0.4 ha) or MORE
- Plot ownership
- Plot design: Each farmer plot assumed to be a block with tree randomization within a block
- Planting pattern:
 - Food crops-farmer traditional
 - Trees - Regular at 4m x 4m spacing
- Farmers secured pegs
- Researchers assist farmers with techniques for pegging and planting
- Take GPS coordinates and other data

PLOT LAYOUT-KINTAMPO NORTH



FC = FOOD CROP

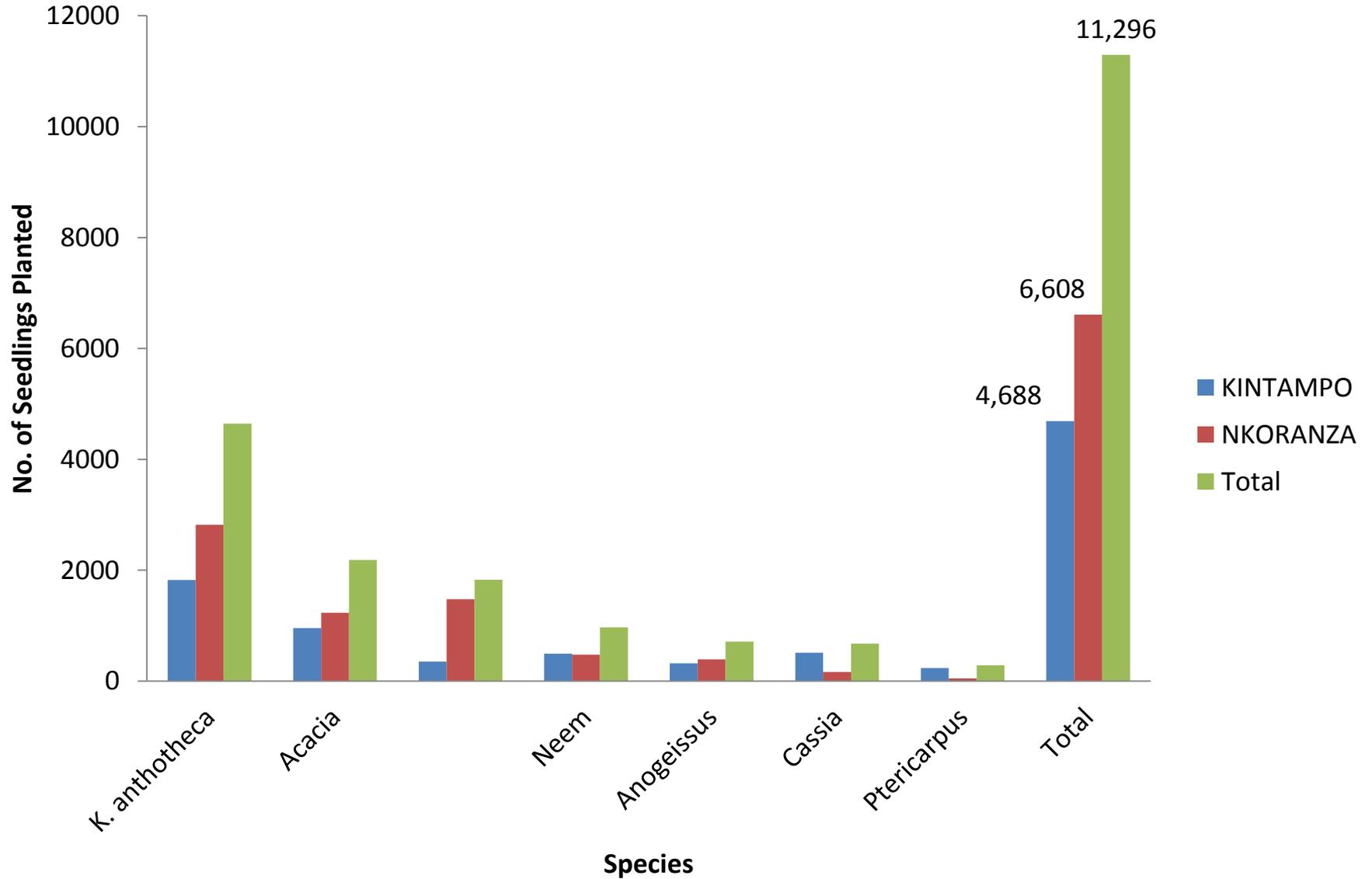
PLANTING



Planting



SPECIES PLANTED



PLOTS CHARACTERISTICS

X'tics	KINTAMPO NORTH	NKORANSA	TOTAL
No. fields	19	31	50
Field size per farmer (AV.) HA	0.3	0.4	0.3
Total acreage (HA) @ 4 x 4 m	7.5	10.6	18.1
No. seedlings	4,688	6,600	11,296
Tree species	<ol style="list-style-type: none"> 1. <i>K. anthotheca</i> 2. <i>Acacia</i> 3. <i>Senna siamea</i> 4. <i>Anogeissus</i> 5. <i>Ptericarpus</i> 6. <i>Neem</i> 	<ol style="list-style-type: none"> 1. <i>K. anthotheca</i> 2. <i>Acacia</i> 3. <i>Terminalia</i> 4. <i>Anogeissus</i> 	<ol style="list-style-type: none"> 1. <i>K. anthotheca</i> 2. <i>Acacia</i> 3. <i>S. siamea</i> 4. <i>Anogeissus</i> 5. <i>Ptericarpus</i> 6. <i>Neem</i> 7. <i>Terminalia</i>
Food intercrops	Maize, yams,	Cassava, maize, yam vegetables	

TREE-CROP MIXES

District	Tree-crop woodlot model	Reason for choice	Expected products
Kintampo North	<i>Senna siamea</i> -Yam-Maize; <i>Senna siamea</i> -Acacia-Yam-maize	All species browsed by livestock and susceptible to wild fire damage except <i>Senna siamea</i>	Food crops Lea biomass improve soil fertility Wood for charcoal Poles for construction Stakes for trailing yam vines
Kintampo North	<i>Senna siamea</i> - <i>Khaya senegalensis</i> - <i>Anogeissus leiocarpus</i> - Acacia sp. – Yam-Maize	Where livestock browsing and wildfire can be controlled	Food crops Leaf biomass improve soil fertility Wood for charcoal Timber for sawing Poles for construction Stakes for trailing yam vines
Nkoransa	<i>Khaya senegalensis</i> - Acacia sp. <i>Terminalia ivorensis</i> – Yam-Maize	Preference for multipurpose woodlots that can produce wood for both timber and charcoal	Food crops Lea biomass improve soil fertility Wood for charcoal Timber for sawing Poles for construction Stakes for trailing yam vines

Field Monitoring & ASSESSMENT

● MONTHLY VISITS

❖ **Assessments: data at *beginning, mid and end of season***

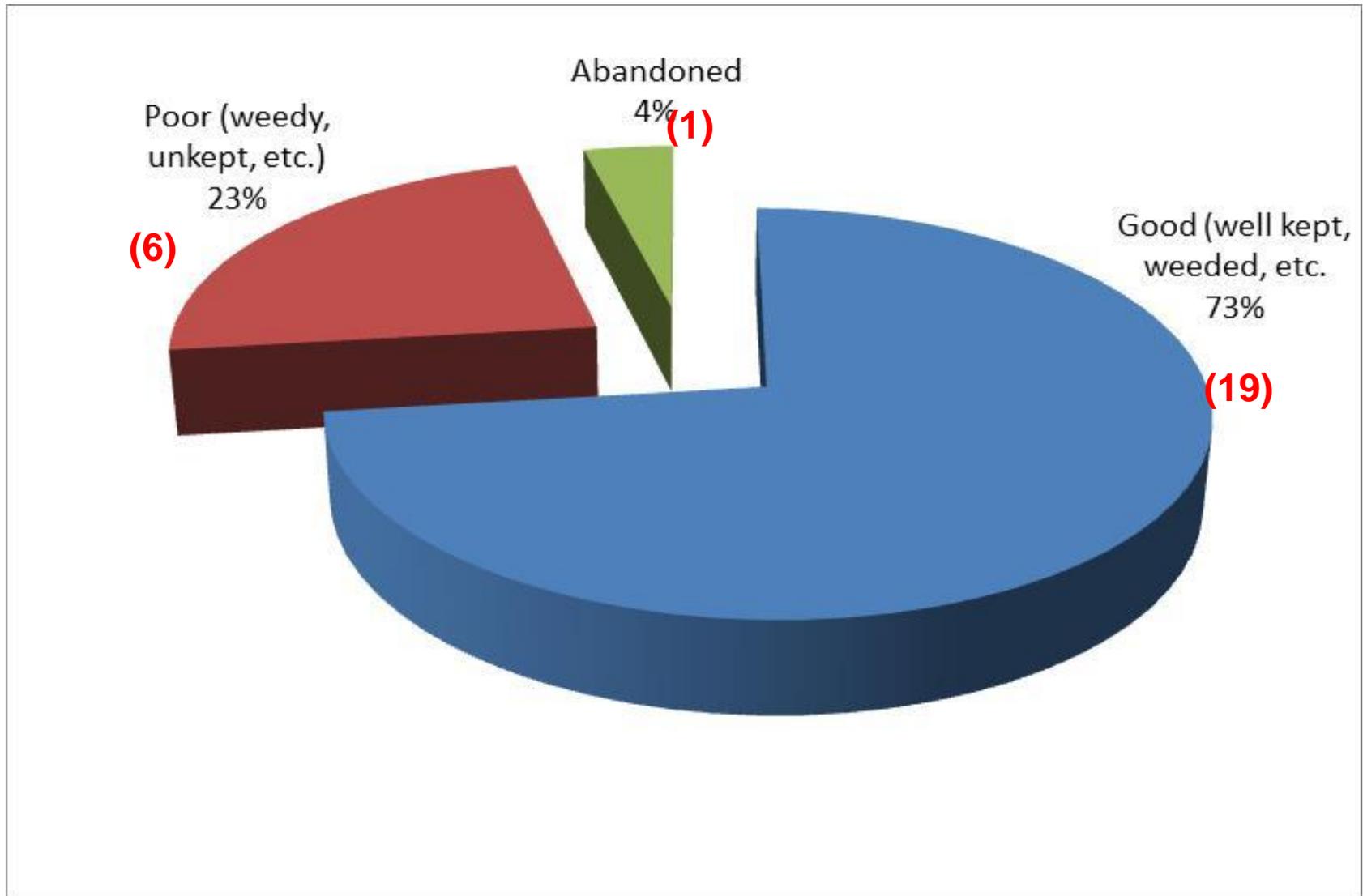
■ General field condition

■ Tree survival

■ Growth (height and diameter) measurement

■ Constraints

Status of Sample Farmer Fields



STATUS OF SPECIES: FIRST SEASON



STATUS OF SPECIES: FIRST SEASON



SPECIES PERFORMANCE: SECOND SEASON

SPECIES PERFORMANCE: **ACACIA**



SPECIES PERFORMANCE: **ACACIA**



SPECIES PERFORMANCE: **ACACIA**



SPECIES PERFORMANCE: **ACACIA**



SPECIES PERFORMANCE: **NEEM**



SPECIES PERFORMANCE: **CASSIA**



SPECIES PERFORMANCE: **CASSIA**



SPECIES PERFORMANCE: **CASSIA**



SPECIES PERFORMANCE: **CASSIA**



SPECIES PERFORMANCE: **ANOGEISSUS**



SPECIES PERFORMANCE: **ANOGEISSUS**



SPECIES PERFORMANCE: **ANOGEISSUS**



SPECIES PERFORMANCE: MAHOGANY



SPECIES PERFORMANCE: MAHOGANY



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SPECIES PERFORMANCE: MAHOGANY



ISSUES & LESSONS

☐ With moderate rain species planted will thrive except Terminalia

☐ PROLONG DROUGHT IN MAJOR GROWING SEASON

– Timeliness

- **Early seedling production for early planting**

– Fast growing species with limited rain

- **Cassia, Neem, Mahogany, Anogeissus, Acacia**

☐ LAND TENURE

– Landowners must be encouraged in woodlot development on sharecropping basis since most people are tenants

ISSUES & LESSONS

☐ Threats

- ❖ Drought
- ❖ Pest damage

☐ Moisture retention/conservation

- ❖ Weeding and using debris to mulch trees will conserve moisture
 - ❖ improve drought tolerance

☐ INCENTIVES – Monetary or material

- ❖ Field maintenance

ISSUES AND LESSONS

■ Weed management



RECOMMENDATIONS

■ MULTIPURPOSE WOODLOTS

- ❖ Income diversification

■ SILVICULTURE KEY TO WOODFUEL PLANTATION DEVELOPMENT

- ❖ Site-species suitability
- ❖ Mix of exotics and indigenous species
- ❖ Farm management key to success
- ❖ Tree management (PRUNING) to improve on stand quality
- ❖ Mulching for moisture retention in harsh climate
- ❖ Pest control

THANKS