

Working Tool

for

Pilot Initiative for Improved Rice Seed Sector in CARD Countries

CARD secretariat

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Section I Current Situation

I. <Current Situation>

1. Legislation, Policy, Institutions and Planning Aspects

1-1) List up policies, legislation and regulations relevant to rice seed production and supply, if any. Also please attach those documents for reference.

1-2) List up all initiatives and/or supports provided by donors, development partners, research institutions to your country (include regional ones) related to rice seed sector. Describe (or attach) details of the initiatives/ supports (Purpose, activities etc).

1-3) List up the name of institutions, departments or units from the public and private sectors which is in charge of rice seed production, inspection and supply. Describe roles played by each stakeholder and legislations and policies, if any.

| | | Name of institutions | Roles/ Responsibility | Legislations/ Policies determining responsibility | Remarks |
|----------------|----------------------|----------------------|-----------------------|---|---------|
| Overall | Production | | | | |
| | Inspection | | | | |
| | Supply/ distribution | | | | |
| Breeder Seed | Production | | | | |
| | Inspection | | | | |
| | Supply/ distribution | | | | |
| Pre-Basic Seed | Production | | | | |
| | Inspection | | | | |
| | Supply/ distribution | | | | |
| Basic Seed | Production | | | | |
| | Inspection | | | | |
| | Supply/ distribution | | | | |
| Certified Seed | Production | | | | |
| | Inspection | | | | |
| | Supply/ distribution | | | | |

1-4) Does your country produce annual plan for seed production? If yes, please attach the annual plan of the last five years.

1-5) List up platforms/ forums where public-private dialogues (could) take place on rice seed sector, if any.

1-6) Please indicate the budget allocated to production/ procurement and supply of each level of seeds in the last five years

| Currency: _____ (Approximate exchange rate: _____ 1 = USD _____) | | | | | |
|---|------|------|------|------|------|
| | 2009 | 2010 | 2011 | 2012 | 2013 |
| Breeder Seed | | | | | |
| Pre-basic Seed | | | | | |
| Basic Seed | | | | | |
| Certified Seed | | | | | |

1-7) Indicate the current production (or procurement) of rice seed (last three years, if possible), production location (stations, center or equivalent) and cultivated area in your country according to the below seed categories.

| | Total production/ procurement amount (MT) | Name of production stations | Production amount per station (MT) | Cultivated area per station (ha) |
|-------------------|---|--------------------------------|--|-------------------------------------|
| Breeder Seed | | | | |
| | | | | |
| Pre-Basic Seed | | | | |
| | | | | |
| Basic Seed | | | | |
| | | | | |
| Certified Seed | | | | |
| | | | | |
| | | | | |
| | | | | |

<Year 2012>

| | Total production/ procurement amount (MT) | Name of production stations | Production amount per station (MT) | Cultivated area per station (ha) |
|-------------------|---|--------------------------------|--|-------------------------------------|
| Breeder Seed | | | | |
| | | | | |
| Pre-Basic Seed | | | | |
| | | | | |
| Basic Seed | | | | |
| | | | | |
| Certified Seed | | | | |
| | | | | |
| | | | | |
| | | | | |

<Year 2011>

| | Total production/ procurement amount (MT) | Name of production stations | Production amount per station (MT) | Cultivated area per station (ha) |
|-------------------|---|--------------------------------|--|-------------------------------------|
| Breeder Seed | | | | |
| | | | | |
| Pre-Basic Seed | | | | |
| | | | | |
| Basic Seed | | | | |
| | | | | |
| Certified Seed | | | | |
| | | | | |
| | | | | |
| | | | | |

<Year 2010>

1-8) Is the data available in your country on the amount of rice seed produced and cultivated land for rice seed production each year per variety? If yes, please fill in the below table (even partially).

| Year_____. | Name of Varieties | Cultivated Areas (ha) | Amount produced (MT) |
|----------------------|-------------------|-----------------------|----------------------|
| Irrigated Lowland | | | |
| | | | |
| | | | |
| | | | |
| Rain-fed Lowland | | | |
| | | | |
| | | | |
| | | | |
| Rain-fed Upland | | | |
| | | | |
| | | | |
| | | | |

1-9) List up the name of officially certified rice varieties in your country

| Agro-Ecological Zones | Name of Varieties |
|-----------------------|-------------------|
| Irrigated Lowland | |
| | |
| | |
| | |
| Rain-fed Lowland | |
| | |
| | |
| | |
| Rain-fed Upland | |
| | |
| | |
| | |

1-10) List up the name of rice varieties recommended and promoted by the government of your country.

| Agro-Ecological Zones | Name of Varieties |
|-----------------------|-------------------|
| Irrigated Lowland | |
| | |
| | |
| | |
| Rain-fed Lowland | |
| | |
| | |
| | |
| Rain-fed Upland | |
| | |
| | |
| | |

1-11) Categorize the varieties recommended by your government described in the list of the above item 1. 1-8) into two, namely those for market oriented farming and those for subsistence farming.

| Agro-Ecological Zones | Name of Varieties | Seed Category (Market and/or Subsistence) |
|-----------------------|-------------------|---|
| Irrigated Lowland | | |
| | | |
| | | |
| | | |
| Rain-fed Lowland | | |
| | | |
| | | |
| | | |
| Rain-fed Upland | | |
| | | |
| | | |
| | | |

1-12) Please list up any issues in legislation, policy, and/or institutions related to rice seed production and supply, with detailed explanation on each issue.

2. Technical Aspects in Production

2-1) Attach rice variety catalogue, table for characteristics/features of rice varieties, and/or anything equivalent for your country, if any.

2-2) Indicate the name of institutions, title of officers who are in charge of production and inspection of each kind of seed.

| | | Name of institutions (Please list up all if several institutions are in charge) | Title of officers in charge |
|-----------------|------------|---|-----------------------------|
| Breeder Seed | Production | | |
| | Inspection | | |
| Pre-basic Seeds | Production | | |
| | Inspection | | |
| Basic Seed | Production | | |
| | Inspection | | |
| Certified Seed | Production | | |
| | Inspection | | |

2-3) Please describe the flow of seed production (who produces/procures seeds, and how they are supplied to seed producers of next level)

| | Players in production/ procurement | | | |
|---|------------------------------------|--------------|-----------------------|--------------|
| | Market varieties | Roles played | Subsistence varieties | Roles played |
| Breeder seed Production/ procurement | | | | |
| How it is supplied to foundation seed producers | | | | |
| Pre-basic seed Production | | | | |
| How it is supplied to basic seed producers | | | | |
| Basic seeds production | | | | |
| How it is supplied to certified seed producers | | | | |
| Certified seed production | | | | |

2-4) Indicate whether the deterioration of seed quality/features/characteristics is observed in your countries. If yes, indicate possible causes of deterioration.

| | Deterioration Observed | | Possible Causes |
|-----------------|------------------------|----|-----------------|
| | Yes | No | |
| Breeder Seed | | | |
| Pre-Basic Seeds | | | |
| Basic Seed | | | |
| Certified Seed | | | |

2-5) Describe methods and procedures practiced in your country to maintain quality/ features/ characteristics of rice varieties, if any.

2-6) Describe in details the agronomic methods and managerial procedures for rice seed production and maintenance of rice seed purity, **Using the questionnaire** attached to this working tools.

Please see attached questionnaire

2-7) Describe the number of technical personnel currently employed in seed production, capacity of technical personnel (knowledge and experience), geographical production areas covered per personnel, size of land for seed production covered per personnel etc)

| | Number of Technical personnel | Capacity of Technical personnel | | Size of land covered per Technical personnel | Geographical areas covered per Technical personnel | Means of transport (with Remarks) | Budget per Technical personnel (with Remarks) |
|-----------------|-------------------------------|---------------------------------|---------------------------|--|--|-----------------------------------|---|
| | | Knowledge (with Remarks) | Experience (with Remarks) | | | | |
| Researchers | | | | | | | |
| Technicians | | | | | | | |
| Workers/ Labors | | | | | | | |
| Total | | | | | | | |

2-8) If there is difference between methods and procedures for rice seed production and those for ordinary rice production, describe which part is different and how.

2-9) Describe (or attach) details of training program for seed producers conducted in your country, if any. Please cover lectures/ trainers, training modules, items covered (e.g. production methods/procedures, identification of off-type, countermeasures against pests and diseases, countermeasures against lodging, fertilizer application, harvesting), training period, target of training (e.g. researchers, personnel in public institutions, private seed producers, seed producing farmers etc), among others. Also evaluate if it is sufficient.

2-10) Indicate the purity standard set in the regulations for rice seeds

| | Purity Standard |
|----------------|-----------------|
| Breeder Seed | |
| Pre-basic Seed | |
| Basic Seed | |
| Certified Seed | |

2-11) Indicate the institutions responsible for overall supervision of seed inspection. List up all if there are more than one. Describe their responsibility and demarcation.

| Name of institutions | Roles/ Responsibility |
|----------------------|-----------------------|
| | |
| | |
| | |

2-12) Attach laws, policy, and/or guidelines related to rice seed inspection if any.

2-13) Describe (or attach) details of the inspection standard, if any.

2-14) Describe on-plot seed inspection procedures and methods in your country.

| | Organizations/ institutions in charge of inspection | Frequency and timing of Inspections | Items for Inspection | Inspection Methods | Quality Standard for Inspection |
|-------------------|---|--|-------------------------|--------------------|---------------------------------------|
| Breeder Seed | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Pre-basic Seed | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Basic Seed | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Certified Seed | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

2-15) Describe inspection procedures and methods for harvested seeds in your country.

| | Organizations / institutions in charge of inspection | Items for Inspection | Inspection Methods | Quality Standard for Inspection |
|-------------------|---|----------------------|--------------------|------------------------------------|
| Breeder Seed | | | | |
| | | | | |
| | | | | |
| | | | | |
| Pre-basic Seed | | | | |
| | | | | |
| | | | | |
| | | | | |
| Basic Seed | | | | |
| | | | | |
| | | | | |
| | | | | |

| | | | | |
|----------------|--|--|--|--|
| | | | | |
| Certified Seed | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

2-16) Describe the number of inspectors currently employed, capacity of inspectors (knowledge and experience), geographical areas covered per inspector, size of land covered per inspector, means of transport, budget for inspection (fuel, transport means, per diem etc)

| | Number of inspectors | Capacity of inspectors | | Size of land covered per inspector | Geographical areas covered per inspector | Means of transport (with Remarks) | Budget per inspector (with Remarks) |
|----------------|----------------------|--------------------------|---------------------------|------------------------------------|--|-----------------------------------|-------------------------------------|
| | | Knowledge (with Remarks) | Experience (with Remarks) | | | | |
| Breeder Seed | | | | | | | |
| Pre-basic Seed | | | | | | | |
| Basic Seed | | | | | | | |
| Certified Seed | | | | | | | |
| Total | | | | | | | |

2-17) Describe (or attach) details of training program for seed inspectors conducted in your country, if any. (Lectures/ trainers, frequency, training modules, items covered, period, etc). Also evaluate if it is sufficient.

2-18) Please list up any technical issues in seed production. Be specific as much as possible.

3. Supply Aspects

3-1) Identify stakeholders in seed supply chain, and the roles played by different stakeholders.

| | Stakeholders | | | |
|--|------------------|--------------|-----------------------|--------------|
| | Market varieties | Roles played | Subsistence varieties | Roles played |
| Breeder seed development/ Production/ supply | | | | |
| Basic seed production/ Supply | | | | |
| Pre-basic seed production/ Supply | | | | |
| Certified seed production | | | | |
| Distribution of seeds | | | | |
| Financing | | | | |
| Others | | | | |

3-2) Through Interview/ questionnaire to stakeholders identified in the above section I. 3. 3-1), identify bottlenecks and challenges at each stage of seed production and supply chain.

| | Market varieties | Subsistence varieties |
|--|------------------|-----------------------|
| Breeder seed development/ Production/ supply | | |
| Pre-basic seed production/ Supply | | |
| Basic seed production/ Supply | | |
| Certified seed production | | |
| Distribution of seeds | | |
| Financing | | |
| Quality Control/ Standard | | |
| Others | | |

3-3) List-up supports provided by your government or other stakeholders in supply of certified rice seeds to farmers (e.g. subsidy, credit), if any.

3-4) List-up the routes for supply of certified seeds in your countries. If possible, indicate the approximate amount of seeds supplied, frequency and any supports from the government through each route.

3-5) List up platforms/ forums where public-private dialogues (could) take place on rice seed production and supply. If there is not such platform, describe how the communication between public and private sectors is being made.

3-6) Please list the sales price of certified seeds if seeds are sold.

| Currency: _____ (Approximate exchange rate: _____ 1 = USD _____) | | |
|---|-------------------|--|
| | Name of Varieties | Price (Information from the year of 20__) |
| Irrigated Lowland | | |
| | | |
| | | |
| | | |
| Rain-fed Lowland | | |
| | | |
| | | |
| | | |
| Rain-fed Upland | | |
| | | |
| | | |
| | | |

3-7) Please list the purchase price of certified seeds if seeds are purchased from seed multipliers.

| Currency: _____ (Approximate exchange rate: _____ 1 = USD _____) | | |
|---|-------------------|---|
| | Name of Varieties | Price (Information from the year of 20__) |
| Irrigated Lowland | | |
| | | |
| | | |
| | | |
| Rain-fed Lowland | | |
| | | |
| | | |
| | | |
| Rain-fed Upland | | |
| | | |
| | | |
| | | |

3-8) Please indicate who decides the price of certified seed, and describe in details the procedure for price setting.

3-9) Indicate how and how often farmers in your country renew their seeds.

3-10) Indicate the number of rice varieties cultivated per farmer in your country. Also indicate the name of varieties commonly produced by farmers in your country.

3-11) Describe how farmers in your country identify certified seed and its quality, when they purchase it.

Section II Target Setting, Planning and Discussions

II. <Target Setting, Planning and Discussions>

1. Legislation, Policy, Institutions and Planning Aspects

1-1) Based on the issues listed up in the above section I. 1. 1-12), discuss the way forward and suggestions for policy makers for improvement.

2. Technical Aspects in Production

2-1) Against the NRDS goal, identify target seed production by 2018 of breeder seed, foundation seed, and certified seed. If seeds are to be procured, indicate it in the table.

Step 1: Identify target production for 2018 set in NRDS

Step 2: Identify average amount of seeds used per ha, and average production per ha. Based on those figures, calculate required amount of seed to produce one ton of grain at farm level in your country, and then calculate "Seed-Grain Ratio"

Step 3: Considering the current seed production and supply identified in I. 1.1-7), identify approximate amount of rice seeds currently self-supplied by/among farmers, and percentage of certified seed in the total amount of seeds used.

Step 4: Considering the figure identified by the above Step 3, set the target percentage of production in your country to be covered with certified seed.

Step 5: Determine the target frequency of renewals of certified seeds by farmers

Step 6: Based on the figures identified in the above Step 1, 2, 3, 4 and 5, determine the required amount of certified seed per year to achieve rice production set in NRDS by 2018,

Step 7: Based on the required amount of certified seed identified in the above Step 6, determine the amount of basic seed required to achieve rice production set in NRDS by 2018

Step 8: Based on the required amount of basic seed identified in the Step 7, determine the amount of pre-basic seed required to achieve rice production set in NRDS by 2018

Step 9: Based on the required amount of pre-basic seed identified in the Step 8, determine the amount of breeder seed required to achieve rice production set in NRDS by 2018

| | | |
|--|-------------------------|---|
| NRDS target production by 2018 is: _____ MT/year | | |
| Average amount of seed used _____ kg/ha, average yield _____ t/ha, Seed-Grain Ratio _____ : _____. | | |
| Approximate amount of seeds currently self-supplied by or among farmers _____ MT, _____ % | | |
| Target amount of production to be covered by certified seeds _____ % | | |
| Seeds are renewed every _____ years | | |
| | Target amount (MT/year) | Area of land required for production (ha) |
| Breeder Seed | | |
| Pre-basic Seed | | |
| Basic Seed | | |
| Certified Seed | | |

2-2) With considering the varieties listed in the above sections I. 1. 1-7), 1-8), and 1-9), determine the varieties for market oriented farming and/or subsistence farming to be recommended and promoted in your country.

| Suitable Agro-Ecological Zones | Name of recommended varieties | Seed Category (Market and/or Subsistence) |
|--------------------------------|-------------------------------|---|
| Irrigated Lowland | | |
| | | |
| | | |
| | | |
| Rain-fed Lowland | | |
| | | |
| | | |
| | | |
| Rain-fed Upland | | |
| | | |
| | | |
| | | |

2-3) Determine the gap **between the current production** identified in the above section I. 1. 1-7) **and target amount of seed production** determined in the above section II. 2. 2-1) on Certified seed, Basic seed, Pre-basic seed and breeder seed. Based on the of breeder seed

| | Target amount (MT/year) | Current Production/ supply (MT/year) | Gap (MT/year) |
|----------------|-------------------------|--------------------------------------|---------------|
| Breeder Seed | | | |
| Pre-Basic Seed | | | |
| Basic Seed | | | |
| Certified Seed | | | |

- 2-4) Determine the gap **between the total area currently being cultivated** for rice seed production identified in the above section I. 1. 1-7) **and area of land required for target production** determined in the above section II. 2. 2-1) for Certified seed, Pre-basic seed, Basic seed and Breeder seed.

| | Area of land required to achieve target production (ha) | Current cultivated area for seed production | Gap (ha) |
|----------------|---|---|----------|
| Breeder Seed | | | |
| Pre-Basic Seed | | | |
| Basic Seed | | | |
| Certified Seed | | | |

- 2-5) Based on the above sections II. 2. 2-2), 2-3) and 2-4), determine the target production of **Certified seed per variety** and the target area of cultivation.

| | Name of recommended varieties | Seed Category (Market and/or Subsistence) | Target Amount of Seed Production (MT/year) | Areas required for production (ha) |
|-------------------|-------------------------------|---|--|------------------------------------|
| Irrigated Lowland | | | | |
| | | | | |
| | | | | |
| | | | | |
| Rain-fed Lowland | | | | |
| | | | | |
| | | | | |
| | | | | |
| Rain-fed Upland | | | | |
| | | | | |
| | | | | |
| | | | | |

2-6) Based on the above items II. 2. 2-5), determine the target production of **Basic Seed per variety** and the target area of cultivation.

| | Name of recommended varieties | Seed Category (Market and/or Subsistence) | Target Amount of Seed Production (MT/year) | Areas required for production (ha) |
|-------------------|-------------------------------|---|--|------------------------------------|
| Irrigated Lowland | | | | |
| | | | | |
| | | | | |
| | | | | |
| Rain-fed Lowland | | | | |
| | | | | |
| | | | | |
| | | | | |
| Rain-fed Upland | | | | |
| | | | | |
| | | | | |
| | | | | |

2-7) Based on the above section II. 2. 2-6), determine the target production of **Pre-basic Seed per variety** and the target area of cultivation.

| | Name of recommended varieties | Seed Category (Market and/or Subsistence) | Target Amount of Seed Production (MT/year) | Areas required for production (ha) |
|-------------------|-------------------------------|---|--|------------------------------------|
| Irrigated Lowland | | | | |
| | | | | |
| | | | | |
| | | | | |
| Rain-fed Lowland | | | | |
| | | | | |
| | | | | |
| | | | | |
| Rain-fed Upland | | | | |
| | | | | |
| | | | | |
| | | | | |

2-8) Based on the above section II. 2. 2-7), determine the target production/ procurement of **Breeder Seed per variety** and the target area of cultivation.

| | Name of recommended varieties | Seed Category (Market and/or Subsistence) | Target Amount of Seed Production (MT/year) | Areas required for production (ha) |
|-------------------|-------------------------------|---|--|------------------------------------|
| Irrigated Lowland | | | | |
| | | | | |
| | | | | |
| | | | | |
| Rain-fed Lowland | | | | |
| | | | | |
| | | | | |
| | | | | |
| Rain-fed Upland | | | | |
| | | | | |
| | | | | |
| | | | | |

2-9) Based on the above section II. 2. 2-5), determine the target annual **certified seed** production/ multiplication and cultivated area for each rice seed variety **in each seed production stations**.

| Name of Seed Producing Station | Name of recommended varieties | Category (Market and/or Subsistence) | Target Amount of Seed Production (MT/year) | Areas required for production (ha) |
|--------------------------------|-------------------------------|--------------------------------------|--|------------------------------------|
| | | | | |
| | | | | |
| | | | | |
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2-10) Based on the above sections II. 2. 2-6), 2-7), 2-8), 9), determine the target annual production of **Breeder seed, Pre-basic seed, and Basic seed at each seed production stations per variety**

| Name of Seed Producing Stations | Name of recommended varieties | Breeder seed (MT/year) | Areas required for production (ha) | Pre-basic Seed (MT/year) | Areas required for production (ha) | Basic Seed (MT/year) | Areas required for production (ha) |
|---------------------------------|-------------------------------|------------------------|------------------------------------|--------------------------|------------------------------------|----------------------|------------------------------------|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |

2-11) Based on the above sections I. 1. 1-7), II. 2. 2-9) and 2-10) determine the gap in the **size of land for seed production for each station**

| Name of Seed Producing Stations | Currently cultivated Area for rice seed production (ha) | Area required for production (ha) | Total Gap (ha) | To be Rehabilitated (ha) | To be Developed (ha) |
|---------------------------------|---|-----------------------------------|----------------|--------------------------|----------------------|
| | | | | | |
| | | | | | |
| | | | | | |

2-12) Identify required **human resources for seed production and multiplication** to achieve the target rice seed production identified in the above section II. 2. 2-1).

| | Number of technical personnel | Capacity of technical personnel | | Means and Budget required to be allocated per technical personnel (with Remarks) |
|------------------|-------------------------------|---------------------------------|------------|--|
| | | Knowledge | Experience | |
| Researchers | | | | |
| Technicians | | | | |
| Workers/Laborers | | | | |

2-13) Based on the above sections I. 2. 2-7) and II. 2-12), identify the gap **between required human resource and available human resource for seed production and multiplication**

| Name of Seed Producing Stations | Researcher | | Gap | Technician | | Gap | Workers/ Laborers | | Gap |
|---------------------------------|------------|-----------|-----|------------|-----------|-----|-------------------|-----------|-----|
| | Required | Available | | Required | Available | | Required | Available | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Total | | | | | | | | | |

2-14) Based on the above mentioned section I. 2. 2-9) and II. 2-13), determine the needs for **Human resource development for rice seed production.**

| | Number of technical personnel to be newly employed | Required Budget For employment | Number of technical personnel to be trained | Areas for training | Required Budget for training |
|-------------------|--|--------------------------------|---|--------------------|------------------------------|
| Researcher s | | | | | |
| Technicians | | | | | |
| Workers/ Laborers | | | | | |
| Total | | | | | |

2-15) Based on the questionnaire for the above section I. 2. 2-6), determine required **human resources for seed inspection** to achieve the target rice seed production identified in the above section II. 2. 2-1.

| Geographical area | Required Number of Inspectors | Required Capacity of Inspectors | | Means and Budget required to be allocated per Inspector (with Remarks) |
|-------------------|-------------------------------|---------------------------------|---------------------------|--|
| | | Knowledge (with Remarks) | Experience (with Remarks) | |
| | | | | |
| | | | | |
| | | | | |
| Total | | | | |

2-16) Based on the the above section I. 2. 2-16) and the above section II. 2. 2-15, identify the gap between required human resources and available human resources in seed inspection.

| Geographical area | Number of Inspectors | | Gap in number | Gap in Capacity |
|-------------------|----------------------|-----------|---------------|-----------------|
| | Required | Available | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Total | | | | |

2-17) Based on the questionnaire for the above section I. 2. 2-6) and the above section II. 2. 2-16, determine the needs for **Human resource development for seed inspection.**

| Geographical area | Number of inspectors to be newly employed | Required Budget For employment | Number of Inspectors to be trained | Areas for Training | Required Budget for training |
|-------------------|---|--------------------------------|------------------------------------|--------------------|------------------------------|
| | | | | | |
| | | | | | |
| | | | | | |
| Total | | | | | |

2-18) Discuss the issues listed up in the above section I. 2. 2-18), and suggest possible way forward to address each issue.

3. Supply Aspects

3-1) Discuss the below assumption regarding seed multiplication modalities and finalize the table for both market and subsistence varieties, with identifying key stakeholders and their demarcation in roles.

| | Market varieties | Subsistence varieties | Geographical Area covered |
|--|---|---|---------------------------|
| Breeder seed Development/ Production/ Supply | - Government (be specific on which institutions) and/or - Certified private producers (Be specific) | - Government (be specific on which institutions) | |
| Pre-basic seed Production/ Supply | - Government (be specific on which institutions) or - Certified private producers (Be specific) | - Government (be specific on which institutions) | |
| Basic seed Production/ Supply | - Government (be specific on which institutions) or - Certified private producers (Be specific) | - Government (be specific on which institutions) | |
| Certified seed Production | - Certified private companies (Be specific) or - Certified village core farmers | - Certified village core farmers | |
| Distribution | - Ordinary market channel | - NGO, government, and or any other channel (be specific) | |

3-2) Based on the issues and bottlenecks identified in the above item I. 3. 3-2), discuss and make suggestions for possible solutions to address each one of the bottlenecks.

| | Market varieties | Suggestions/ Possible solutions | Subsistence varieties | Suggestions/ Possible solutions |
|---|------------------|------------------------------------|--------------------------|------------------------------------|
| Breeder seed development/ Production/ supply | | | | |
| Pre-basic seed production/ Supply | | | | |
| Basic seed production/ Supply | | | | |
| Certified seed production | | | | |
| Distribution of seeds | | | | |
| Financing | | | | |
| Quality Control/ Standard | | | | |
| Others | | | | |

Section III Way Forward: Future Interventions and Recommendations

III. < Way Forward: Future Interventions and Recommendations>

1. Legislation, Policy, Institutions and Planning Aspects

Summarize the discussion points and way forwards from the Suggestions/Recommendations

2. Technical Aspects in Production

List up Intervention options discussed in the section II, with priority, fund source identification, and required resources (financial resources, technical resources or others)

3. Supply Aspects

List up Intervention options discussed in the section II, with priority, fund source identification, and required resources (financial resources, technical resources or others)

Attachment:

Questionnaire on methods and procedures for Rice Seed Production

Questionnaire for Rice Seed Production

| | |
|---|--|
| Name of organization (including details such as branch/ laboratory name) | |
| Location | |
| Name of Reporter | |
| Title of Reporter | |
| | |
| Type of seeds | Breeder seeds/ Foundation Seeds/ Certified Seeds |
| Name of the variety | |

<Instruction>

- 1. Please fill in the below format with information as detail as possible.**
- 2. Please leave the space blank if it is not applicable in rice seed production in your organization.**
- 3. Please use one copy of this format per variety. (You have to fill in 3 formats, if you produce three varieties in your organizations) However, you need to submit only one format, if the same procedures and methods are applied to all varieties.**

| Methods/ Procedures for rice seed production | Persons in charge of work | Procedure for supervision | Persons in charge of Supervision |
|--|---------------------------|---------------------------|----------------------------------|
| <p><Plot and Personnel></p> <ul style="list-style-type: none"> - Indicate the distance between a seed production plot and adjacent plots - Indicate the size of land allocated for production of this respective seed variety - Indicate the number of people work on production of this respective seed variety <ul style="list-style-type: none"> i) Person in-charge:_____. ii) Workers:_____. - Indicate the size of plots for seed production the each person in charge and each worker are responsible for. <ul style="list-style-type: none"> i) Person in-charge:_____. ii) Worker:_____. - Select an option which is most applicable to you, regarding the balance between quantity and quality of seeds. <ul style="list-style-type: none"> i) Quality matters more than production quantity ii) Quality is important, while some production quantity should be secured iii) If no obvious issues in quality, I pursue maximize the production. iv) Other (Please specify) <p><Seed Pre-Treatment></p> <ul style="list-style-type: none"> - Describe the source of seeds - Do you practice seed selection [Yes / No] in case Yes, describe the procedure and methods of seed selection in details. | | | |

- Do you practice seed disinfection [Yes / No]
in case Yes, describe the methods and procedures of disinfection in details.

<Seedling preparation> (if applicable)

- Describe in details how soil and plot for nursery bed are prepared

- Describe in details the seeding methods used in nursery beds (seeding rate and seeding methods such as broadcasting and drilling)

- Indicate seedling age at transplanting.

<Seeding/ Transplanting>

- Select planting methods
 - i) Direct Seeding on upland plot,
 - ii) Line planting on upland plot,
 - iii) Direct seeding on lowland plot
 - iv) Line transplanting on lowland plotRemarks (if any):

- Select seeding methods in case of **direct seeding**
Dibbling/ Drilling/ Broadcasting
Remarks (if any):

- Indicate the seed rate in case of **direct seeding**

| | | | |
|--|--|--|--|
| <p>Seed Rate: _____ kg/ha</p> <p>Remarks (if any):</p> <ul style="list-style-type: none"> - Select spacing applied for rice seed production, in case of line planting. <ul style="list-style-type: none"> i) Same spacing as ordinary rice production methods ii) Wider spacing than ordinary rice production methods <p>Remarks (if any):</p> <ul style="list-style-type: none"> - Select the number of seedlings in case of transplanting. <ul style="list-style-type: none"> i) Single seedling per hill ii) 2 seedlings per hill iii) 3 seedlings per hill iv) No standard methods <p>Remarks (if any):</p> <ul style="list-style-type: none"> - Select the number of seeds in case of direct seeding. <ul style="list-style-type: none"> i) Adjust the number of seeds after germination ii) Single seeding per hill iii) 2 seeding per hill iv) 3 seeding per hill v) No standard method <p>Remarks (if any):</p> <ul style="list-style-type: none"> - Indicate planting density applied for rice seed production in direct seeding. <ul style="list-style-type: none"> Density: _____ hills/ m² (in case of dibbling) [planting space: __cm X__ cm & ___grains /hill] Planting density: _____cm between lows (in case of drilling) <p>Remarks (if any):</p> | | | |
|--|--|--|--|

- Indicate planting density applied for rice seed production in **transplanting**.

Density: _____ hills/ m²

[planting space: __cm X__ cm & ___grains /hill]

Planting density: _____ cm between lows

Remarks (if any):

- Describe how and when complementary planting for missing hills are done.

<Fertilizer application>

- Indicate the frequency of fertilizer application:
_____ Times

- Describe details of **1st** application

i) Kind of fertilizer:

ii) Timing of the fertilizer application

iii) Dose of the fertilizer

iv) How to apply (application methods)

- Describe details of **2nd** application

i) Kind of fertilizer:

ii) Timing of the fertilizer application

iii) Dose of the fertilizer

| | | | |
|--|--|--|--|
| <p>iv) How to apply (application methods)</p> <p>- Describe details of 3rd application</p> <p>i) Kind of fertilizer:</p> <p>ii) Timing of the fertilizer application</p> <p>iii) Dose of the fertilizer</p> <p>iv) How to apply (application methods)</p> <p>- Describe details of 4th application</p> <p>i) Kind of fertilizer:</p> <p>ii) Timing of the fertilizer application</p> <p>iii) Dose of the fertilizer</p> <p>iv) How to apply (application methods)</p> <p><Weeding></p> <p>- Indicate the frequency of weeding : _____ Times</p> <p>Remarks (if any):</p> <p>- Indicate the timing and methods of weeding</p> <p>1st weeding [when:]] [How:]]</p> <p>2nd weeding [when:]] [How:]]</p> <p>3rd weeding [when:]] [How:]]</p> <p>4th weeding [when:]]</p> | | | |
|--|--|--|--|

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|--|--|--|--|
| <p>[How:]</p> <p><Removal of Off-type/ Rouging></p> <ul style="list-style-type: none"> - Indicate the frequency of removal of off-type: _____ Times per __week/ month/ whole growth period <p>Describe in details if the frequency changes depending on different growth stages of rice:</p> <ul style="list-style-type: none"> - Indicate the timing of removal of off-type <p>1st Removal [when:]</p> <p>2nd Removal [when:]</p> <p>3rd Removal [when:]</p> <p>4th Removal [when:]</p> <ul style="list-style-type: none"> - Select how to spot the off-type <ul style="list-style-type: none"> i) Observe plots from roads or ridges and spot off-types ii) Observes hills row by row from inside plots, and spot off-types iii) Combine two methods mentioned above. iv) By other methods (Describe in details): <ul style="list-style-type: none"> - Select the timing to check off-type <ul style="list-style-type: none"> i) Mainly during nursery stage and vegetative growth period ii) Mainly between to ear emergence to maturing period iii) Throughout growing period iv) By other method (Describe in details): | | | |
|--|--|--|--|

| | | | |
|--|--|--|--|
| <p>- Do you strip off husk to check the color of grain? Select answers applicable to you.</p> <ul style="list-style-type: none"> i) Never on the plot ii) Yes, sometime iii) Yes. Always when the suspicious hills are found. iv) Other (Describe in details): <p>- Select how to deal with off-type when it is spotted</p> <ul style="list-style-type: none"> i) Remove it immediately, if it is obviously the off-type ii) Remove immediately, both obvious and suspicious off-type iii) Leave them for all off-type to be removed together later iv) By other method (Describe in details): <p>- Select how to deal with hills on or close to border to next plot.</p> <ul style="list-style-type: none"> i) Handle them together with other hills which are not off-type (No special handling). ii) A few rows from the border are excluded from other seed, thus harvested earlier than other hills. (Handled differently) iii) No special handling, if the timing of maturity is different from rice planted in next plots iv) By other method (Describe in details): <p><Countermeasures against pests and/or diseases></p> | | | |
|--|--|--|--|

| | | | |
|--|--|--|--|
| <p><Harvesting ></p> <ul style="list-style-type: none">- Indicate the timing for Harvesting - Describe in details the procedures for rice seed harvesting <p><Post Harvesting></p> <ul style="list-style-type: none">- Describe in details how seeds are dried - Describe how seeds are processed/ treated after the harvest - Describe in details where seeds are stored (Name of facility, quality of facility, and who manages it) - Describe in details how seeds are stored, including the temperature control, moisture control, and preventive measures from being mixed with other seeds). | | | |
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