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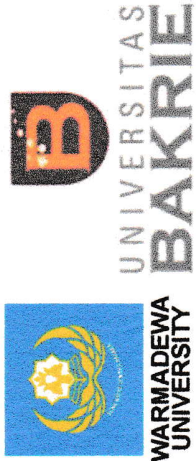
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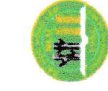
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EXPLORATION OF LOCAL RICE VARIETIES FROM EAST KALIMANTAN AND IDENTIFICATION OF ITS POTENCIES FOR RICE BREEDING PROGRAMS

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Background

Genetic Diversity:

- A main factor plays an important role in plant breeding program.
- A basic material for the assembly of new cultivars with high productivity and good quality results as well as tolerance to environmental stress factors which is a main objective of plant breeding program



Background

East Kalimantan local rice varieties:

- Good taste (WWF, 2013).
- Resistant to environmental stress (Subroto 2002; Rusdiansyah, 2006).
- Carrying alleles encoding for other superior traits which have not been characterized



Background

East Kalimantan local rice varieties:

- Have not been well explored
 - There is no data base/genetic resources information
 - Information depends on the farmers/local communities
 - Confusion nomenclature
- There is no adequate conservation programs
 - Existence highly depends the local farmers based on needs and the tendency towards certain varieties
 - Genetic label is dubious/ seed purity cannot be maintained
 - Threatened by genetic erosion
- The genetic potency has not been mapped
 - Superior character has not been identified optimally
 - Has not been utilized in the rice breeding program



Background

Important.....

➤ Exploration

- Documenting genetic resources
- Facilitate access to genetic resources information
- Nomenclature alignment

➤ Conservation

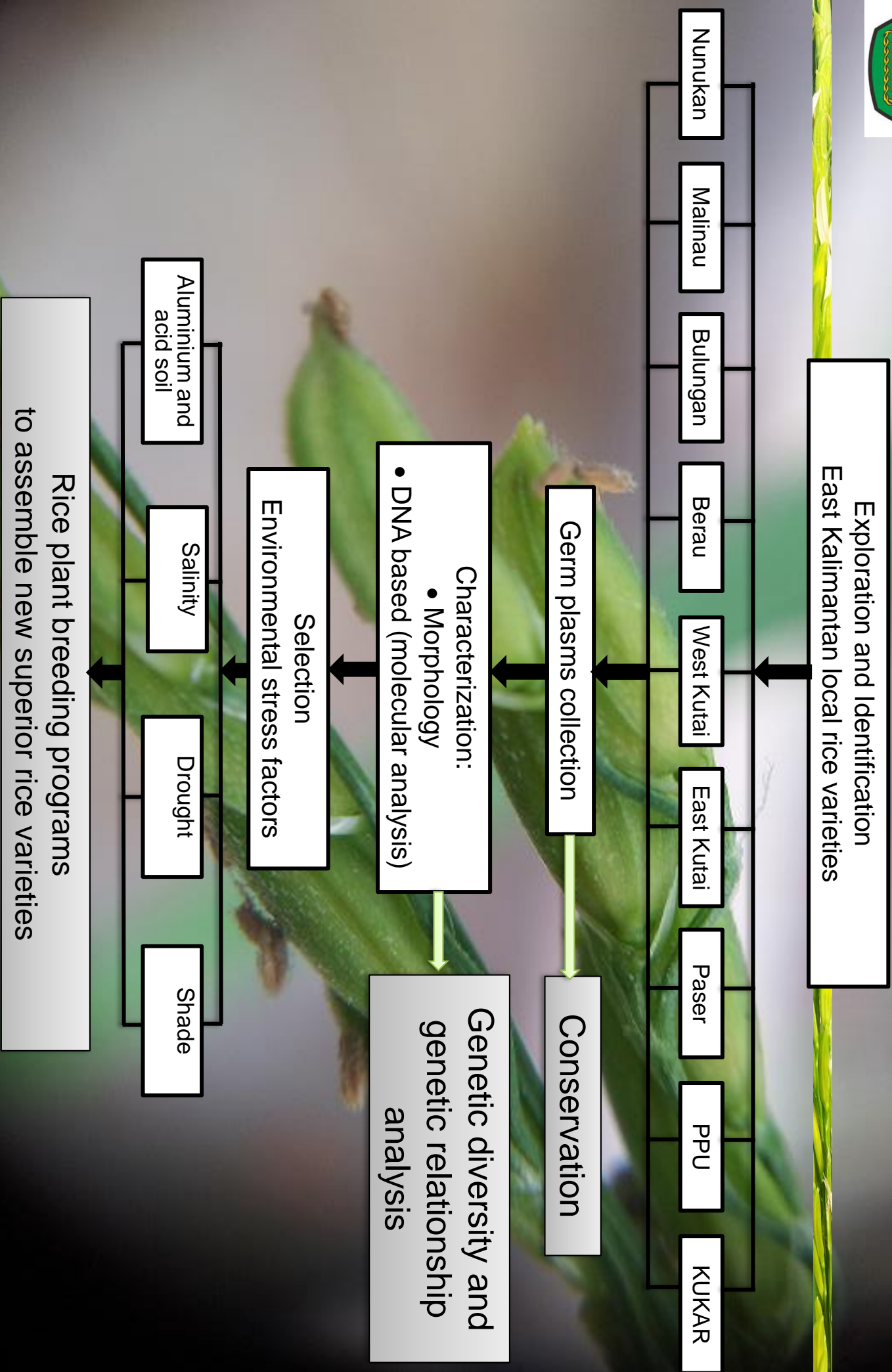
- Preservation of genetic resources to prevent genetic erosion
- Facilitate access to genetic resources
- Ensure the genetic purity of seeds

➤ Identification

- Mapping the genetic potency
- Utilization of the genetic potential optimally in plant breeding programs to assemble superior varieties



Methods





Results

➤ Genetic Diversity

- A relatively high diversity of local rice and glutinous rice cultivars were found.



Rice and glutinous rice diversities in Penajam Paser Utara (PPU) district



1. Cilamaya



2. Duppa



3. Jambu



4. Jambu-jambu



5. Kemang Sungkai



6. Ketan Gunung



7. Ketan Hitam



8. Ketan Merah



9. Ketan Botol



10. Ketan Nunuk



11. Ketan Paser 0



12. Ketan Pasir



Rice and glutinous rice diversities in Penajam Paser Utara (PPU) district



13. K. Tangkai Pariyang



14. Lungku Dupu



15. Mayas



16. Mayas Merah



17. Muncul



18. Padi Menyan



19. Padi Putih (Siam)



20. Padi Sungkai



21. Pare Kiongo



22. Sasak Jalan 1



23. Sasak Jalan 2



24. Sasak Jalan 3



Rice and glutinous rice diversities in Penajam Paser Utara (PPU) district



25. Sereh 1



26. Sereh 2



27. Siam



28. Siam Mas



29. Tangkai Mayang



30. Tihung



Rice Genetic Diversity

| No. | Kabupaten | Jumlah | Sawah | Ladang |
|-----|--------------|------------|-----------|------------|
| 1 | PPU | 30 | 16 | 14 |
| 2 | PASER | 41 | 5 | 36 |
| 3 | KUBAR | 5 | 0 | 5 |
| 4 | KUKAR | 31 | 1 | 30 |
| 5 | KUTIM | 65 | 0 | 65 |
| 6 | BULUNGAN | 25 | 7 | 18 |
| 7 | NUNUKAN | 38 | 16 | 22 |
| 8 | MALINAU | 15 | 7 | 8 |
| 9 | KRAYAN | 6 | 0 | 6 |
| | TOTAL | 256 | 52 | 204 |



Results

➤ Genetic Diversity

- A relatively high diversity of local rice and glutinous rice cultivars were found.
- Physical grain shape diversities; some cultivars have round grains like cultivar Dupa, Lungku Dupa and Menyan. Slender and long grain with more than 1 cm length were also observed as Kemang Sungkai, Sasak Jalan, Siam Mas.



Some cultivars have round grains



Dupa



Lungku Dupa



Menyan



Some cultivars have slender and long grain



Sasak Jalan



Siam Mas



Tihung



Kemang Sungkai



Sungkai



Siam

Results



➤ Genetic Diversity

- A relatively high diversity of local rice and glutinous rice cultivars were found.
- Physical grain shape diversities; some cultivars have round grains like cultivar Dupa, Lungku Dupa and Menyan. Slender and long grain with more than 1 cm length were also observed as Kemang Sungkai, Sasak Jalan, Siam Mas.
- A similar local name as well as grains-shape was observed in some cultivars indicating the same cultivars?



Similar local names and grain shapes probably indicated the same cultivars with different local names



Kemang Sungkai



Sungkai



Dupa



Lungku Dupa



Menyan



Results

➤ Genetic erosion

- Some cultivars that have ever recorded, is difficult to be rediscovered (ex: Lameding), meaning that the existence of such local cultivars currently are very limited or endangered.
- Currently only 40% of local rice varieties in West Kutai can be recognized by the local community (Hendra, 2012).

Results



➤ Genetic potencies

| Eminent character | Kultivar | Asal |
|--------------------------|--|-------------|
| Uniform tillers | Ketan Tagkai Ngeno', Padi Prari | PASER |
| Many tillers | Sereh Putih, Sereh Gunung | PASER |
| Fragrant/aromatic | Lupa Pantai, Jambu-jambu | PASER |
| | Ketan Botol, Ketan Pasir, Padi Menyan | PPU |
| Long panicle | Ace Cina, Sereh Kuning | PASER |
| Good taste | Ketan Kuning | PASER |
| | Jambu, Lungku Dupu, Padi Putih (Siam), Sasak Jalan | PPU |
| <i>Pera</i> | Sasak Jalan | PASER |
| | Cilamaya, Cilamaya, Sasak Jalan, Sereh, Siam | PPU |
| <i>Pera</i> and fragrant | Pance Kuning | PASER |
| Uniform harvest time | Rendilio | PASER |



Results

➤ Genetic potencies

| Karakter Unggul | Kultivar | Asal |
|------------------------------|--|-------|
| Fluffy taste | Mayas Putih, Si Buyung 1 (Sebuyung Biasa), Raden Darat, Rendah Kuning | PASER |
| | Ketan Tangkai Panjang, Muncul, Sereh, Siam Mas, Tangkai Mayang, Tihung | PPU |
| | Si Buyung 2 (Sebuyung Harum), Padi Benalu | PASER |
| Fluffy and fragrant/aromatic | Dupa, Kemang, Sungkai | PPU |
| | Siam Gunung, Mayas Kuning, Pance Puteh, Elvi, Lekatan Pelam, Ketan Mayas, Tempu Maya, Padi Loreng, Mayas | PASER |
| Good taste | Ketan Gunung, Pare Kiongo, Ketan Hitam, Ketan Merah, Mayas Merah, Padi Sungkai, Sasak Jalan | PPU |
| Shorter height | Ketan Jenggot / Pulut Jangko' | PASER |
| Disease tolerance | Almost all cultivars | |



Results

➤ **Genetic potencies**

- These local rice cultivars have great potencies for organic rice farming development.
- Nowadays the tendency of rice consumers for organic rice increases.
- Organic rice priced higher than anorganic.



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Thank you