

DNA Gynotyping for Assessing Farmer Identification: Rice in Bangladesh and India

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DNA Fingerprinting

1. Seed collection
2. Germination
3. Leaf sampling
4. Packing/shipping
5. DNA extraction
6. Gynotyping (Illumina – Infinium 6K platform: more than 4K SNPs usable)
7. Analysis (identification)

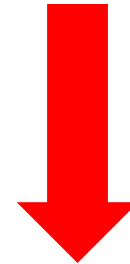
Bangladesh
(n=1,289)



India
(n=2,798)



SciGenome



IRRI GSL

Results on Top 5 varieties at 5% MAF

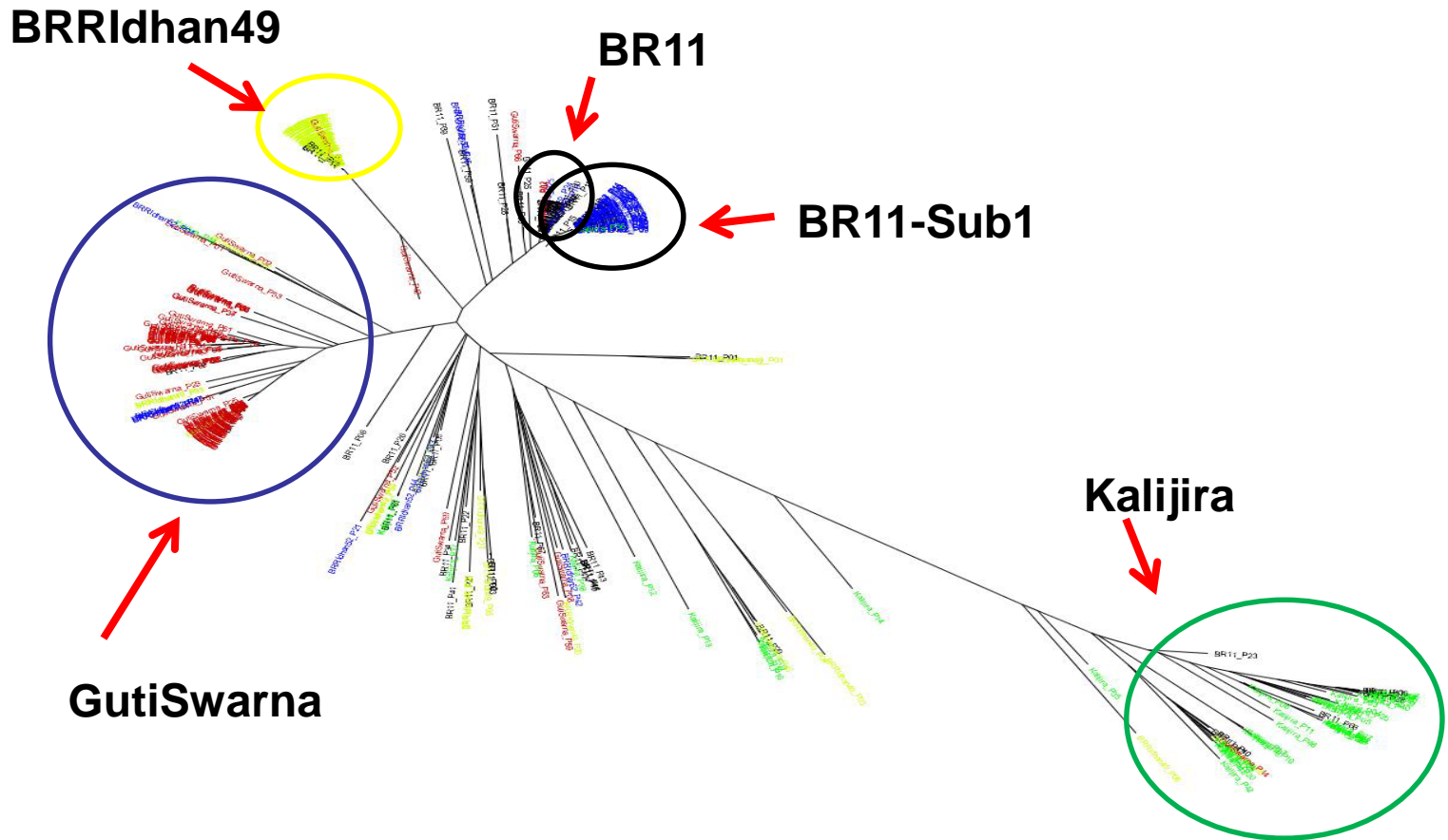


Figure 2. Variety Identification based on DNA Fingerprinting: Bangladesh

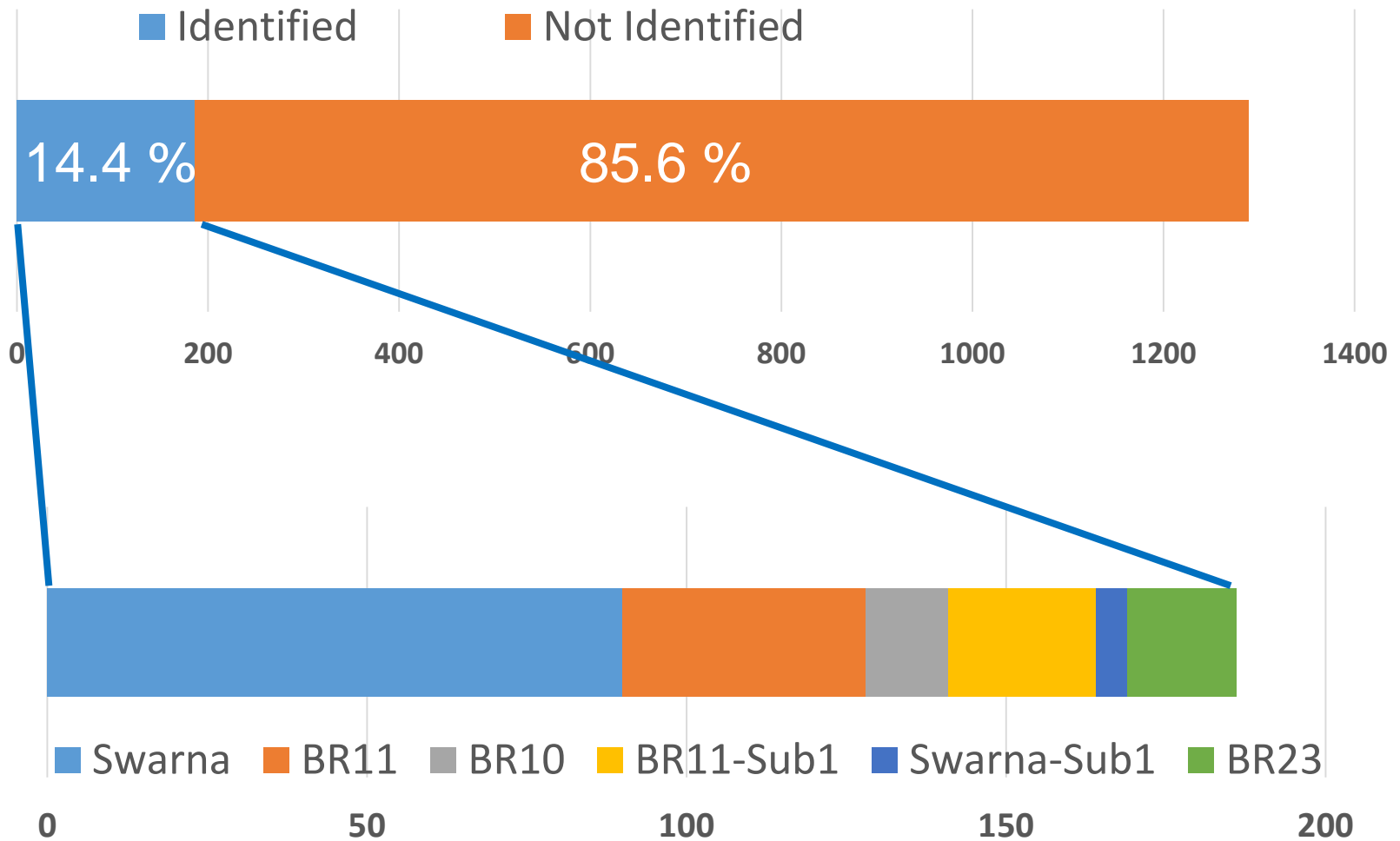
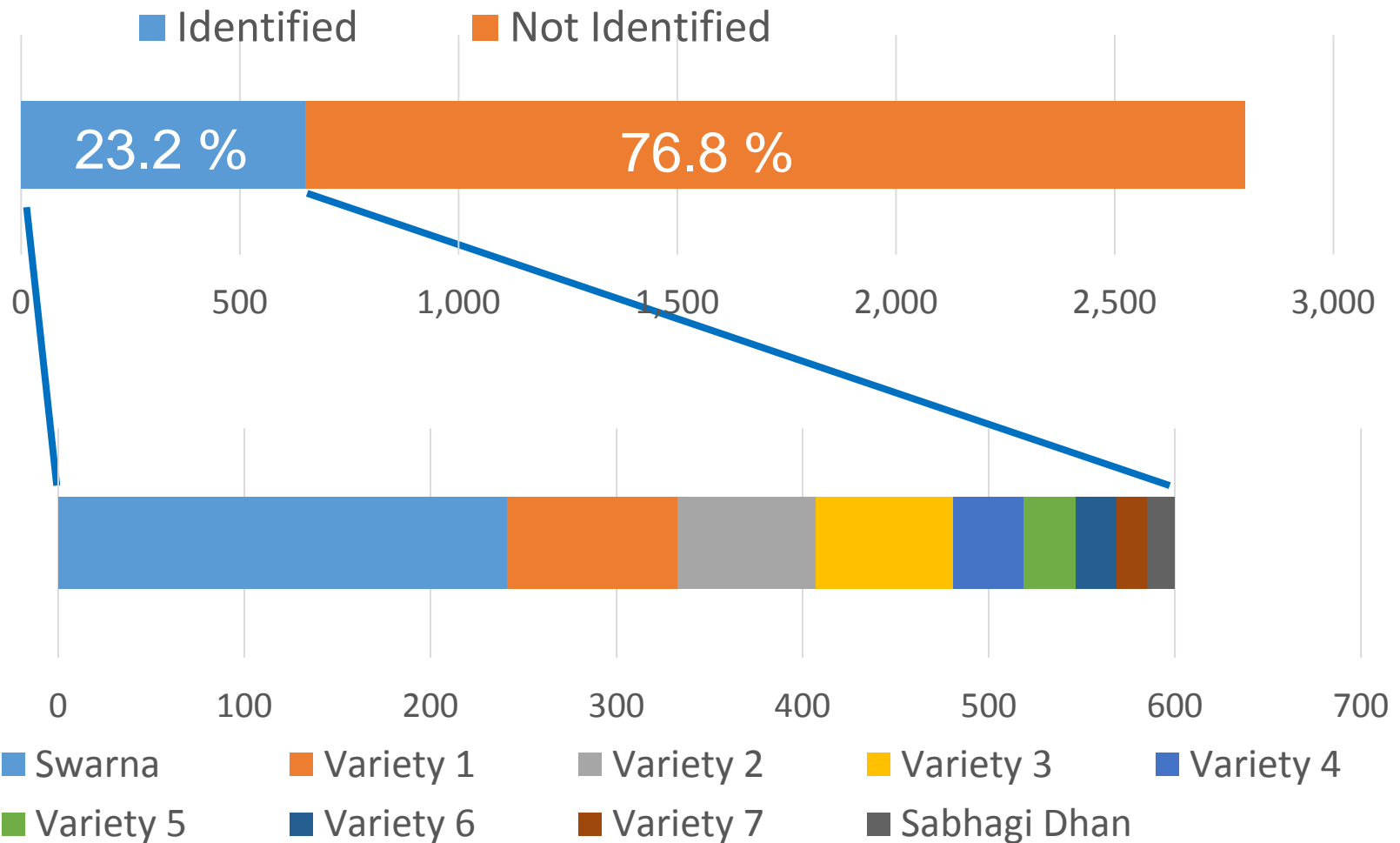


Figure 2. Variety Identification based on DNA Fingerprinting: India



Appendix

Table 1. Variety Identification and Variety Names used by Famers: Bangladesh

| Variety | Number of seed samples identified ^A | Sub1 QTL available? | Variety names commonly used by farmers |
|----------------------------|--|---------------------|--|
| | (A) | (B) | (C) |
| | Number (%) | Number (% of A) | |
| Swarna ^B | 90 (7.0) | 0 (0) | Guti Swarna (30), Lal Swarna (11), Swarna (7), Nepali Swarna (6), BR24 (6) |
| BR11 | 38 (2.9) | 4 (10.5) | BR11 (21), BRRRI dhan 40 (7) |
| BR10 | 13 (1.0) | 1 (7.7) | BR10 (4), Binadhan-7 (3) |
| BR11-Sub1 | 23 (1.8) | 18 (78.3) | BR11 (8), BR22 (3), Hori dhan (3) |
| Swarna-Sub1 | 5 (0.4) | 5 (100) | Binadhan-7 (4), BR22 (1) |
| BR23 | 17 (1.3) | 1 (1.3) | BRRRI dhan 30 (5), BR10 (3) |
| Not identified | 1,103 (85.6) | 88 (8.0) | |
| Total | 1,289 | 117 (9.1) | |

Table 1. DNA Fingerprinting Results in India 2015

| Variety | Number of seed samples identified ^A | Variety names commonly used by farmers |
|-----------------------|--|---|
| | (A) Number (%) | (B) |
| Swarna | 241 (8.6) | Swarna (122), Mahsuri (13), Niranjan (4), Moti Gold (2), others |
| Variety 1 | 92 (3.3) | MTU1010 (41), Lalat (10), Swarna (4), Moti (1), others |
| Variety 2 | 74 (2.6) | Lalat (39), MTU1001 (4), Swarna (2), Puja (2), others |
| Variety 3 | 74 (2.6) | Lalat (48), Puja (2), MTU1001 (2), others |
| Variety 4 | 38 (1.4) | Moti (8), others |
| Variety 5 | 28 (1.0) | Swarna (16), Ranjit (2), Puja (1), others |
| Variety 6 | 22 (0.8) | MTU1010 (16), Lalat (2), others |
| Variety 7 | 16 (0.6) | Sarju 52 (14), others |
| Sabhagi Dhan | 15 (0.5) | Sabhagi Dhan (4), Swarna (2), others |
| ... | | |
| Not identified | 2,147 (76.8) | |
| Total | 2,797 (100) | |