

Table 1: Diversity of Lines Used to Evaluate the MaizeSNP50 BeadChip

Lines	Number of DNA Samples	Call Rate (%)	Heterozygosity Rate (%)
B73	3	99.40	0.32
Mo17	3	97.37	2.50
B73xMO17	3	97.34	51.84
25 DL*	25	96.34	2.26
NAM F1s†	25	97.61	40.89
IBMs‡	94	97.59	2.17
PVPs§	96	95.35	2.77
Teosinte	6	91.67	2.52
TeoNIL F1	6	88.10	34.02
LHRE¶	94	95.08	4.29
All	489	95.65	6.86

* DL = Diverse Lines
 † NAM = Nested Association Mapping population
 ‡ IBM = Intermediated B73 x Mo17 mapping population
 § PVP = Plant Variety Protection Act
 ¶ LHRE = Lines Highly Recombinant European

Illumina’s internal validation of the MaizeSNP50 BeadChip is shown in Table 2. For samples representing the B73 reference genome line, call rates across 56,110 markers were 99.40% with high reproducibility and low Mendelian inconsistency rates. Across 489 samples, spanning more than 30 diverse maize lines, the call rate was 95.65%. Reproducibility was >99.9% for nine replicates and the Mendelian inconsistency was 0.16% for 43 inbred crosses.

Figure 2 shows the distribution of the markers for the MaizeSNP50 BeadChip. More than 50% of the markers are within 10,000 nucleotides of the neighboring marker. Less than 5% of the physical gaps are larger than 200 Kb. With more than 55,000 markers, the average spacing is one marker every 40 Kb.

Call rates and heterozygosity for the diversity lines used to validate markers for the MaizeSNP50 BeadChip are shown in Table 1. The three B73 reference samples have an average call rate of >99%, while the six Teosinte progenitor samples have an average call rate of 91%. Samples evaluated include a panel of 25 highly diverse inbred lines, as well as their crosses with B73. Importantly, the inbred cross of B73 x Mo17 is heterozygous for more than 50% of markers contained in the panel. Samples for marker validation also included European and North American mapping populations, as well as the Plant Variety Protection Act panel.⁷

Illumina Solutions for Genotyping

The high-quality data and low per-sample cost of the MaizeSNP50 BeadChip are part of the powerful Illumina Whole-Genome Genotyping Solution. In addition, optional automation and the Laboratory Information Management System (LIMS) lower costs by eliminating errors associated with manual processing. Illumina genotyping products can be accessed via Illumina FastTrack Genotyping Services or any Illumina CSpPro® Service. Illumina solutions provide industry-leading levels of accuracy, flexibility, and affordability. To learn more about Illumina’s genotyping solutions, please visit www.illumina.com/maizeSNP50.

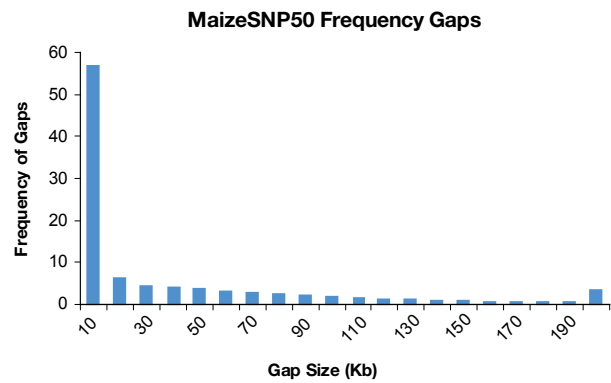
Table 2: MaizeSNP50 BeadChip Performance Data and Specifications

Parameter	Percent	Product Specification
Average Call Rate	99.40%*	>99%
Reproducibility	>99.9%	>99.9%
Mendelian Inconsistencies	0.036%	<0.1%

*Maize line B73 only

A standard cluster file is provided with the product to use as a starting point for calling genotypes. Given the complexity and diversity of maize lines, it is important to evaluate cluster positions for each data set. It is also best practice to include parental control inbred lines and their crosses for reference.

Figure 2: MaizeSNP50 BeadChip Probe Spacing



The MaizeSNP50 BeadChip provides uniform coverage across the entire maize genome.

References

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- SanMiguel P et al. (1998) The paleontology of intergene retransposons of maize, Nat. Genet. 20, 43–5.
- Schnable PS et al. (2009) The B73 maize genome: complexity, diversity, and dynamics, Science 326:1112–5.
- Gore MA et al. (2009) A first-generation haplotype map of maize. Science 326:1115–7.
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Ordering Information

Catalog No.	Product	Description
WG-500-1001	MaizeSNP50 Whole-Genome Genotyping Kit (48 samples)	Each package contains 2 BeadChips and reagents for processing 48 samples.
WG-500-1002	MaizeSNP50 Whole-Genome Genotyping Kit (288 samples)	Each package contains 12 BeadChips and reagents for processing 288 samples.
WG-500-1003	MaizeSNP50 Whole-Genome Genotyping Kit (1152 samples)	Each package contains 48 BeadChips and reagents for processing 1152 samples.
FT-440-1006	MaizeSNP50 FastTrack Service Project	Illumina's FastTrack provides services for a wide range of SNP genotyping projects.

Each MaizeSNP50 Genotyping BeadChip can process 24 samples in parallel and assay 56,110 markers per sample.

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