**FY20-21 RFP Application**

**FHB Breeding Program Summary Form**

**Name**       **Institution**

**FY19 Award:** $

1. FHB-related Crosses[[1]](#footnote-1)\*

a. Number of crosses made each year for FHB.

b. What % do these FHB-related crosses represent of total annual crosses?

2. List the FHB resistant sources (individual lines used as parents or categories such as Chinese, European, Brazilian, native, etc.) used in your breeding program.

3. For each FHB nursery you have please indicate the following: Location, total number of plots at the location, mist irrigated (yes/no), inoculation method (grain spawn, spray, none), and percentage of rows dedicated to YOUR variety development work (exclude mapping, commercial tests, uniform test, etc)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Location** | **# of Plots** | **Irrigated?** | **Inoculation Method** | **Variety Development Rows (%)** |
|  |  |  |  |  |
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4.  Number of new breeding lines from your program tested in a typical year in the nursery (e.g. year 1 entries)

5. Number of lines tested in the greenhouse?

6. How many breeding lines per year do you submit to the DON testing labs for DON evaluation?

Are you bulking over reps? Yes  No

7.  Do you evaluate the state test of commercial cultivars for FHB resistance?

Yes  No  No. of entries?

8. If you are using GS or MAS for FHB resistance loci, please indicate below how you are using GS or MAS and the loci you are selecting for.

MAS in early generation (F2 or F3 single plants) Yes  No

MAS on families derived from single plants Yes  No

Enrichment of F1 from multiparent crosses Yes  No

MAS in BCing[[2]](#footnote-2)\*\* Yes  No

MAS for recurrent parent background during BCing Yes  No

GS for FHB resistance Yes  No

Locus for MAS       Source(s)

How are you using GS?

9. Are you using the USDA-ARS Genotyping Laboratories? If yes, indicate the number of lines to be tested in the year of the grant application.

Yes  No  No. of lines

10.  Please list your most recent cultivar releases and indicate those with FHB resistance better than your Moderate Resistant check. FHB Reaction (R, MR, MS, S, VS)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Year** | **Release method** | **FHB reaction** | **FHB index (%)** | **DON (ppm)** |
| Check: | ------- | ------------- |  |  |  |
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11. Other brief comments (e.g. hardness evaluation or milling and baking tests on lines?):

12. How important are the following in your current and future **variety development** work for success in improving FHB resistance (1= very important, 5=not important at all)?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **1 (Very important)** | **2** | **3** | **4** | **5 (Not important at all)** |
| **Current Program** | | | | | |
| Accurate phenotyping |  |  |  |  |  |
| Greenhouse screening for Type II resistance |  |  |  |  |  |
| Nursery size |  |  |  |  |  |
| Uniform nurseries |  |  |  |  |  |
| Traditional breeding |  |  |  |  |  |
| Native resistance |  |  |  |  |  |
| Working with pathologist |  |  |  |  |  |
| Resistance from Asian |  |  |  |  |  |
| Resistance from Europe |  |  |  |  |  |
| Resistance from S. America |  |  |  |  |  |
| Resistance from other sources |  |  |  |  |  |
| MAS for 3BS |  |  |  |  |  |
| MAS for 5AS |  |  |  |  |  |
| MAS for 2DL |  |  |  |  |  |
| MAS for other QTL |  |  |  |  |  |
| Genomic Selection (GS) |  |  |  |  |  |
| **Future Program Needs** | | | | | |
| New sources of FHB resistance |  |  |  |  |  |
| New markers for current FHB QTL |  |  |  |  |  |
| New FHB QTL |  |  |  |  |  |
| New marker systems (SNPs, etc) |  |  |  |  |  |
| New screening techniques for Type I, II, V resistance |  |  |  |  |  |
| Increase nursery size |  |  |  |  |  |
| Increase GH screening |  |  |  |  |  |
| Increase DH availability |  |  |  |  |  |
| Increase GS capability |  |  |  |  |  |

1. \* What constitutes a cross for FHB?

   1) at least one parent carrying a defined QTL;

   2) at least one parent having at least moderate FHB resistance; or

   3) in cases where 1) or 2) are not met, progeny undergo FHB evaluation such that lines with MS or worse reactions are not released. [↑](#footnote-ref-1)
2. \*\* BCing – Back-crossing [↑](#footnote-ref-2)