

Critical Stem Rust Research Needs

Priorities for FY07 Cereal Rust Initiative		Priority rating	
		1 (high) to 5 (low)	
		NWIC - 12	Other - 3
Rust Pathology and Assessment			
	1. Assess vulnerability of US cereal varieties and germplasm to current and newly identified races of rust diseases throughout the world	1.17	1.67
	2. Monitor development, evolution, and spread of new rust races	2.54	1.67
	3. Identify sources of genetic resistance to the rust diseases, characterize race specificity of resistances, and develop molecular markers	1.5	2
	4. Investigate function of rust resistance genes in cereals and the function of avirulence genes in the pathogen.	4.17	3.5
	5. Communicate and coordinate information on current and emerging rust threats throughout the cereal industry	3.13	3.5
Germplasm Enhancement, Gene Discovery, Development of Molecular Markers			
	1. Identify and develop cereal germplasm with novel sources of disease resistance.	1.63	2
	2. Utilize genetic resources of the National Small Grains Collection and conduct 'pre-breeding' and marker development to facilitate their use.	2.29	2
	3. Identify and introgress resistances from wild and related species into modern cereal germplasm	3.75	4
	4. Identify and characterize molecular markers to facilitate transfer of major, minor, adult plant, and novel genes for rust resistance	2.33	3
Regional Variety Development, Evaluation, and Implementation			
	1. Establish and coordinate uniform screening nurseries to identify varieties, germplasm, genes with effective seedling and adult plant disease resistance	1.25	1.67
	2. Utilize molecular markers to introgress and pyramid resistance genes	2.17	3
	3. Develop, release, and deploy varieties with improved, more durable resistance to rust diseases	1.96	2.33
International Exchange, Coordination, Evaluation, and Pathogen Monitoring			
	1. Coordinate and support US-based international nurseries and germplasm evaluation and exchanges and global database management	1.3	2
	2. Monitor development, evolution, and spread of new rust races and vulnerability of US varieties and germplasm	2	1.67
	3. Introduce, evaluate, and distribute elite germplasm from International Agricultural Research Centers with enhanced rust resistance	2.33	2.5
Others	1. Fungicide research and assessment	1.67	1

Critical Stripe Rust Research Needs

Priorities for FY07 Stripe Rust Working Group		Priority rating	
		1 (high) to 5 (low)	
		NWIC - 6	Other - 0
Rust Pathology and Assessment			
	1. Assess vulnerability of US cereal varieties and germplasm to current and newly identified races of rust diseases throughout the world	1.33	
	2. Monitor development, evolution, and spread of new rust races	2	
	3. Identify sources of genetic resistance to the rust diseases, characterize race specificity of resistances, and develop molecular markers	1.33	
	4. Investigate function of rust resistance genes in cereals and the function of avirulence genes in the pathogen.	3.67	
	5. Communicate and coordinate information on current and emerging rust threats throughout the cereal industry	2.83	
Germplasm Enhancement, Gene Discovery, Development of Molecular Markers			
	1. Identify and develop cereal germplasm with novel sources of disease resistance.	1.33	
	2. Utilize genetic resources of the National Small Grains Collection and conduct 'pre-breeding' and marker development to facilitate their use.	2.33	
	3. Identify and introgress resistances from wild and related species into modern cereal germplasm	2.83	
	4. Identify and characterize molecular markers to facilitate transfer of major, minor, adult plant, and novel genes for rust resistance	1.67	
Regional Variety Development, Evaluation, and Implementation			
	1. Establish and coordinate uniform screening nurseries to identify varieties, germplasm, genes with effective seedling and adult plant disease resistance	1.33	
	2. Utilize molecular markers to introgress and pyramid resistance genes	1.33	
	3. Develop, release, and deploy varieties with improved, more durable resistance to rust diseases	1.67	
International Exchange, Coordination, Evaluation, and Pathogen Monitoring			
	1. Coordinate and support US-based international nurseries and germplasm evaluation and exchanges and global database management	1.67	
	2. Monitor development, evolution, and spread of new rust races and vulnerability of US varieties and germplasm	2	
	3. Introduce, evaluate, and distribute elite germplasm from International Agricultural Research Centers with enhanced rust resistance	1.83	