



EPA, Office of Pesticide Programs Resistance Management

Goal

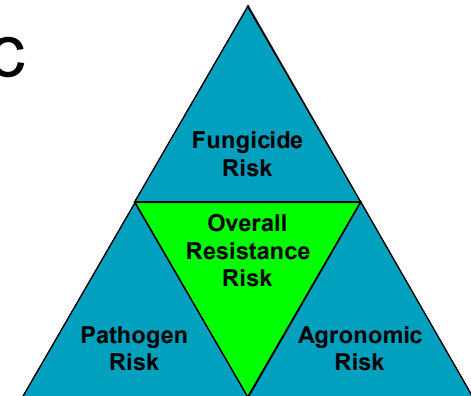
to extend the useful life of chemicals used
for pest control by slowing the development
of resistance

Resistance Management Workgroup

- More strongly encourage registrants to provide pesticide labels that include:
 - Mode of Action information on labels
 - resistance management language
- Work with researchers, professional societies, and RACs to better understand what works for resistance management
 - Education
 - Research
 - Resistance Management Plans

Identify Areas of High Risk for Resistance

- Resistance is only a problem in a small percentage of use situations (intersection of mode of action, pest, and agronomic characteristics)

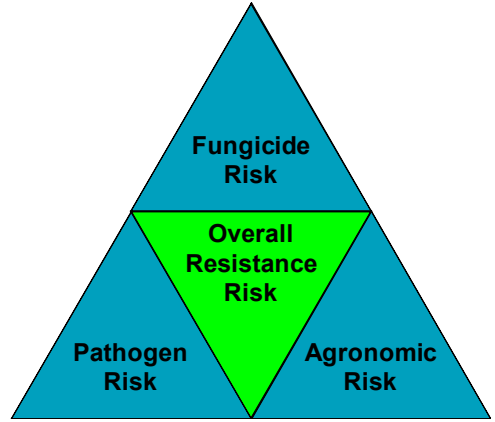


- Ask RACs and societies to come up with a short list of risky situations
 - Let societies and RACs develop criteria
- Focus on situations with known resistance

Combined Fungicide/Pathogen/Agronomic Risks*

High risk Benzimidazoles Qols Phenylamides	3	3	6	9	1	High risk
		1,5	3	4,5	0,5	Medium risk
		0,75	1,5	2,25	0,25	Low Risk
Medium risk Carboxanilides DMIs / APs Morpholines MBI-D Phenylpyrrols	2	2	4	6	1	High risk
		1	2	3	0,5	Medium risk
		0,5	1	1,5	0,25	Low Risk
Low Risk Multi sites MBI-R Resistance Ind.	0,5	0,5	1	1,5	1	High risk
		0,25	0,5	0,75	0,5	Medium risk
		0,125	0,25	0,375	0,25	Low Risk
Fungicide Risk	Pathogen Risk	1	2	3	Agronomic Risk	
		Low Risk Rhizoctonia Rusts Soil borne fungi Smuts & Bunts	Medium Risk Eyespot Septoria tritici Rhynchosporium	High Risk Botrytis Erysiphe Pyricularia Venturia Plasmopara	Pathogen Risk	

*mitigating/delaying the occurrence by using some of the modifiers to lower the likelihood as well as tank-mixing etc.



Source: Allison Tally, Syngenta Crop Protection

Assuming

1. Pesticide resistance shows a linkage between:
 - pest
 - pesticide mode of action
 - agronomic and crop characteristics
2. The majority of pesticide resistance problems are centered around a finite/ small group of uses.

How Societies, RACs and EPA/ OPP May Work Together on Resistance Management

- Identification of these key problem areas would allow pesticide manufacturers, regulators, and users to focus on the same key problem sites.
- How can we refine the list (top 10 or 20)?
- How can we educate the growers / crop consultants and expand resources available to them?