COMPATIBILITY QUESTIONS INVOLVING PLASMA POWER With Paradigm (DOW Agrosciences), Cadence WG and AmistarXtra (Syngenta) and MCPA LVE

by Steve Wornes, Senior Process Chemist

Recently the question of compatibility with several agricultural chemicals when mixed with RLF's **Plasma Power** was asked. RLF's Senior Process Chemist, Steve Wornes, has given a detailed and technical response in an effort to cover all scenarios.

The Chemist's Response

1. Paradigm (DOW Agrosciences)

Paradigm (DOW Agrosciences) is a dual active herbicide containing the active ingredients florasulam (200 g/L) and halauxifen (200 g/L).

Florasulam is hydrolytically stable at pH 5, however there is no data available for stability at lower pH. Therefore, chemical compatibility of florasulam with acidic RLF products cannot be guaranteed if the final pH of the spray solution is less than 5.

Halauxifen is a new herbicide and the molecule is still covered by patent. There is limited physical chemistry information available for this active ingredient, with no pH stability data available at present. Halauxifen is a pyridinecarboxylic acid and is present in the *Paradigm* formulation as the methyl ester. This means that at pH <4, hydrolysis of the methyl ester is likely to occur which may reduce herbicidal bio-efficacy.

Tank Mix Recommendation

Based on the individual chemistries of the two active ingredients in *Paradigm*, tank mixing with PLASMA POWER should be OK. However, the safest approach is to proceed with caution. Physical compatibility should be confirmed first of all and tank mixes only used when spraying conditions are ideal. Biological efficacy should be assessed before proceeding with application over large areas.

2. Cadence WG and AmistarXtra (Syngenta) and LVE MCPA

Cadence WG (Syngenta) is dicamba formulated as the sodium salt (700 g/kg). Dicamba is a benzoic acid and is stable in both acids and alkalis. The pKa for dicamba is 1.87 which means less than 50% of the dicamba will be in the acid form at pH >2. Since dicamba in *Cadence WG* is present as the sodium salt, and not as the amine, neutralisation will not be significant when mixed with Plasma Power and the active ingredient will remain stable at pH >2.

AmistarXtra (Syngenta) is a dual active fungicide containing the active ingredients azoxystrobin (200 g/L) and cyproconazole (80 g/L).

Azoxystrobin belongs to the strobilurin group of fungicides. It is hydrolytically stable in aqueous media under acidic and alkaline conditions.

Cyproconazole belongs to the triazole group of fungicides and is hydrolytically stable between pH 4-9.

Since the two active ingredients in *AmistarXtra* are stable to hydrolysis at varying pH, the biological efficacy of both, azoxystrobin and cyproconazole, should not be reduced when mixed with PLASMA POWER, even if the final pH of the spray solution is slightly less than 4.

MCPA LVE (Generic) and PLASMA POWER are chemically, physically and biologically compatible at normal rates of use.

Tank Mix Recommendation

Based on the above, a four-way tank mix of *Cadence WG*, *AmistarXtra* and *LVE MCPA* with PLASMA POWER should be OK, providing the mixture is physically compatible. Performance of the fungicides should be observed closely, however, to confirm that bio-efficacy is not reduced when applied at the lower pH.

Reference/s : The Pesticide Manual Online, BCPC (British Crop Production Council), 2014.

Pesticide Properties Database (PPDB) - Online, University of Hertfordshire; Agriculture & Environment Research Unit (AERU), 2013.

ASK THE CHEMIST

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