NOVEMBER 2023 NEWSLETTER

SPRAY WATER QUALITY AND CHEMICAL EFFECTIVENESS

The pH of a spray solution can influence the effectiveness of herbicides and other agrochemicals in several ways, particularly regarding leaf penetration and absorption.

HERE'S WHY PH IS IMPORTANT FOR LEAF PENETRATION:

Chemical Stability: The stability of herbicides in solution is pH dependent. Some herbicides may undergo chemical changes or degradation under extreme pH conditions.

Maintaining an appropriate pH helps to keep the herbicide in its active form, ensuring it remains effective upon application.

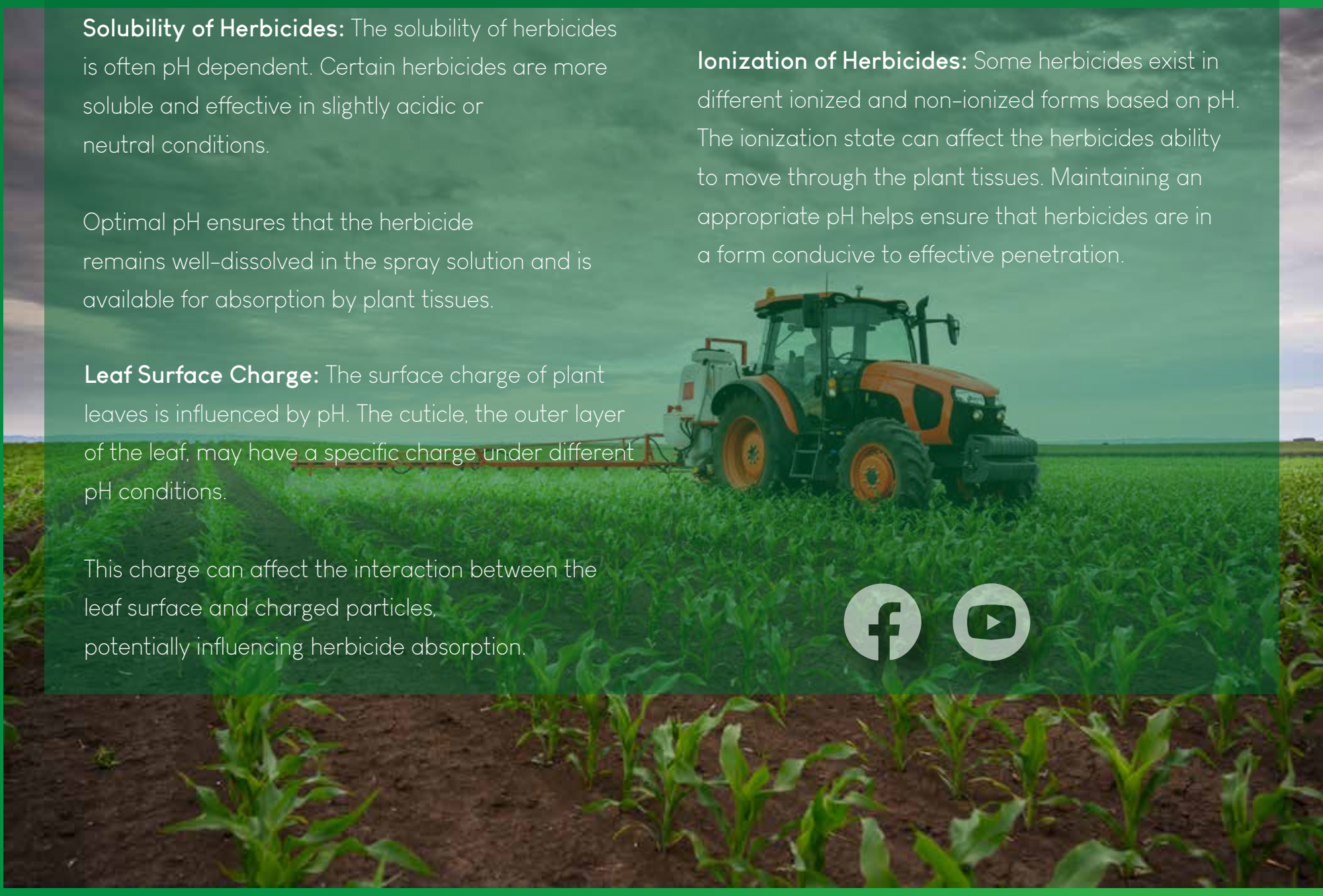
Leaf Cuticle Permeability: The cuticle acts as a barrier on the surface of plant leaves. Changes in pH can affect the permeability of the cuticle, influencing how easily herbicides can penetrate and move into the plant tissues.

Optimal pH conditions may enhance the ability of herbicides to pass through the cuticle and reach the target site.

Solubility of Herbicides: The solubility of herbicides is often pH dependent. Certain herbicides are more soluble and effective in slightly acidic or neutral conditions.

Optimal pH ensures that the herbicide remains well-dissolved in the spray solution and is available for absorption by plant tissues.

Ionization of Herbicides: Some herbicides exist in different ionized and non-ionized forms based on pH. The ionization state can affect the herbicides ability to move through the plant tissues. Maintaining an appropriate pH helps ensure that herbicides are in a form conducive to effective penetration.



Leaf Surface Charge: The surface charge of plant leaves is influenced by pH. The cuticle, the outer layer of the leaf, may have a specific charge under different pH conditions.

This charge can affect the interaction between the leaf surface and charged particles, potentially influencing herbicide absorption.

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HERBICIDE	OPTIMAL PH
Glyphosate (Group 9 - Inhibitors of EPSP synthase)	4.0 to 7.0
2,4-D (Group 4 - Synthetic auxins)	6.0 to 7.5
Dicamba (Group 4 - Synthetic auxins)	5.0 to 7.0
Atrazine (Group 5 - Photosystem II inhibitors)	5.0 to 7.5
Paraquat (Group 22 - Bipyridyliums)	6.0 to 7.0
Imidazolinones (Group 2)	5.0 to 7.0
Sulfonylureas (Group 2)	6.0 to 7.0
Glufosinate (Group 10 - Glutamine synthetase inhibitors)	5.0 to 7.0
Pyridines (Group 4)	6.0 to 7.0
Diphenyl Ethers (Group 14)	consult specific product labels
Saflufenacil (Group 14)	6.5 to 7.5
Triazines (Group 5 - Photosystem II inhibitors)	5.0 to 7.5
Isoxazolidinones (Group 27)	5.0 to 7.5
Benzothiadiazoles (Group 6)	consult specific product labels

Always check the product labels and recommendations provided by herbicide manufacturers for the most accurate and up-to-date information on pH requirements. Additionally, local soil conditions and climate can influence herbicide effectiveness, so considering these factors is crucial for successful weed management.

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