



VILLA
CROP PROTECTION

Tip of the Month

Penetrants... silver bullets or just normal adjuvants that must be positioned correctly?

Villa has always advocated the classification of adjuvants per active ingredient, namely oils, surfactants, salts and buffers. Exceptions are the terms “sticker” and “deposition-aid” that refer more to function, but give a clear indication what the product does and to what chemistry group it belongs to. However, it has become common practice to refer to adjuvants solely based on their functionality. This has resulted in the frequent use of the term “penetrants.” One often hears that penetrants are superior adjuvants for use with systemic pesticides because they are the most effective at drawing the pesticide into the leaf surface and may also have a function in the translocation process. We do not agree with this stance and believe that penetrants may be effective with certain chemistry groups and formulations but not necessarily with all systemic products. The pitfalls of the incorrect adjuvant choice with systemic pesticides will be discussed in more detail below.

What is a penetrant?

Although various penetrant (absorption) claims are made about certain products, the fact is that various adjuvants have penetration properties.

1. Ammonium sulphate adjuvants negate the dissolved antagonistic ions in spray water that may decrease absorption and will therefore increase glyphosate efficacy to the same level had it been applied in distilled water.
2. Although it is often said that the only function of surfactants is to decrease

surface tension and to increase retention and droplet spreading, the truth is that surfactants also play a vitally important role in the absorption process of pesticides. Replacement of one surfactant with another could therefore have very negative consequences.

3. Humectants that are contained in certain adjuvant formulations prolong the droplet drying time and could therefore increase the absorption of certain pesticides.
4. The same applies to the oils and the other adjuvants on the South African market that either directly or indirectly influence the absorption process. Although absorption is influenced by many adjuvants, their role is primarily to negate the negative effect of the environment and to assist the pesticide to reach more of its potential under various conditions.

Are penetrants always the most effective adjuvants with systemic pesticides?

The answer to this is No! There are many aspects to consider when selecting an adjuvant and the characteristics of the specific pesticide needs to be considered before choosing a product. Take glyphosate as an example. If one just assumes that glyphosate is a systemic herbicide that needs to be absorbed rapidly and effectively, one may be tempted to use a penetrant adjuvant. However, it has been proved that many oil-containing adjuvants are actually antagonistic to glyphosate. If

one therefore applies an oily penetrant with glyphosate, it could have the direct opposite effect and the absorption speed and amount could be decreased! It is therefore of critical importance to use adjuvants that have gone through a rigorous registration process and have been proved to be effective with specific groups of active ingredients. Penetrants are therefore not always the most effective option.

Villa's point of view

We believe that the word “penetrant” can be extremely confusing as it implies that these adjuvants will always result in the most effective absorption of systemic products. A much more scientific and effective approach to choose an adjuvant is purely on the grounds of science. Choose products that are registered, have been tested with various active ingredients under various climatic conditions and have the backing of the registration holder.



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