



## vegIMPACT

**Pests and diseases can dramatically reduce shallot yields, even causing an entire harvest to fail. This is why shallot farmers in the lowlands of West Java rely heavily on pesticides to control crop diseases and pests. The high use of pesticides is a major cost factor for farmers, however, and their toxicity poses an occupational health risk. In addition, frequent use of the same types of pesticide increases the risk of resistance in the pest organism, which can reduce the effectiveness of pest and disease control measures and may encourage farmers to increase the amount they use.**

### Current pesticide use practices

Farmers use on average 9.2 kg/ha of active ingredient (AI) for fungicides and 1.5 kg/ha AI for insecticides against diseases and pests in shallot, excluding pesticides used against soil-borne pests and diseases. Some farmers even use up to 33.2 and 5.4 kg/ha AI of fungicide and insecticide, respectively. These control agents are routinely applied every four to five days according to a fixed schedule during the growing season, and generally without proper personal protective equipment (PPE). According to the WHO's recommended classification of pesticides by toxicity, the most frequently used fungicides (Class U) are unlikely to result in an acute health hazard, while most of the used insecticides represent a moderate health hazard (Class II). However, extremely hazardous insecticides (WHO class Ib) are still used in 29% of all applications in a given growing season.

*WHO classification of pesticides and pesticide use in shallot cultivation as percentage of total number of pesticide applications.*

WHO Class	description	(%) <sup>1)</sup>
Ia	Extremely hazardous	29
Ib	Highly hazardous	80
II	Moderately hazardous	8
III	Slightly hazardous	88
U	Unlikely to present acute hazard	15

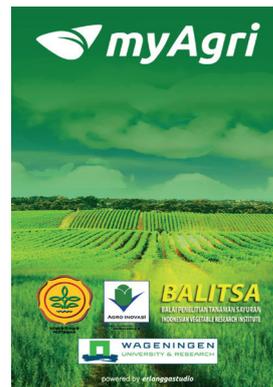
<sup>1)</sup> Because farmers often use more than one pesticide in a given application, the sum of percentages exceeds 100%.

The most frequently used fungicides are triazoles and so-called contact fungicides such as propineb and mancozeb, while the most frequently used insecticides are pyrethroids and chlorfenapyr. Most farmers use more or less the same pesticides in each application. Overuse in terms of both quantity and frequency can lead to resistance in pests such as Spodoptera and diseases such as anthracnose. To prevent this, it is important to alternate the pesticides used based on their mode of action, as listed by the resistance action committees for fungicides and insecticides (FRAC and IRAC – see <http://www.frac.info/> and <http://www.irc-online.org/>)

### MyAgri

Farmers need to be informed and advised about the proper application of pesticides and about the pesticide types that are suitable for a sustainable pest and disease control. The mobile App MyAgri, developed to support farmers, can be downloaded for free from the Google Play Store. MyAgri provides information on the mode of action and efficacy of pesticides, the WHO toxicity class per active ingredient, spraying techniques, and visual diagnostics for pests and diseases. Further information on brand name and side effects is provided for each active ingredient. MyAgri thereby helps farmers and extension agents to select pesticides based on hazard class and to use pesticides with different modes of action to prevent the build-up of pest and disease resistance.

### Screenshot of the mobile App MyAgri



*Safe use of pesticides starts with proper reading and understanding of the pesticide package label.*



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