

Late blight management in Israel

OLAF VAN CAMPEN¹, YAIR JACKSON², AND DAPHNA BLACHINSKY³

¹ Makhteshim-Agan Benelux & Nordic B.V. POB 355 NL 3830 AK Leusden, Netherlands

² Makhteshim Agan Holding B. V. Rotterdam (NL), Schaffhausen Branch Spitalstrasse 5, CH-8200 Schaffhausen, Switzerland

³ Makhteshim Agan Group, Golan Street, Airport City 70151, Israel.

Makhteshim Agan Industries is a leading manufacturer and distributor worldwide of crop-protection solutions and the largest producer of post-patent products in the industry. The Company supplies farmers with efficient solutions that assist them in combating disease and increasing yields. Makhteshim Agan is characterized by its know-how, advanced technological-chemical abilities, expertise in product registration, and observance of strict standards of environmental protection, stringent quality control and global marketing and distribution channels.

Consumption of potatoes in Israel has been increasing steadily. Along with the consumption, the production of potatoes has also been increasing and reached 18,000 ha in 2012. Potatoes are grown in the Negev region (>80% of total production), in the Sharon area, in the Chula valley and in the Arava desert. The potato production occurs in various soils, from sandy to medium-heavy soil and also with saline water.

Potatoes are grown in Israel in two seasons: the fall season planting starts in September and harvested in January, while the spring season starts in December and harvested until June. Tubers are imported to Israel from Europe for the fall season, and the production is exported back to Europe both for seeds and consumption (fresh market and industry).

The two seasons differ in their growth conditions: the spring growing season is short and fast, characterized with days that have more light hours. The fall season is slow and characterized with days that are going shorter. Therefore, the main disease during the fall season is Early Blight caused by *Alternaria solani*. In the spring, differences between the cold nights and warmer days, coupled by massive canopy, high levels of long lasting dew is formed creating favorable conditions for the *Phytophthora infestans*, the agent of Late Blight.

Eighty percent of the potatoes are grown in the dry region (Negev) and therefore are regularly irrigated twice a week. Late blight control in Israel is based on protectant fungicides (mancozeb and chlorothalonil) that are sprayed from 70% emergence following each irrigation. Potatoes are monitored on daily basis for late blight infections. In case of favorable disease conditions (rainfalls or heavy fog), translaminar fungicides "Super protectants" are being sprayed (dimethomorph, benthiovalicarb, mandipropamid, propamocarb-HCL). In a typical season 2-3 treatments are sprayed with those fungicides. In case of infection, curative (systemic) fungicides are being used (metalaxyl-M, cymoxanil). In addition, a sample of infected leaves is sent to prof. Yigal Cohen (Bar-Ilan University) for resistance monitoring. Results are reported to "Yacham" (potato growers cooperative) and delivered back to the growers (2-3 days). In case of metalaxyl resistance - super protectants are being used again.

Banjo Forte (fluazinam 200 + dimethomorph 200 SC) is a new innovative product for potatoes. containing two AIs with complementary modes of action: a local translaminar AI, dimethomorph, and a very effective contact AI, fluazinam. Due to this unique combination, efficacy of **Banjo Forte** on different *P. infestans* strains is high. **Banjo Forte** has a wide disease spectrum including excellent leaf and tuber blight (*P. infestans*) prevention as well as white mold (*Sclerotinia sclerotiorum*) control. **Banjo Forte** perfectly fits the mid application timing, the products used with a low dose and is therefore simple to use.