

# "ATPLUS" brings more daminozide into chrysanthemum plants

UITGAVE SURfaPLUS Trading

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**INHOUD: ATPLUS UCL 1007 ENHANCES UPTAKE OF DAMINOZIDE INTO CHRYSANTHEMUM (PAG 1) – ABOUT "ATPLUS" (PAG 2) – AVAILABILITY OF "ATPLUS" (PAG 3) – CONTACT WITH SURfaPLUS (3)**

## "ATPLUS" enhances foliar uptake of daminozide into chrysanthemum plants

### Introduction

**ATPLUS UCL 1007 ("ATPLUS") is frequently used in the growth of chrysanthemum to improve the performance of the plant growth regulator daminozide. The influence of ATPLUS on the uptake of daminozide into chrysanthemum was investigated. The project was carried out by SURfaPLUS B.V., Botany B.V. and Groen Agro Control.**

### Methods

**Location:** Botany B.V., Horst, The Netherlands.

**Plants:** Chrysanthemum sprouts (cv. Reagan)

**Growth conditions:** Plants were potted (diam. 19 cm) on 02-02-18 and transferred to a climate room. Four sprouts were placed into a pot. The day temperature was 18-20 °C and the night temperature was 13-14 °C. The light period was 14 h and the RH was 70%. The plants were watered with nutrient solution via an ebb-flood sub-irrigation system. The plants were treated on 27-02-2018 between 14 and 15 h. On the day of treatment, the plants had a height of ±30 cm and had 10 leaves and several side shoots (Picture 1 on next page). After drying of the spray solution, the plants were transferred to the climate room.

**Plant growth regulator:** Dazide Enhance (80% m/m daminozide).

**Adjuvant:** ATPLUS UCL 1007

**Treatments:**

1. Untreated
2. Dazide Enhance (3 g/L)
3. Dazide Enhance (3 g/L) + ATPLUS (2,5 g/L)

**Application:** The treatment solutions were applied with an air-pressured laboratory track-sprayer having Teejet TP8003E nozzles delivering 1000 L/ha at a pressure of 303 kPa (3 bar).

**Experimental design:** One experiment with four replicates. Each replicate consisted of two pots with each four plants.

**Measurement of foliar uptake daminozide**

Twenty-four h after treatment a 100 g sample (leaves plus stem) was taken from each replicate. The stems were cut midway the stem and the upper half of the plants were taken for further processing. The plant



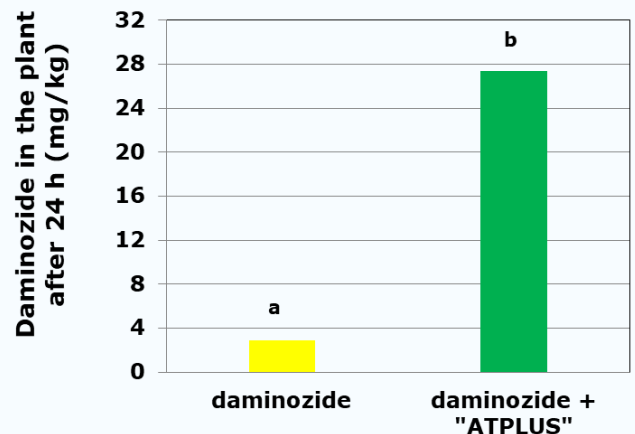
*Chrysant cv. Reagan on the day of treatment*

samples were washed (20 s) with 2 x 500 ml tap water which contains the adjuvant Elasto G5 at 0.05%. Elasto G5 was included to reduce the surface tension, so that there is an optimal contact between the leaf surface and the washing solution. Elasto G5 is a quite mild to plants adjuvant which minimizes the risk on leakage of absorbed daminozide to the washing solution. The samples were stored during  $\pm 20$  h at 7°C and then the daminozide contents were measured by a commercial analytical laboratory (Groen Agro Control). Untreated plants were also included in the analysis because of possible presence of daminozide due to applications by the supplier of the plants. In advance of the test, several washing-off recovery tests were carried out to verify that the washing-off procedure removes all unabsorbed daminozide residue on the leaves.

## Results and discussion

The adjuvant ATPLUS enhances the foliar uptake of daminozide 9.4-fold. The daminozide content of the upper half of the plants goes from 2.9 to 27.4 mg/kg plant when ATPLUS is added. The daminozide content in the untreated plants was around the detection limit (0.01 mg/kg). This result underpins the experience with ATPLUS in practice that daminozide rates can be

## Influence of "ATPLUS" on uptake of daminozide into chrysanthemum



*Figure 1. Effect of ATPLUS UCL 1007 on the foliar uptake of daminozide into chrysanthemum cv. Reagan. Plant samples are taken 24 h after treatment. Values are averages of four replicates. Eight plants were used to prepare one sample of a replicate. The letters above the columns present the statistical significance at the 95% confidence level.*

reduced 50 to 60%. Chrysanthemum leaves are generally well wettable and therefore we estimate that the ATPLUS effect is almost entirely based on a much higher uptake of daminozide via the leaf surface.

## Conclusion/recommendation

The adjuvant ATPLUS can enhance the foliar uptake of daminozide into chrysanthemum plants 9.4-fold. This explains that chrysanthemum growers lower their daminozide application rate by 50 to 60% when they add ATPLUS. In addition to a reduction of daminozide use, this practice also results in cost reduction. Depending on the original 100% rate, the cost reduction can go up to 37%.

## About ATPLUS UCL 1007

ATPLUS is a granular product which contains urea and ethoxylated alcohols. ATPLUS improves the wetting of difficult-to-wet plants and increases substantially the foliar uptake of active ingredients. SURfaPLUS sells the products since 2004 to predominantly chrysanthemum growers in the Netherlands. The product is often too hard for other crops. See more [online](#).

## Availability “ATPLUS” outside NL

In the Netherlands SURfaPLUS sells ATPLUS to distributors and growers. For other countries we look for partners for registration and distribution.

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## Data ownership

SURfaPLUS Trading B.V. is the owner of the published data.

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## About SURfaPLUS

SURfaPLUS is specialised in the development and sale of adjuvants for agrochemicals. Each year we investigate new applications of our adjuvants for chemical and biological plant protection products and foliar nutrients. Adjuvants can be used to enhance the performance of growth regulators, insecticides, fungicides, herbicides and foliar nutrients. See also [www.surfaplus.com](http://www.surfaplus.com).

## IMPORTANT

When using for the first time, we recommend to apply the adjuvant ATPLUS UCL 1007 at a small scale.