

THE EFFECT OF HOT WATER TREATMENT ON A VIRUS OF *OPUNTIA EXALTATA*¹

*Het effect van een warm-waterbehandeling op een virus in
Opuntia exaltata*

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In 1958 BACKEBERG (pg. 140) described a monstrosity condition in several *Opuntia* species. He suggested that the abnormal growth might be attributed to a virus. GRÄSER (1960) transmitted the disease by grafting, as also did USCH-DRAWEIT (1962) who concluded that it is caused by a virus which produces symptoms resembling those caused by witches' broom viruses.

From the literature it is known that several witches' broom diseases can be cured by a hot water treatment (KUNKEL, 1936, 1941; THUNG, 1952). We applied this treatment to 40 rooted cuttings of *Opuntia exaltata* Berg. in September 1964. All cuttings were taken from a plant which showed typical symptoms (Fig. 1-A). The temperature of the water was constant at 45°C; the duration of the treatment varied from one to five hours. Initially the appearance of the treated plants was very promising. Compared with the untreated ones they produced longer hairs and leaves and did not form lateral shoots. Although most of the treated plants began to show witches' broom-like symptoms in summer 1965, all eight plants treated for five hours remained symptomless for about a year. Later most of these too changed in appearance (Fig. 1-B). At the moment, however, two years after the hot water treatment, two plants of that group still look normal (Fig. 1-C) probably indicating that the virus has indeed been inactivated by the hot water treatment.

SAMENVATTING

Bewortelde stekken van *Opuntia exaltata*, die geïnfecteerd waren met een virus dat heksenbezemsymptomen veroorzaakt, werden in september 1964 gedurende perioden variërend van één tot vijf uur gedompeld in water van 45°C. Nu, ruim twee jaar na de behandeling, zijn twee van de acht planten, welke vijf uur in warm water verbleven, nog volkomen vrij van symptomen. Dit maakt het waarschijnlijk dat het virus in deze planten inderdaad volledig geïnactiveerd is door de warm-waterbehandeling.

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FIG. 1. Two-year-old plants grown from cuttings of a diseased *O. exaltata*.
Twee jaar oude planten van O. exaltata, gegroeid uit stekken van een zieke plant.

- A. Untreated plant showing witches' broom symptoms.
Onbehandelde plant met duidelijke heksenbezemsymptomen.
- B. Plant which remained free of symptoms till about one year after a five hour treatment at 45° C.
Behandelde plant (vijf uur bij 45° C) die tot een jaar na de behandeling vrij bleef van symptomen.
- C. Plant still looking healthy two years after a treatment of five hours at 45° C.
Plant, die dezelfde behandeling onderging als B en twee jaar na de behandeling nog vrij is van symptomen.

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