

This article was downloaded by:

On: 28 January 2011

Access details: *Access Details: Free Access*

Publisher *Taylor & Francis*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713618290>

Some Nitro-Acenaphthenephosphonic Acids as Potential Plant-Growth Regulators

Mata Grozav^a; Gheorghe Ilia^a; Ileana Neamtiu^a; Mirela Mercea^a; Maria Laichici^a

^a Institute of Chemistry, Romanian Academy, Romania

Online publication date: 27 October 2010

To cite this Article Grozav, Mata, Ilia, Gheorghe, Neamtiu, Ileana, Mercea, Mirela and Laichici, Maria(2002) 'Some Nitro-Acenaphthenephosphonic Acids as Potential Plant-Growth Regulators', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 177: 8, 2053 — 2054

To link to this Article: DOI: 10.1080/10426500213337

URL: <http://dx.doi.org/10.1080/10426500213337>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.



SOME NITRO-ACENAPHTHENEPHOSPHONIC ACIDS AS POTENTIAL PLANT-GROWTH REGULATORS

*Mata Grozav, Gheorghe Ilia, Ileana Neamtii, Mirela Mercea,
and Maria Laichici*

Romanian Academy, Institute of Chemistry, Romania

(Received July 29, 2001; accepted December 25, 2001)

It is well known that some benzene, naphthalene, and indole phosphonic acids are plant-growth regulators. In the series of acenaphthenephosphonic acids, only 1-acenaphthenephosphonic acid was mentioned as being bio-regulator of plants.

We present our studies concerning methods of synthesis and biological testing of 5-nitro- and 5,6-dinitroacenaphthenephosphonic acids. The two acids were synthesized two ways: first, by the direct nitration of 1-acenaphthenephosphonic acid and the second, by bromination of the corresponding nitro-acenaphthene derivatives followed by a reaction with sodium diethylphosphite and hydrolysis of the obtained phosphonate.

The two acids were characterised by UV, IR, and ¹H-NMR spectra.

The synthesized acids were assessed in laboratory by Tsiulskaya-Vassiliev bio-test to establish if they are auxins or not.¹ The bio-test shows that the two acids have a rooting activity, the increase of the number of roots being 14% for the first acid and 42% for the second, the length of the main root being 29% and 30%, respectively. Then, the two acids were tested on the wooden cuttings of *Ligustrum Vulgaris*. We observed the variation of the average length of the main root, the number of the roots, and the number of the offshoots depending on the acid concentration and the immersion time, comparing with water control. The increase of the number of roots was 41.6% for 5-nitroacenaphthenephosphonic acid, and 57.6% for 5,6-dinitroacenaphthenephosphonic acid. The increase of the length of the main root was 67% for the first acid and 97% for the second. The number of the offshoots after 87 days from the treatment has an increase of 20.4% for the first and 47.7% for the second acid.

Address correspondence to Mata Grozav, Romanian Academy, Institute of Chemistry, Mihai Viteazul 24 Blvd., RO-1900 Timisoara, Romania. E-mail: mgrozav@acad-tim.utt.ro

REFERENCE

- [1] L. G. Nickell, *Plant Growth Regulators* (Springer-Verlag, Berlin 1982), pp. 19–27.