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Naktuinbouw = Quality in Horticulture!

NEW

Detection of Chrysanthemum Chlorotic Mottle Viroid

Naktuinbouw Laboratories has developed a new test designed to detect chrysanthemum stunt viroid and chrysanthemum chlorotic mottle viroid in a single test.



Chrysanthemum in greenhouse

Viroids are the smallest pathogens in the world and only occur in plants. Chrysanthemums are prone to two different viroids: chrysanthemum stunt viroid (CSVd) and chrysanthemum chlorotic mottle viroid (CChMVd).

Symptoms

CSVd is a quarantine organism in chrysanthemum. More is known about this quarantine organism than about CChMVd. Plants infected by CChMVd sometimes display chlorotic leaves and/or stunted growth of foliage, flowers and sometimes the entire plant. The symptoms may be confused with a nutrient deficiency. Infected plants may also be symptomless. Until recently, occurrence of this viroid was mainly reported from the USA and Japan, but it has now also been found on European plant material.

CChMVd

CChMVd belongs to the *Avsunviroidae* family of viroids and was not detected by the existing molecular tests for *Pospiviroidae*. CChMVd is also not detected by a general R-PAGE procedure (return-polyacrylamide gel electrophoresis). In practice CChMVd is often present without any symptoms being visible, or it is not recognised as such. This makes it a hidden threat for chrysanthemum growing: symptoms mainly appear at higher temperatures. Like many other viroids, CChMVd

can be transmitted mechanically (through infected sap). This means that in chrysanthemum cultivation the use of vegetatively propagated cuttings only serves to increase the risk of mechanical transmission. Dutch chrysanthemum producing companies are found in all corners in the world, making infection with CChMVd a real and present danger.

Detection

The Product Board Horticulture funded a consultancy project to investigate the possibilities of detecting CChMVd using PCR. This project has been successfully completed. Naktuinbouw subsequently continued the development of the test to create a real-time RT-PCR and combined detection of both chrysanthemum viroids, so that both viroids (CSVd and CChMVd) can be detected in a single test. The process of extraction from leaf materials has also been automated. The new test detects the different strains of CChMVd and is highly sensitive, specific and fast. The test is a valuable addition to the screening process of chrysanthemum propagating material.

More information?

For more information, please contact Ellis Meekes, senior researcher at Team R&D, tel. +31 (0)71 332 62 36, or email: e.meekes@naktuinbouw.nl

Obtained for 850 crops:

CPVO-accreditation

In July 2010 the Variety Testing Department was audited for its performance of DUS testing to accompany the requests for European Plant Breeders' Rights submitted to the CPVO (Community Plant Variety Office).

In February the board of the CPVO decided to accredit Naktuinbouw to perform DUS testing on approximately 850 crops.

Naktuinbouw has been performing DUS testing for the CPVO for years. In 2010 the CPVO started to perform audits at its designated European research stations.

During their visit to Naktuinbouw in 2010, the audit team was impressed by the quality of the tests, the expertise of the employees, the

equipment, the greenhouses and the quality system. The audit team placed a few comments, which were solved by the Variety Testing Department in a very short time.

Picture: The proud members at DUS Vegetable Crops, Bureau for Plant Varieties, DUS Ornamental & Fruit Crops and Trial Management show their certificate.



Left to right: Ruud Miedema, Claudia van der Tang, Jos Bloemberg and Ronald Wortman

Agreement with Vietnam

on Exchange of DUS Reports

In early March, during a visit to Naktuinbouw, the Dutch and Vietnam governments signed an agreement pertaining to the mutual exchange of DUS reports for Plant Breeders' Rights or registration.



Visit Vietnamese government to Naktuinbouw

In the framework of the 'Strengthening the PVP system in Vietnam' project, a delegation from Vietnam visited the Netherlands in the first week of March. The project is being carried out by Naktuinbouw in cooperation with the Vietnamese Office for Plant Variety Protection and is funded by EVD International, a department of Ministry of Economic Affairs, Agriculture & Innovation. The aim of the visit was to show senior civil servants of the Vietnamese government what the effect a good system of Plant Breeders' Rights is on the development of the seed and plant industry.

Visit

Visits to and presentations by Naktuinbouw, the Board for Plant Varieties, NAK, Plantum NL, three breeding companies (Dekker Chrysanten, Meijer Potatoes and Rijk Zwaan), the Flower Auction Aalsmeer and the Ministry of Economic Affairs, Agriculture & Innovation emphasised the influence of Plant Breeders' Rights on the breeding sector in the Netherlands.

Contract

During the visits an Administrative Agreement between the Netherlands and Vietnam was signed by the chairman of the Board for Plant Varieties, Dr. L. van Vloten-Doting, and the director of the Department of Crop Production of the Vietnamese

Ministry of Agriculture and Rural Development, Dr. Nguyen Tri Ngoc. This agreement states that the Netherlands and Vietnam agree to exchange DUS reports (for the purpose of Plant Breeders' Rights or registration) against payment of a fee agreed within UPOV of Sfr 350 (€ 240) if one of the countries submits a request to this end with the other country.

Advantages

DUS reports concerning varieties for which Plant Breeders' Rights have been granted or that have been registered, based on DUS testing performed in the Netherlands can be taken over by Vietnam for a fixed fee. Based on this Dutch DUS report Vietnam (associated to the UPOV 1991) can grant Plant Breeders' Rights. The same stipulation applies the other way round. This agreement will contribute to the efficiency of the Vietnamese system: DUS testing performed on the plant in the Netherlands will not have to be repeated in Vietnam, while Dutch growers will also no longer have to have the variety re-tested in Vietnam.

More information?

For more information, please contact Peter Lentjes, coordinator International Projects, tel. +31 (0)71 332 61 36 or email: p.lentjes@naktuinbouw.nl

Cooperation with CPVO and Taiwan

Naktuinbouw and the CPVO have agreed on the way in which Phalaenopsis varieties that have obtained Plant Breeders' Rights in Taiwan may also be considered for European Plant Breeders' Rights.



DUS test on Phalaenopsis

As Taiwan is not a member of the UPOV, the standard rules that apply to adopting Plant Breeders' Rights reports cannot be applied as a matter of course when taking over reports drawn up in Taiwan where applications for European Plant Breeders' Rights are concerned.

DUS test

Naktuinbouw and CPVO have agreed that Naktuinbouw will perform a limited scope DUS test, bearing in mind that DUS testing has already been carried out in Taiwan. Naktuinbouw will verify the Plant Breeders' Rights

report compiled in Taiwan and the corresponding description of the variety using a sample of live plant material and confirm whether they meet the EU standards. Based on Naktuinbouw's findings, the CPVO will then grant European Plant Breeders' Rights. Naktuinbouw will add the plant material from Taiwan to the living reference collection.

Exchange

Naktuinbouw and Taiwan exchange information about the reference collections and share their experiences to ensure the

way in which the varieties are tested are harmonised and in compliance with the DUS-criteria. Finally, Naktuinbouw and Taiwan consult together regarding their cooperation in managing a joint DNA-SSR database for Phalaenopsis.

More information?

For more information about this cooperation, please contact Kees Grashoff, DUS Ornamental & Fruit Crops Manager, tel. +31 (0)71 332 623 02, or c.grashoff@naktuinbouw.nl

Scientific Publications

Inter-laboratory evaluation of real-time PCR assays for the detection of Pospiviroids

The article 'Inter-laboratory evaluation of real-time PCR assays for the detection of Pospiviroids' by W. Monger, J. Tomlinson, M. Virscek Marn, V. Molinero-Demilly, X. Tassus, E. Meekes (Naktuinbouw), M. Toonen (Naktuinbouw), L. Papayiannis, N. Mehle, Z. Perez-Egusquiza, C. Jansen, L. Fink and S. Lykke Nielsen was published in the Journal of Virological Methods 169:

207-210 and describes various real-time RT-PCRs for specific detection of *Columnea latent viroid* (CLVd), *Citrus exocortis viroid* (CEVd) and *Tomato apical stunt viroid* (TASVd). A generic real-time RT-PCR is also described which detects eight of ten (currently known) pospiviroids. A report is also given of the results from nine different laboratories in seven countries.

Naktuinbouw Diagnostics

Each year, the Diagnostics Team at Naktuinbouw Laboratories diagnoses problems in approximately 300 crops on behalf of 175 international and national customers.

During this work the presence of around 200 different pest and diseases is established. However, close to a quarter of the diagnoses do not concern primary plant diseases, but cultivation related problems. The Diagnostics Team was formed seven years ago and as far as phytopathology is concerned has evolved in a crucial 'eye and ear' for the Dutch and international horticultural sector to gain a good overview of disease related problems in the horticultural sector.

saved and shared anonymously – without information about specific companies – with the Research & Development Team, the Inspections Teams and with scientists. The isolate collections at Diagnostics of *Clavibacter michiganensis* pv. *michiganensis*, *Xanthomonas hortorum* pv. *pelargonii* and *Xanthomonas axonopodis* pv. *pruni* and *Xanthomonas axonopodis* pv. *poinsettiicola* form an important basis for scientific research of these diseases. The research being carried out mainly concentrates on developing new or modified tests and identification using DNA technique as AFLP®.

Alert to disorders
 The team at Diagnostics often see common diseases, but then showing different symptoms. Altered growing conditions and production systems can cause these diseases to suddenly change and become of greater significance. Sometimes the symptoms of diseases can change due to the arrival of other lines or strains. An example of this is a *Xanthomonas hortorum* pv. *pelargonii* in *Pelargonium*. This surprised propagators and growers in 2010. Together with the Research & Development Team at Naktuinbouw Laboratories the unknown symptoms were quickly identified and now suitable measures can be taken against the disease.

Q-diseases
 The Diagnostics Team investigates samples of plants suspected of being infected with a quarantine organism for Naktuinbouw Inspections. By performing the tests within the Naktuinbouw organisation, the results indicating whether a q-organism is concerned, and if yes which one, can be quickly revealed. If the results indicate that no quarantine organisms are concerned, then the provisional inspection measures can be quickly revoked.

More information?
 For more information about the Diagnostics Team, please contact Jan Westerhof (manager), tel. +31 (0)71 332 62 55 or diagnostiek@naktuinbouw.nl

Knowledge in collections
 The knowledge of pests and diseases, and also of isolates, is



Investigation of samples by Diagnostics Team

New Race of Downy Mildew in Spinach Named

The international working group *Peronospora farinosa* (IWGP) has characterised a new race of downy mildew in spinach on a set of differential varieties and designated it as strain Pfs: 12. This race forms a threat to spinach growing.

New threat
 In May 2009 a new race of downy mildew was discovered for the first time in Salinas Valley in California, USA. This race breaks the resistance of several important resistant varieties of spinach and was discovered in more and more places in 2010. Race Pfs: 12 presents a new threat because it is exceptionally well-adapted to Pfs: 1-11 resistant varieties, that have been widely grown on a large scale in recent years. Race Pfs: 12 is distinct from race Pfs: 11 because of its virulence on the differential varieties Campania and Boeing. The newest race has not yet been reported in the Netherlands.

Not unexpected
 The appearance of Pfs: 12 is not an entirely unexpected event according to the working group. In the past years there have often been occurrences of resistance breakdown (Pfs: 5 in 1996, Pfs: 6 in 1998, Pfs: 7 in 1999, and Pfs: 8 and 10 in 2004, and Pfs: 11 in 2009). The cause may possibly be found in the intensive (year-round) cultivation of spinach and the limited possibilities to spray the crops. As a result of the emergence of race Pfs:12, spinach varieties resistance to Pfs:1-12 will attract strong interest from both growers and breeders.

The working group IWGP
 The working group IWGP was set up through Plantum NL by Naktuinbouw and companies with trading interests in spinach seed. The working group is supported by research centres in the USA, including the University of Arkansas and the University of California Cooperative Extension. The aim of the working group is to inventurise the new races of downy mildew in spinach and designate them where necessary. This will encourage communication between seed companies and growers about the resistance breaking races. These are races that are persistent enough to survive over several years in a wide area, and can result in a significant economic damage.

The IWGP is monitoring if new races occur by testing suspect isolates on a common differential set of spinach varieties that contains the relevant range of resistances. Researchers all over the world are invited to join the IWGP initiative and use the common host differential set to identify new isolates.



Downey mildew in Spinach

4th International Workshop Phytopathology

On 31 January the 4th International Workshop Phytopathology took place. The theme was uniform resistance characterisation. The workshop was organised by the isolate working group of Plantum NL and hosted by Naktuinbouw.



Participants at the workshop

The participants at the workshop discussed the currently relevant themes regarding phytopathology with a focus on applications related to resistance breeding that receive little attention in the public sector nowadays. The following subjects were presented at this workshop:

Nomenclature of phytopathology

Kees van Ettehoven (Naktuinbouw), who chaired the workshop, gave an explanation of the ISF (International Seed Federation) working group on the nomenclature of plant diseases that are of importance for the seed sector.

Intermediate resistance

European seed companies collaborate in the European Seed Association (ESA) to classify the level of resistance using example varieties, and to make agreements about market communication.

Downy mildew in Spinach

New races of this pathogen are developing at increasing speed. Jim Correll (University of Arkansas) gave a lecture explaining these developments. Intensive consultation is necessary between companies with an interest in spinach and stakeholders such as the American

Phytopathological Society (APS). The same host differential set of spinach has recently become available in Europe (Naktuinbouw) and in the United States (GRIN).

Clubroot resistance

A current problem with variety registration seems to have been solved thanks to joint research into the reaction patterns of type isolates on a set of new differential cabbage varieties. This research is closely connected to scientific research into clubroot and steps into the gap left when the authorities ceased to perform applied research.

Isolate collection (NL)

Naktuinbouw maintains an isolate collection for a group of vegetable seed companies in the Netherlands, united in a working group of Plantum NL. This group has proven its value by contributing to the standardisation of resistance tests. The involvement of Naktuinbouw is crucial to safeguard this united approach. This initiative will be continued in the coming years, and expanded where necessary.

Isolate collection (France)

In France a collaborative network of companies and institutes (MATREF) provides technical support for resistance testing and harmonisation between the various testing centres. As well as type isolates, reference varieties are also maintained. GEVES recognizes possibilities to cooperate on a joint EU database for isolates and reference varieties. Collaboration can also be possible to share the burden of testing that is necessary for good variety registration.

New working group

Within Plantum NL, a new working group will be concentrating on research into new problems that occur in the market for resistant varieties. Examples include the problems relating to clubroot, TSWV, and Nasonovia. The new working group hopes to be able to react quicker to such problems in the future.

More information?

The presentations given by the participants can be found on www.naktuinbouw.nl/en/news/international-workshop. For more information, please contact Diederik Smilde, (specialist resistance research, DUS Vegetable Crops Team), tel. +31 (0)71 332 62 13, or email: d.smilde@naktuinbouw.nl

Plant Breeders' Rights New Project in India

Over the next fifteen months, Naktuinbouw will be working together with the Indian government in increasing the effectiveness of its Plants Breeders' Rights system through the 'Strengthening the PVP System in India' project.

India has had Plant Breeders' Rights legislation since 2001. The Plant Variety Protection (PVP) and Farmers' Rights (FR) Act provides balanced rights to breeders, farmers and communities. This Act however differs from the generally accepted UPOV model protection systems

and therefore in the eyes of the international breeding community does not provide adequate protection of the intellectual property rights of plant varieties. In its present form, the PVP and Farmers' Rights Act does not comply with the UPOV 1991 Convention.

India, with one of the largest populations in the world and an enormous agricultural industry, offers huge potential to the Dutch plant breeding and propagation industry. However, access to the market by the Dutch breeding industry is limited by the present act.

Aim of the project

The 'Strengthening the PVP System in India' project is funded by EVD International, a department of the Ministry of Economic Affairs, Agriculture & Innovation and is a cooperation between Naktuinbouw and Plantum NL. The project aims to enhance cooperation and exchange of expertise between the Dutch and Indian PVP and FR authorities, in order to strengthen the PVP section in the present PVP and Farmers' Rights Act. This will contribute to safeguarding the availability of modern varieties for the Indian market and support the process of adding new crops to the list of protectable crops.

Programme

The project will start this May with an inception mission. Naktuinbouw and Plantum NL will discuss and agree the project plan with the Indian counterpart. This will be confirmed in a signed Management Agreement. The project will continue with a study tour by a high level delegation of the Indian government to the Netherlands during which the effect of PVP on the development of the Dutch plant breeding industry will be

demonstrated and discussed. A seminar will be organised in India featuring Indian and Dutch speakers explaining the effects of PVP. The project finishes with technical training for personnel of the Protection of Plant Varieties and Farmer's Rights Authority about the practical implementation of Plant Variety Protection, on UPOV based DUS testing in

general, and that of potatoes, roses and *chrysanthemums* in particular. The training will be given on the spot in India.

More information?

For more information, please contact Peter Lentjes International Projects coordinator, tel. +31 (0)71 332 61 36, or p.lentjes@naktuinbouw.nl



Farmers selling their vegetables on the market in Thiruvananthapuram

Extraction and Storage of DNA Samples of Rose Varieties

Naktuinbouw has been chosen by the CPVO to extract and store the DNA samples of rose varieties for the purpose of Plant Breeders' Rights testing.

At the end of 2010 the Community Plant Variety Office (CPVO) put a rose project out to tender. They invited applications to deliver the service of extracting and storing DNA samples of rose varieties for the purposes of Plant Breeders' Rights testing. The sample is therefore the original material.

Following the assessment of the applicants, Naktuinbouw was awarded the contract to perform this important task on behalf of the CPVO when new rose varieties are submitted.

Storage

The stored DNA is and remains the applicant's property. The significance of this material was underlined again in recently conducted Variety Tracer projects, whereby suspected infringement of Plant Breeders' Rights was investigated with the help of molecular DNA-technologies. The availability of the material that was originally used in the Plant Breeders' Rights testing can play a decisive role in this kind of investigation. By extracting DNA from the

material and storing it, the Plant Breeders' Right holders for the particular variety of rose are well prepared in advance for any infringements in the future. On request of the owner, the DNA can of course also be used for identity tests or other types of testing.

More information?

For more information, please contact Hedwich Teunissen (researcher, Team R&D), tel. +31 (0)71 332 62 51, or h.teunissen@naktuinbouw.nl



Poster Session PVP Course Get to Know the Participants and Their Systems

The Plant Variety Protection Course will be held from 20 June until 1 July 2011. If you are interested in meeting the participants, you are invited to attend a specially organised afternoon on Monday 27 June.



The PVP Course is a training course for participants from countries where a system of Plant Breeders' Rights is in the process of being introduced or has just been implemented. The participants are all employed in a function that is related to the Plant Breeders' Rights system, or they will be involved in such tasks in the future.

Programme

Points addressed by the programme include the legal and technical aspects of a Plant Breeders' Rights system and demonstrate what DUS testing means through a series of practical exercises. Various speakers from Naktuinbouw, Plantum NL, UPOV and CPVO will hold lectures on a variety of facets of Plant Breeders' Rights testing. The programme also includes excursions to NAK, Flower Auction Floraholland Aalsmeer. The PVP Course sees its fourteenth edition this year.

Attend the poster sessions

On Monday 27 June from 14.00 to 17.00 the participants will be showing how the Plant Breeders' Rights system works in their respective countries using various posters illustrating the systems. Admission is free for those interested in attending this poster session. After the session, the participants and visitors have the opportunity to meet and enjoy some drinks and snacks. The poster session will be held at 'Het Hof van Wageningen', Lawickse Allee 9 in Wageningen.

More information?

Would you like more information about the PVP Course and/or to attend the poster session? Please contact Naktuinbouw Training Courses, tel: +31 (0)71 332 61 65 or email: opleidingen@naktuinbouw.nl

Your Opinion Counts UPOV 2011

Naktuinbouw is asking companies to contribute their thoughts on the technical aspects of Plant Breeders' Rights. The proposals that are discussed will then be communicated by Naktuinbouw to the UPOV.

Employees of the Variety Testing Department represent the Netherlands in the technical meetings of the UPOV (International Union for the Protection of New Varieties of Plants).

Meetings

During a Technical Working Party (TWP) the guidelines for Plant Breeders' Rights testing per crop are established. Naktuinbouw would like to invite the business community to give its opinion on this matter and approaches the companies some weeks before the meetings of the TWV (Vegetables) in July and TWO (Ornamentals) in November. Companies can also contribute any additional information and remarks via the ISF and Ciopora.

Shortly to be Available: GSPP-accredited Seed

Seed companies with GSPP accreditation will be supplying their GSPP certified seed from July 2011.



The initial focus is on seed of tomato varieties for heated greenhouse horticulture in North West Europe. This is the first step in the integrated GSPP production chain. If plant growers are granted GSPP accreditation, the GSPP qualification for tomato plants will follow in the coming years. The GSPP (Good Seed and Plant Practices) organisation develops and manages a chain system

designed to prevent tomato seed and plant lots from being infected by *Clavibacter michiganensis* subsp. *michiganensis* (Cmm).

More information?

For further information, visit <http://gspp.eu> or contact Naktuinbouw GSPP coordinator, Peter van Enkevort, tel. +31 (0)71 332 61 29 or: p.v.enkevort@naktuinbouw.nl

NEW Variety Descriptions and Calibration Books

www.naktuinbouw.com contains the variety descriptions of the varieties listed in the Netherlands and varieties for which Dutch Plant Breeders' Rights were granted in 2010. Calibration books can also be ordered via the website.



Variety descriptions

The variety descriptions are subdivided into the vegetable, agricultural and ornamental sectors. Consult this information via www.naktuinbouw.nl/en/article/varietydescriptions New descriptions of varieties are added on a monthly basis. On request, older versions will be posted on the site.

Calibration books

Naktuinbouw uses calibration books to perform DUS testing. An explanation accompanied by drawings and photographs is given of each characteristic, based on the UPOV-guidelines/CPVO-protocols.

Naktuinbouw makes these books available for interested parties. They can be used as a guide when completing the application form, when describing the variety and for a better understanding of the descriptions. The books cost € 60 (excl. VAT) each for a printed copy. A digital version costs € 300 (excl. VAT, incl. a printed copy).

Preview and Order

www.naktuinbouw.nl/en/topic/calibration-books lists the books that are available in Dutch or English. You can also take a look at some examples of pages from the books. Calibration books can be ordered at kalibratieboek@naktuinbouw.nl

Naktuinbouw in Kenya

Participants in quality-plus systems such as Naktuinbouw's Elite and Select Plant often have production sites in third countries like Kenya, Guatemala and Tanzania. Performing an audit on location is very important in order to safeguard the quality of production and the products.



Adrie Böhm at the Naivasha Horticultural Fair

Inspector Adrie Böhm has been travelling to visit sites in Kenya three times a year since 1998. The timing of the visit is linked to the production process on the nurseries: in January, May and September the production process is assessed in various stages of advancement. Adrie Böhm usually stays in Africa for about ten days. "I tend to start in Nairobi and travel from there to the companies in the surrounding area. I start by taking the samples in the morning. I often have to acclimatise to the conditions: don't forget we are working there at an altitude of 1,400 to 2,000 metres and this takes some time getting used to. Then I start doing the audits: One of the things I do is talk with the employees involved in the production process. Observing implementation of hygiene protocols, companies work instructions and procedures is an important aspect. High levels of hygiene are applied here and the employees take their jobs very seriously."

Team spirit

Working in Africa requires knowledge of the local culture: the pace of work may be slower, but their degree of motivation is certainly not, and the people are very proud. "Everyone I need for the audit is aware of the planning, but people here work in a different way than in the Netherlands, and the skill lies in being able to keep to my plans." Adrie hold the Africans in high respect: "The workers are really committed, they pay attention to even the tiniest details and there is often a really close team spirit. They are also proud of their work and their employer, and as an auditor I see this pride

reflected." In the evening we often go out to dinner with people; managers of the companies we are visiting or people interested in the quality-plus systems. "Networking is vital: there is a lot of interest in Naktuinbouw's work".

Networking

Once the visits in Nairobi are over, Adrie moves on to visit the sites in and around Naivasha. Each year he takes part in the Naivasha Horticultural Fair, an event visited by all the growers in Kenya. Besides networking the fair also has a charitable side: a percentage of the participation fee is donated to an orphanage in the city. Adrie has become a familiar face at the companies in Africa. To secure the independence of the audits a fellow auditor occasionally travels with him to perform the audits.

Future

Propagating companies invest a lot in their production sites abroad. In the quality-plus system Naktuinbouw Elite it is mainly the large scale production (step E) that takes place in Africa, but there is a tendency that the propagation stock stage (step EE) of this system will move to countries such as Kenya, Ethiopia and Tanzania. Adrie will continue to visit Africa regularly: "If this tendency continues and with the participation of African production sites in the new GSPP quality mark, the work in Africa is sure to increase."

More information

For more information about the quality-plus systems, contact the International Systems Team tel. +31 (0)71 332 61 90.

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