

<u>iteipmai</u>

MAP SYMPOSIUM

Medicinal, Aromatic and Perfum plants



ABSTRACTS

































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LAURENT MARTINEAU

Promoplantes
Président of iteipmai

EDITORIAL

Each "Rendez-vous d'Herbalia" is eagerly awaited, but probably even more this edition, which has been postponed twice due to health precautions.

This symposium allows networking, exchanges, and conviviality moments between the actors of MAP sector. It is a great opportunity to explore the subjects of development or concerns for our map productions.

During these two days, iteipmai and its partners will present their work covering the subjects of genetics, adaptation of plants to climatic, environmental and sanitary aggressions. A whole afternoon will be devoting to the contaminant's topic, still a subject of great concern, with conferences and round tables that will be very instructive.

Agroecology and new production methods will be illustrated by very instructive feedbacks Finally, how couldn't we close a symposium without projecting the future for our sector, by exploring the different scenarios and mention the relocation of productions.

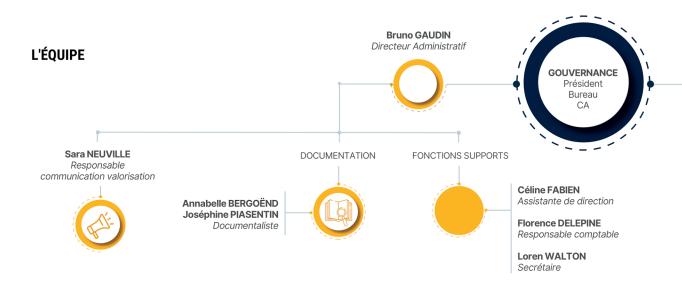
To summarize, the program promises to be very rich and to give ideas for the future of the MAP sector.

I would like to thank the funders, the Pays de la Loire Region, FranceAgriMer, the Maine et Loire Department and all the sponsors for their support. I would also like to thank and congratulate the iteipmai team and the steering committee made up of administrators, for their work to prepare this event.

Happy 5th Rendez-vous d'herbalia to all!

Jaurent Wartineau

MEET ITEIPMAI TEAM!





MEET ITEIPMAI TEAM!

Philippe GALLOISDirecteur Technique



Denis BELLENOTResponsable pôle
Phytochimie Normalisation



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Magali PELISSIER Responsable pôle développement et



Simon RENOU Responsable/chef de culture UE 49

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Responsable pôle caractérisation des ressources génétiques Coordinatrice UE 49

Marlène ARTONNE RAVARD Christelle GARNIER Roxane TRABATTONI Chargées d'expérimentation

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CHRISTELLE



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DENIS



FLORENCE



JEAN-ROBERT



MARIANICK



MÉLINA



**PHILIPPE



ROXANE



SARA



SIMON



THIBAUT

TUESDAY, NOVEMBER 22



BERLINE FOPA FOMEJU & iteipmai FABRICE FOUCHER



INRAE, IRHS, équipe GDO

IMPLEMENTATION OF MARKER-ASSISTED SELECTION FOR PERFUME PLANTS: FINE LAVENDER AND ROSE.

Varietal selection has been practiced by human being since his settlement 12,000 years ago. Initially, it was based on the assessment of the phenotype of plants (all visible traits). Today, breeders also assess gene content (or genotype) to guide their choices. For example, molecular markers are routinely used for the selection of cereal, oil-protein or vegetable species to eliminate early plants susceptible to some diseases and pests, to identify plants with high yield potential or with better quality production.

The objective here is to present the possibilities allowed by these tools in the case of the creation of new varieties of ornamental, perfume, aromatic and medicinal plants (OPAMP). We will rely on fine lavender (Lavandula angustifolia) to present how, starting from little knowledge, it is possible to develop genomic tools for a species. Next, we will see how these tools can be used to identify genes involved in traits of economic interest, and how they can help select and improve these traits. For this, we will take the example of the number of petals (double flower versus simple flower) in the garden roses (Rosa genus). Thus, we will see the advantages, the limits and the perspectives offered by genomics for the varietal creation of OPAMP.

ly notes;		



SHRUB CUTTINGS - NEW WAYS EXPLORED IN ORNAMENTAL HORTICULTURE AND IMPLICATIONS FOR GROWING METHODS.

The production of shrubs in soilless ornamental nurseries usually starts with the cutting of plant material. The repercussions of multiplication on the organization of the companies, on the quality of the products and on the production costs are very important. The number of species cultivated in this sector is also very large

The traditional method of cutting which consists in transplanting woody cuttings in short days, with little heating, results in a slow rooting and requires long durations of culture with successive repottings in containers of increasing size. In addition, many taxa show rooting defects with random success.

Also, since 2014, the implementation of experimental programs has allowed the development of a new propagation itinerary gathering techniques facilitating the rooting and branching of young plants to accelerate the culture cycles. The study of an aeroponics propagation method has also started to overcome the limits of the substrate-based cutting methods which increase the risks of anoxia at the base of the cuttings due to excess water. With aeroponics, oxygen supply at the base of the cuttings is no longer a limiting factor. In addition, in a more recent project, we are studying whether the hardening of mother plants by water restrictions allows us to obtain, after cuttings, young plants that are better acclimatized and more resistant to water restrictions.

ly notes ;				



STÉPHANE HERBETTE

INRAE Clermont-Ferrand, UMR PIAF

PLASTICITY AS A LEVER FOR ADAPTATION TO CLIMATE CHANGE: EXAMPLE OF THE WORK OF THE RECITAL PROJECT ON LAVENDER.

Climate change is altering resource availability and conditions that affect plant performance. Plants respond to these changes through environmentally induced changes in phenotype (phenotypic plasticity). Understanding this plasticity is essential to predict and manage the effects of climate change on crops. Within the framework of the RECITAL project, the responses of Lavandin and Fine Lavender to various water constraints were characterized. Lavandin and lavender plants grown with a lower water supply show a modification of hydraulic parameters (stomatal conductance, resistance to vessel embolism) that are critical for drought resistance. The plasticity of these parameters induced by drier growing conditions would give them a better resistance to a future drought.

Jy notes :	



LAURENT LEGENDRE

Université de Lyon

PLANT GROWTH-PROMOTING RHIZOBACTERIA AND THEIR APPLICATIONS IN AGRONOMY.

In parallel to fungal symbioses, plant roots develop interactions with reciprocal benefices with a wide array of soil bacterial genera that are grouped under the name 'plant growthpromoting rhizobacteria'(PGPR). These interactions may take place within the root, at its surface or in the rhizosphere, the area of soil that is influenced by the root. PGPR improve plant mineral nutrition, alter the root system architecture and provide direct and indirect protection against a panel of plant pests and abiotic stresses. Their presence in some soils can, in some instances, lead to enhanced tolerance to certain diseases or to the expression of the specific phenotype of some plant varieties. Numerous commercial products include them as active ingredients and are sold as biofertilizers or biocontrol agents to sustain crop yields in a context of changing climate and lesser use of chemical fertilizers and pesticides. True agronomic benefices are nevertheless often disappointing when single microbial isolates are used. Current research efforts are therefore aiming to construct synthetic bacterial communities (SynCom) to better take into account the complexity of the interactions among bacteria and the multitude of their phytobeneficial properties. Artifical selection methods are also used to render the host-SynCom interaction permanent and heritable.

Jy notes :			



Animation : PHILIPPE GALLOIS

iteipmai

WILLIAM GIL Ardo







MULTI-FACTORIAL APPROACH TO CONTROL BASIL DOWNY MILDEW : EXAMPLE OF THE BASIMIL PROGRAM.

Jy notes ;		

AFTERNOON'S TOPIC: CONTAMINANT ISSUE

CONTAMINANTS

PUBLISHED BY ITEIPMAI (IN FRENCH)

Retrouvez sur le site Internet de l'iteipmai les publications traitant des contaminants :



https://www.iteipmai.fr/nos-publications/dossiers-thematiques

LES ALCALOÏDES TROPANIQUES (AT) ET LES SOLANACÉES





LISTE ET DESCRIPTION DES PRINCIPALES PLANTES À ALCALOÏDES PYRROLIZIDINIQUES





RÉSIDUS DE PESTICIDES ET FAUX-POSITIFS : LE CAS DES DITHIOCARBAMATES





TO BE PUBLISHED: ETHYLENE OXIDE



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ALEXANDRE MACIUK

Université Paris-Saclay

From ALERT TO REGULATION: BUTTERFLY EFFECT OR UMBRELLA EFFECT?

Jy notes ;			







Aude AZNAR **Synadiet**

Stéphanie CHANUT Christian LUBRANO Boiron Alban-Muller Alban-Muller

DOWNSTREAM'S POINT OF VIEW: FEEDBACKS.

y notes ;	



Animation: CHRISTOPHE RIPOLL

Natinov

ROUND TABLE:

DISCUSSIONS BETWEEN UPSTREAM AND DOWNSTREAM SECTORS ON

AUDE AZNAR

Synadiet



EMMANUEL BOZON

Les aromates de Provence



PIERRE CHAMPY

Université Paris-Saclay



STÉPHANIE CHANUT

Boiron



ISABELLE RIPOCHE

Promoplantes



JEAN-MARC SEIGNEURET & CHRISTIAN LUBRANO

Alban-Muller



LÉON VAN NIEKERK

Darbonne



My notes ;



DENIS BELLENOT

iteipmai

Pyrrolizidine and tropane alkaloids: results of the FranceAgriMer study

The objective of the study financed by FranceAgriMer is the evaluation of technic and economic impacts of the withdrawal of herbicides in MAP production.

This study is divided into 2 parts: a poll and tests

The poll consists in interviews of actors of the French MAP sector on the economic impact of PAs in their production. This survey took place in the first quarter of 2021. Just over 200 organizations were contacted, 75% responded to our requests, half of which accepted an interview. Three different questionnaires were used: one for upstream companies, one for downstream companies and one for support organizations (associations, unions).

Trials to test different technical hypotheses of contamination by these alkaloids: comfrey manure, pollen as vector of PA, the role of the soil as a reservoir of alkaloids; the behaviour of PA during steam distillation has also been considered.

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EUROPAM'S CONTRIBUTION TO THE NATURAL CONTAMINANTS' ISSUE.

Europam was created in 1994. It brings together European producers of aromatic, medicinal and perfume plants. One of its main missions is to participate in policies for the standardization of products and the definition of their quality criteria and to act as a representative of European producers with the institutions and political organizations of the European Union and their Member States. and to defend their interests.

In 2022, and in the context of the application of Regulation (EU) 2020/2040 of December 2020 scheduled for July 1, 2022, Europam has stepped up its efforts aiming at:

- Strengthening its exchanges with the European Commission
- Making an inventory to date of scientific research
- Making an approach to the flaws in the risk analysis
- Promoting synergy between European economic players in the sector, as well as between their professional organisations.
- Communicating on the economic impact of the application of this regulation with producers, industrials in the sector, and the market.

Main contributions:

- 1/ Consultations with other professional organizations in Europe and France
- 2/ Contribution to the evolution of GACPs to take PAs into account
- 3/ Work with the European Commission -Contaminant Working Group:
- Presentation of April 29 2022 online to the group, with request for an additional 3-year transition period and alignment of the Maximum Limits for aromatic herbs and infusion plants for better consistency:

8.4.1 Infusions (dried product), to be aligned with 8.4.2

® 400 µg/kg

8.4.9 Dried herbs, to be aligned with 8.4.10

® 1000 μg/kg

- Request reiterated on June 8, 2022 to this same working group accompanied by a proposal for a 3-year monitoring plan in the sector of plants, herbs and natural food supplements and the link to the data collection carried out in May 2022 with its preliminary conclusions.
- 4/ Preparation of position papers intended for Europam members to initiate political lobbying at national levels.
- 5/ Exchanges with researchers on the respective toxicity of the various alkaloids, and discussions on Europam's contribution by collecting data to be renewed for 2022/2023. Significant synergy with PPAM from France and CPPARM for data monitoring and processing, lobbying strategies, and consultation with French producers and organisations. Significant mobilization of Europam members including Iteipmai.
- 6/ Continuation of validation tests of the "Europam" sampling method for batches with suspected high contamination.

WEDNESDAY, NOVEMBER 23



USE OF MAPS IN AGROECOLOGICAL CROP SYSTEMS.

Regulatory and societal changes are pushing sectors to find innovative solutions to their crop problems, pest and pathogen management or weed management.

Among the solutions considered and tested, those highlighting biodiversity in the fields are on the rise. By their diversity, the plants of the Aromatic, Medicinal and Perfume sector naturally find their place in these reflections; and their production of secondary metabolites can be an advantage, in the fight against diseases and pests.

Both for its agronomic and phytochemical expertise, iteipmai participates in various projects led by other plant sectors to explore the potential offered by the botanical diversity of the MAP sector, thus work is being carried out in fruit arboriculture, in viticulture as in vegetable production.

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OPHÉLIE BAZIN

Yves Rocher

Systemic agroecology for MAPs: experiments and practices at Yves Rocher.

At the Yves Rocher's Herbarium department, agroecology is a holistic practice: the MAPS are grown on plots that are integrates inside a greater whole, in which every choice contributes to the furthering of the complex and dynamic virtuous equilibrium.

But what does that mean, practically? Comme take an in depth look at this approach, from theory to practice, through precise examples carried over specific cosmetics MAPs and scientific experimentations. Beneficial insects? Managing weeds? Living soil? Agroecological infrastructures and landscape? Cultivating under living mulch? And why not add ewes... From methodology to results, let us share everything.

Ty notes :	



INTERROW PLANT COVERS ON LAVENDER AND LAVANDIN.

Work on inter-row cover crops in lavender systems started in 2015. At that time, one of the most important issues for the sector was the control of stolbur blight. The earlier studies focused on the impact on dieback. For this purpose, different species were worked with the aim of reducing costs for the farmer. The results show that triticale crop is one of the most practical and easy to manage specie during crop establishment. We observed a decrease in dieback symptoms by an average of 50 % for all the species studied. However, there was also an impact on yield in the first year, mostly due to water and nutrient competition between cover-crop and main crop. A lot of work has been done on implantation conditions and management of inter-row cover-crop during the first year of lavender. The choice of the species, sowing density and ground cover area are key elements to consider and manage to limit competition with lavandin. It is therefore advised to plant cover crop only on 60 cm wide in the middle of the inter-row. Other effects of inter-row cover-crops are now being studied, such as weed's competition, impact on soil erosion and improvement of organic matter content.

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DENIS VERNETGAEC des Fabres

NEW CROP SYSTEMS: FEEDBACK OF A LAVANDER GROWER.

GAEC des FABRES family farm presentation: climate and soil context, productions

Research and trials on cover crops in perfumes crops in the territory: CRIEPPAM research showed that cover crops between rows the first year of planting reduce by 50 % the mortality of lavender plants the year after. Besides, an inter-institute project starts in 2014 named REGAIN wish aimed to support farmers from the plateau of Valensole into their agroecological transition. A network of 27 farmer inside this project was initiated by the Regional Natural Parc of the Verdon called "Réseau'sol" or "Soil network". It's about the evaluation of the soil quality in 36 lavender field and follow this on few years regarding the agroecological practices vs conventional practices. Results showed low quality and fertility soil in average with a better quality and fertility in a between row cover crops system.

A GIEE was created to go further in lavender cover crops development: GIEE Essen'sol. We work on 3 main topics: 1- cover crops between lavender rows, 2- How to use distillate residues as fertiliser, 3- crops diversification and rotation

Development and application of cover crops between lavender row on the family farm. 2 different strategies:

- 1) Spring cover crops after planting for sanitary reason
- 2) Autumn cover crops: sowed every year after harvest

Example with pictures and discussion around the main question: How and when to sow the cover crops? How to manage it and the weeds during the cycle? How to destroy it and manage the biomass?

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LAURENT CRESPEL

Agrocampus Ouest

INDOOR GROWING: EXAMPLES OF APPLICATIONS FOR ORNAMENTAL HORTICULTURE.

To meet the food needs of tomorrow, especially for urban populations, many indoor vertical farm projects have been developed in recent years. This production system, with several floors, in a closed and controlled environment, has been made possible thanks to the development of LED (Light Emitting Diodes) artificial lighting. This lighting technology allows not only to control the duration, but also the light intensity and spectrum, thus promoting photosynthesis and therefore the production of biomass. The crops produced today are mainly leafy vegetables, such as lettuce, or aromatic plants, such as basil, i.e., plants of little volume. In ornamental horticulture, this production system opens new applications, especially for the deseasonalized/heated production of young quality plants (well rooted, compact and branched). In addition to optimizing photosynthesis, light allows the control of plant architecture (i.e., photomorphogenesis), a component of the visual quality of ornamental plants. The IRRADIANCE and QUALILED projects carried out in collaboration between ASTREDHOR and the IRHS of Angers have allowed to better understand the effect of light quality on plant architecture and to develop a new system of production of young plants, in climatic closed enclosure, 'low cost-high tech', adapted to the constraints (of space, cost, ...) of the producers of flowering pot plants.

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ALEXANDRA CREME

Tower Farm

INDOOR GROWING: TOWER FARM, FEEDBACK OF A COMPANY PRODUCING MAP USING INDOOR VERTICAL FARMING TECHNOLOGY.

Committed to building a truly sustainable future, Tower Farm enriches the model of urban agriculture based on social and environmental commitments through vertical indoor production: a controlled environment for controlled plants in all seasons.

At Tower Farm, we do not export products but technology. Our mission is to develop a truly sustainable solution for high value-added plant production that will be beneficial for both society and the environment through the absence of pesticide use and the maximum reduction of the carbon footprint by the distance to the next transformation point.

Our vertical farm technology is an aeroponic indoor growing platform supporting the cultivation of the world's largest selection of crops and provide maximum space and time efficiency. This exclusive, fully automatic, digital management system controls and optimises the cultivation process while reducing the consumption of water resources through closed-loop recycling.

Amazon jungle or Indian forests - all of that is in your warehouse. We guarantee exotic plants' stable production and the safety of the local environment. And we design growing protocol to ensure high active ingredient content and premium quality to add more value to your product with full traceability.

We combined high technology, brilliant minds, and exotic or medicinal plants to stand out and propose to you our business model with "Growing as a service". As two major pharmaceutical and cosmetic companies gives their trust, we develop plants intended for the cosmetic, pharmaceutical and food supplement industries.

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STÉPHANE DURAN Robagri

Prospects for using robots in weed control in specialised crops.

Creating RobAgri association in 2017, the emerging sector of agricultural robotics relies on a transversal and shared approach in order to address the challenges farmers face with the ecological transition. After presenting the main current locks of the sector and some tracks and work in progress to overcome them, we will make an opening on the AMP. These latter fall within the scope of the first robotics application to have emerged in plant production: mechanical or precision weeding for crops with high added value.

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SERGE BOUET FNAMS PATRICIA MAUSSION



Région Pays de la Loire

AGROPAMS – A Pays de la Loire project to test and speed up the implementation of innovative weeding Agricultural equipments in specialised crops of MAP Plants and Seed production.

The agricultural sectors of Perfume, Aromatic and Medicinal plants, plus Seeds are historically settled in the regional area of Pays-de-Loire, where they are characterized by a wide range of cultivated species, with varying degrees of value-added. These agricultural sectors are submitted to a necessary evolution of agricultural practices in a context of socio-economic, agroecological and regulatory settings.

Producers need new alternatives, particularly to meet high weeding requirements, as it represents the main expense for most of these crops, and to reduce the use of herbicides.

The project partners (Iteipmai, Fnams, Hemp-it and Vegepolys Valley) have organized Désherb'Expo in 2018, a day event for demo and exhibition of innovative agricultural equipment, bound for perfume, aromatic, medicinal and seed producers (600 visitors). Discussions have continued with the study AgroPASS in 2019.

The project AgroPAMS follows on from these steps. It aims to identify innovative agricultural equipment of technic and economic interest, to answer the weeding needs in specialized crops. This means to study equipment with manufacturers in experimental conditions, then to introduce to producers the solutions of equipment identified during a demonstration of with communication actions in the partners networks. First tests have begun in September 2021, with a first demonstration. This project should continue up to 2023.

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FRANÇOISE BRUGIERE

FranceAgriMer

MAP SECTOR: 5 POTENTIAL SCENARIOS FOR THE FUTURE.

Between June 2018 and April 2020, a group of some 15 professionals from the sector and MAP experts met regularly to draft these five scenarios. Impacted by the health crisis at the time of delivery of the work, this group validated the robustness of the collectively developed method and production. He considered that it was not in vain to seek to enlighten the long term, even if the near future seems largely uncertain. Thus perceived foresight is not an escape into the future but the means for decision-makers and researchers to return to the present, better equipped to influence it according to their intentions and requirements." M. Sebillotte, INRA 2002.

The first analyses of the stakes and the consequences of the scenarios during the virtual seminar for debate on April 1, 2021 highlighted:

- The non-food (calorie) nature of MAP requires that the consumer opportunity be created that can respond to the desire for "natural", "nature", "green". But with very elaborate, processed products, products in long chain the risk for the image is real.
- · Regulatory issues are diverse and decisive: AB non-food labelling, claims vs scientific evidence for health uses, access to animal and plant care markets, residues, REACH, Nagoya, etc.
- · There are specific R&D needs: ecoextraction, effect certification protocols, etc. taking labour costs into account in sourcing (CSR, etc.), adaptation to climate change by diversification crops

To make good use of this work, it will be necessary to succeed in bringing together producers and processors of plant raw materials to develop a culture of anticipation. Not always easy to project to 2040 when the short-term future remains highly uncertain!



TABLE RONDE:

Crop relocalisation.

PIERRE CHICOTEAU

Nor-Feed



GIORGIANA CHIETERA

IFF



EDITH GIFFARD

Giffard



JOËL LABBÉ

Sénateur du Morbihan



JEAN MAISON

Le comptoir d'Herboristerie/AFC



ALEXANDRE PANEL

Pierre Fabre



The movement to relocate agricultural production has been starting in French agriculture sector but also in MAP sector. This change has resulted of new requirements of consumers for traceability and quality of raw materials and products, combined with the need for companies to secure their supplies in context of geopolitical, environmental and climatic crises.

But what exactly is meant by relocalisation? Is it a matter of reinforcing the production of plants already grown or harvested in the country, "importing" new crops (acclimatisation) or innovating by seeking to discover active ingredients in "local" plants?

How do companies make this change? What are the constraints and difficulties encountered? What would be the levers to stimulate this dynamic when it is considered relevant?

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Animation: MARION DUMOULIN

Irisco / Phytolia

TABLE RONDE:

EVOLUTION OF THE PART OF NATURAL INGREDIENTS IN THE INDUSTRY.

NÉBIL BOURGUIBA

Groupe Berkem



MARIE CHUPIN

Alvend



KARINE DENIEUL

RNI Conseil



BENOIT JOIN

Symrise



Natural cosmetics, organic foods, biocontrol solutions, plant-based dietary supplements or biobased perfumes, naturality is present in all our daily life products. Some natural sectors even display a two digit growth despite the pandemic of COVID-19.

If all lights are green for natural products, they however raise some questions: What is behind "natural ingredient" wording? Is there any regulatory framework around naturality? What does the consumer think about natural products? Between Ecolabel, Cosmos certification and other clean label, is communication bringing more information or more confusion? To answer increasing market needs in terms of natural, transparency, security and efficacy, how industrial companies manage to face these technical challenges? Focus on natural ingredients in our products of today and tomorrow through the return to tradition, the substitution and the innovation.

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