

GROWER SUCCESS STORIES

REAL RESULTS
FROM THE
POTATO R&D LEVY

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The Australian potato industry continues to benefit from increased innovation in production practices, efficiency and profitability through ongoing investment in industry research and development (R&D). The real-world results of this investment are highlighted in the 2016 edition of *Grower Success Stories: Real results from the potato R&D levy*.

Hort Innovation, using the National Potato Levy and matching Australian Commonwealth Government funds, annually invests a significant amount of funding in grower-focused R&D projects. These projects continue to deliver countless benefits to potato growers throughout the country who have embraced industry R&D and, as a result, improved the productivity and profitability of their businesses.

For instance, the Potato Industry Extension Program (PIEP) was the Australian potato industry's key program for extending levy-funded R&D information and project outcomes to growers, agronomists and processors. Yuri Wolfert, who is profiled in this booklet, is a young potato grower from Tasmania who attended a range of PIEP workshops and has adopted a number of on-farm ideas communicated through the program.

Controlled traffic farming (CTF) can be a challenging system to implement, however the benefits obtained from this innovative method of increasing productivity make it a worthwhile objective. A number of levy-funded CTF projects have been developed for the industry and two Tasmanian potato growers, John McKenna and James Addison, share their successful experiences with CTF in this booklet.

Learning about cutting-edge potato R&D is not only restricted to Australia. We see many Australian growers, such as Tasmanian Nathan Daly, taking the opportunity to embark on levy-funded missions to key international potato growing regions. These grower missions allow participants to gain a unique insight into the production practices adopted by their international counterparts and allow growers to see firsthand the technology they are using in their businesses.

Back home, the nature of a potato grower's work can be isolating, which can take its toll on even the most seasoned industry veteran. Effective communication within the potato industry is vital, and Victorian potato grower Stuart Jennings is an advocate of communicating R&D information to growers as well as providing general support and advice. He has effectively shared R&D findings to young industry members through various channels in the Potato Industry Communications Program, including *Potatoes Australia* magazine and interacting with growers on social media.

Significantly, the threat of potato soil-borne diseases is an ever-present challenge for growers to overcome. Ongoing investment in soil testing has helped growers and advisers to detect the presence of soil-borne disease in an effort to ultimately produce healthier, higher yielding potato crops. Reflecting on this work is Simplot Australia Seed Potato Field Officer, Angus Galloway, who has experienced significant success using the levy-funded PreDicta Pt diagnostic service with his seed potato growers.

The future of soil health in potatoes is high on the research agenda, with several new R&D projects in the pipeline. We look forward to seeing further innovation and developments arise from levy-funded R&D projects that will help to shape the Australian potato industry for years to come.

Yours sincerely,
Selwyn Snell
Horticulture Innovation Australia Chairman



AUSVEG Ltd
PO Box 138
Camberwell VIC
Australia 3124



Email: info@ausveg.com.au
Website: www.ausveg.com.au



Tel: (03) 9882 0277
Fax: (03) 9882 6722



Twitter: twitter.com/ausveg



JAMES ADDISON

Tackling soil compaction

Photograph by Heath Holden Photography.

Overcoming the negative impact of soil compaction on potato production was the major motivation behind Addison Farm's move to controlled traffic farming (CTF).

The onion packing, potato and vegetable growing operation based in Moriarty, Tasmania is managed by David Addison and his sons, James and Mark.

As the farm manager, James is well aware of the need to operate a farming system that achieves multiple sustainability goals.

The 31-year-old says he was familiar with research that highlighted the unique benefits of CTF systems but was also conscious of the fact that a new farming system would ultimately have to be profitable as well.

For James, CTF was a possible way to alleviate soil compaction on the property, a problem caused by compression from agricultural machinery traffic.

"Some of our paddocks are heavy red clay soils that can be difficult to manage if rain continues into late spring," he says.

"Getting crops sown on time was proving a challenge, as the soils were not responding well to traffic at times when moisture levels were above normal."

Exploring opportunities

Fuelled by an interest in soil health and new knowledge acquired from his father, who was on the reference group for project MT09040 – *Development and demonstration of controlled traffic farming for production of potatoes and other vegetables*, James embraced the opportunity to adopt CTF to improve his agronomic practices and operating efficiencies.

The project was developed to build on project VG07058 – *Controlled traffic farming systems for the Tasmanian vegetable industry*, which highlighted the need for field sites managed under CTF to demonstrate

both the advantages of the system and explore practicalities of implementation.

"Dad came back from the project with a range of ideas which he was keen for us to put into practice," he says.

“ Our soil is gradually becoming much healthier. It's easier to manage and prepare on time and our fuel inputs and tractor hours have reduced. ”

"We engaged John McPhee from the Tasmanian Institute of Agriculture, who worked with us to create a more comprehensive system that would help us use our natural resources and inputs more efficiently."

CTF limits compaction zones to permanent wheel tracks where the traffic lanes are permanently separated.

The challenge, therefore, was minimising the cost of converting to CTF.

"We are gradually adjusting our existing machinery (over a two-year period) to ensure the wheel spacing on all implements matches the width of the traffic lanes," James says.

Encouraging signs

CTF was used on a seasonal basis on Addison Farm, and was progressively being applied across as many cropping zones as possible.

"The aim is to have every activity, except the harvesting, done using the same wheel tracks," James explains.

"As we have such a wide range of different harvesters come on the farm, it would be

impossible to set up a full CTF system. Hopefully, this will be the next best option."

Although the benefits of CTF were not immediately obvious, James says there was plenty that was encouraging him to stick with the system.

"Our soil is gradually becoming much healthier. It's easier to manage and prepare on time and our fuel inputs and tractor hours have reduced."

Summary:

- The principles and benefits of controlled traffic farming (CTF) are well documented, but there are a number of technological barriers to widespread adoption in the potato industry.
- This project has shown that it is possible to arrange crop rotations to maximise the opportunities to maintain a CTF system.
- Tasmanian potato grower James Addison, based in Moriarty, displays an interest in soil health and has tried innovative farming methods, which he is currently in the process of developing further.
- Project MT09040 was funded by Horticulture Innovation Australia Limited using the Potato and Onion Levies and funds from the Australian Government. It was coordinated by the Tasmanian Institute of Agriculture.

NATHAN DALY

Sowing seeds of inspiration



Generating new ideas and inspiration is not always easy, but for first generation potato grower Nathan Daly, the benefits are worth the effort.

A newcomer on the growing scene, the 23-year-old from Tasmania is still learning the ropes in his parents' potato production operation, GP & SJ Daly, but says being raised in a farming environment has its advantages.

Working mainly in the field and packing shed, Nathan also has some input into the management and decision-making side of the business, which has been in operation for 26 years with three sites across the state's south east.

Family dynasty

Innovation runs through Nathan's blood. His mum, Susie Daly, is well known in the industry for developing new potato products using second-grade spuds, so it's only natural that Nathan enjoys searching for new ways of doing things.

"Mum was actually the driving force behind my decision to attend the Potato Industry Leadership and Development Mission in 2015, which involved an intensive two-week schedule of visits in China," he says.

Nathan was one of nine growers from multiple potato growing regions across four states to represent the seed, fresh and processing sectors of the potato industry.

The mission (PT14701) also focused on developing and strengthening relationships between both Australian potato growers and their international counterparts, including other growers, researchers, processors and mechanisation specialists.

"It was great to meet other growers from around Australia and exchange ideas and experiences, both professionally and socially," he says.

"The opportunity to link in and potentially

form connections across the region was really invaluable."

Nathan says he also found it interesting to learn about the Chinese food chain and how they tackled the challenges particular to their environment, climate and economics.

"China has a significant Potato scab problem, which highlighted to me the importance of effective cropping techniques and pest and disease management back at home," he says.

"Being in the washed potato industry, quality is paramount – you have to have a spud that looks as good as it tastes."

Mission accomplished

With this in mind, Nathan has begun increasing his use of technology on-farm, implementing pivots and new fertilisers and sprays into his growing program.

“It was great to meet other growers from around Australia and exchange ideas and experiences, both professionally and socially.”

Plus, he is more conscious of picking the best soil types to suit the business.

He says the mission also prompted him to rethink the ways the business was dealing with potato waste.

"China has a thriving potato industry, but it's not stopping farmers from trialling new ways to use their potatoes, such as in cakes and other baked goods.

"Taking inspiration from this, we are incorporating our leftover potatoes in potato salads and potato vodka, two products that

we've recently launched to market.

"These spuds are all the seconds from washing and normally would be fed to the cows."

Nathan says he is continuing to keep his eyes peeled for new varieties.

"We currently grow six varieties of spuds that are pre-packaged for supermarkets," he says.

"One of our newest additions is a low-carb potato, which is proving popular among consumers."

Summary:

- The Potato Industry Leadership and Development Mission 2015 – China was an exciting and dynamic learning experience for Australian potato levy payers.
- A key focus of the mission was the ninth World Potato Congress in Beijing, which provided deep insight into the international potato industry.
- Through his participation in the levy-funded mission, Tasmanian potato grower Nathan Daly was able to gain a unique perspective into the Chinese food chain, along with an understanding of the various climate, soil and environmental conditions that international growers contend with.
- Project PT14701 was funded by Horticulture Innovation Australia Limited using the National Potato Levy and funds from the Australian Government. It was coordinated by AUSVEG.

STUART JENNINGS

Strength in numbers



Photographs by Lisa Hayman.

If there ever was a man to champion the adage “united we stand, divided we fall”, it would be Victorian potato grower Stuart Jennings.

A staunch believer in the power of shared knowledge, 30-year-old Stuart, who is based in Thorpdale, says the next generation of growers should be working together to support each other and strengthen the industry.

It is the reason he founded the Young Potato People (YPP) networking group, an interactive online forum that uses Facebook and Twitter to help build better relationships and stronger communication lines between potato growers around the country.

Grower connection

Stuart says the main aims of the group were to foster collaboration and enable and facilitate ideas and information.

“I started YPP as a way to encourage the next generation of potato farmers to connect with each other and communicate better,” he says.

“When I was in Europe on the AUSVEG grower tour to the World Potato Congress in 2012, it was obvious that most of the young Australians there did not know each other.

“I thought, ‘Wouldn’t it be great to have a forum that allowed us to stay in touch, work together and bounce ideas and information off one another?’”

“ Usually, it is the little things you pick up through conversing that make the biggest difference. ”

Stuart also writes a YPP column that appears in each edition of *Potatoes Australia*, and says any newly released R&D information is shared on the YPP social media pages.

These activities, which are both



components of the Potato Industry Communications Program (PT15007), are designed to inspire growers to take advantage of these results and encourage business innovation.

“Usually, it is the little things you pick up through conversing that make the biggest difference,” he says.

“I find people are keen to talk to me and share their on-farm experiences after reading my column or seeing my posts on the page.

“Since creating the Facebook and Twitter pages and building up our member base, we’ve done a couple of trips with young growers to different areas to network and see how other producers are doing things.”

Raising awareness

Aside from forging connections and achieving better communication in the industry, Stuart says YPP is helping to address mental health-related issues.

“Too many farmers have suffered, or are suffering, from mental health issues and linked to this is the high rate of suicide,” he says.

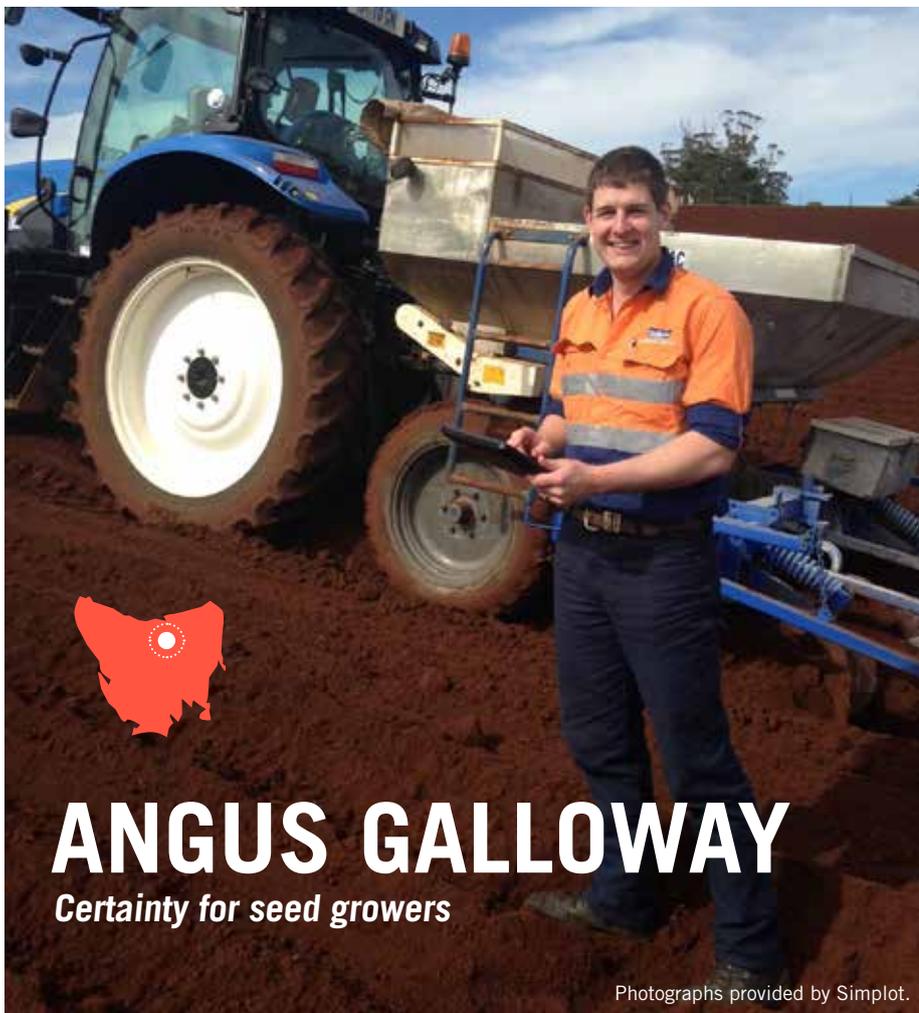
“Hopefully, through this forum, growers feel they can talk about their feelings and encourage others who are in a similar situation to do the same. It might only be a small thing, but it could help someone out enormously.”

Looking to the future, Stuart says he hopes to get more people to participate in grower tours and events under the YPP banner.

“If YPP can continue to be a forum for the younger generation and support them in their work every day, then I would be pretty proud to be a part of it,” he says.

Summary:

- Through his Young Potato People (YPP) column, which is supported by ADAMA and appears in each edition of *Potatoes Australia*, Victorian potato grower Stuart Jennings has been able to communicate the latest in potato R&D.
- The YPP has expanded, and is now appearing on social media sites including Facebook and Twitter.
- The interactive online forum, which is used by potato growers around the country, is actively promoted by AUSVEG in *Potatoes Australia*, as well as on its Twitter page, which are both components of the Potato Industry Communications Program.
- Project PT15007 is funded by Horticulture Innovation Australia Limited using the National Potato Levy and funds from the Australian Government. It is coordinated by AUSVEG.



ANGUS GALLOWAY

Certainty for seed growers

Photographs provided by Simplot.

As the Seed Potato Field Officer at Simplot Australia, Angus Galloway has one piece of advice for seed potato growers: “Always DNA test your soil before planting seed potatoes.”

It is an approach that has worked well for the northern Tasmanian, who manages the production of around 17,000 tonnes of potato seed.

Angus has been using the pre-planting DNA soil testing service, PreDicta Pt (PT09023), since it launched in August 2014.

He says the technology was proving a valuable and cost-effective way for Simplot seed growers to assess the risk of harmful pathogens present in their soil, and make informed decisions prior to planting.

Gauging disease risk

The service enables growers to have their soils tested for pathogens causing Powdery scab, Black dot, *Rhizoctonia*, Potato early dying and Root knot nematode in potato crops.

“Soil-borne diseases in potatoes cause significant economic losses to the Australian processing potato industry every year and the effects can be devastating for growers,” Angus says.

“The PreDicta Pt diagnostic test is about knowing the risk of disease in seed potato production sites and managing the risks associated with any of the pathogens that are identified.

“Last year Simplot went out and DNA

tested all of its seed crops using PreDicta Pt, focusing on the Powdery scab pathogen, which is a major issue for Tasmanian growers.

“I was convinced by the technology at the end of the season, when out of my top 10 results for Powdery scab, six paddocks failed certification due to the disease. The remaining four passed certification but Powdery scab was present on crop roots.”

Angus says knowing the disease risk in each field helped growers to determine what cropping system they should use, which paddocks they could use for seed and whether they should explore different varieties.

“Prior to contracting any potatoes with growers, I will go out and take a soil sample,” says Angus, who has recently completed training to become an accredited agronomist under the PreDicta Pt program.

“The sample is then sent off to SARDI’s (South Australian Research and Development Institute) labs for testing and within a fortnight I will receive a test sheet that provides me with an accurate reading of the levels of soil pathogens in the ground.”

Versatile technology

Angus says growers could use the test results to choose fields or match varieties and planting schedules to available fields.

He adds that other variables were also taken into account when interpreting the results.

“As well as factoring in variables relating to



Steve Carr

has worked with Angus Galloway using PreDicta Pt.

the climate or potato variety, the grower and I will add in our own local knowledge, which will enable us to get an accurate measure of whether the potato will pass the required certification sampling.”

Conducting up to 70-80 soil tests annually has given Angus new insights into different ways that PreDicta can be used in the industry.

“These include assessing R&D trials for soil pathogens; for example, biofumigation trials or testing the efficacy of new soil fungicides versus the old ones,” he says.

“Always DNA test your soil before planting seed potatoes.”

“The technology has also proven invaluable for seed growers who are looking at leasing or purchasing new ground to grow seed potatoes.”

Summary:

- PreDicta Pt is a DNA-based soil testing service that identifies whether certain soil-borne pathogens pose a significant risk to potato crops prior to planting.
- Simplot Australia Seed Potato Field Officer Angus Galloway has been using the diagnostic service on his clients’ behalf in recent years and says he finds it an invaluable tool for seed potato production.
- Project PT09023 was funded by Horticulture Innovation Australia Limited using the National Potato Levy and funds from the Australian Government. It was coordinated by SARDI.



JOHN MCKENNA

Laying the groundwork

Photographs by Belle Young.

Less field work, better soil structure and more efficient processing are just some of the benefits Tasmanian grower John McKenna has observed since implementing controlled traffic farming (CTF) in his potato, onion, carrot and poppy growing operation.

But CTF is not without its challenges, says the West Gawler grower who, despite stumbling across a few roadblocks, has managed to establish a system that works for him.

“While the concept is straightforward – plants grow better in soft soil and wheels work better on roads – achieving a fully integrated CTF system is difficult, largely due to the incompatibility of working and track widths across the current equipment range,” he says.

“However, simple steps can be taken to make a start towards a CTF system. To gain its full benefits, growers need to ensure their machinery fits in with the farm plan, including choosing a wheel track and buying or modifying tractors to match.”

On-farm investigation

In 2007, John set up a trial on his farm to investigate and demonstrate the feasibility of growing vegetables on a commercial scale using CTF. He later moved into trialling CTF with potatoes.

The activities were conducted as part of MT09040 – *Development and demonstration of controlled traffic farming techniques for production of potatoes and other vegetables*, a levy-funded project coordinated by the Tasmanian Institute of Agriculture.

The five-year project, which culminated in September 2012, set out using a 1.6 metre track width CTF system that was maintained for 18 months, from pre-onion tillage to potato harvest.

Seasonal CTF was then maintained from potato harvest until poppy harvest.

“We found it difficult to harvest potatoes without having a customised harvester built,” John explains.

“We didn’t have a harvester set to harvest in the assigned wheel tracks.”

John says the project demonstrated that, even if full CTF was difficult with current machine configuration, there was merit to converting to seasonal CTF.

“ Our focus remains on minimising compaction and sticking to the wheel tracks as much as we can. ”

“The system is designed to alleviate soil compaction constraints, which is an issue for vegetable farmers, especially in Tasmania where you are likely to be growing a variety of different crops at a time,” he says.

“So while we saw early improvements in fuel use, soil conditions and infiltration, we later ran into some issues due to incompatible machine configurations.”

Overcoming challenges

To overcome these technological barriers, John decided to take a more seasonal approach to CTF.

“As a result of the trials, one of the main things we changed was getting a custom-made three-row potato planter (built by Dobmac) on 2.5 metre wheel centres, which equated to a 50 per cent reduction in wheel track compaction,” he says.

“Our focus remains on minimising compaction and sticking to the wheel tracks as much as we can, while working on each crop individually and gradually updating our farming equipment.

“By minimising our ground work, we are able to get crops in quicker. It’s been a tough season and the wet weather has put a spanner in the works, but if you’ve done all the groundwork prior to planting, then the job is much easier.

“Thanks goes out to Tasmanian Farm



Equipment, along with Phillip Hubbard, (TopCon Australia) and Tim Bourke (Precision Agricultural Solutions). Without their ongoing support, CTF/seasonal CTF transition would not have been possible.”

Summary:

- This project was developed to build on project VG07058 – *Controlled traffic farming systems for the Tasmanian vegetable industry*, which highlighted the need for field sites managed under a CTF system to both demonstrate the advantages of the system and explore practicalities of implementation.
- Tasmanian potato grower John McKenna’s use of seasonal CTF practices has delivered efficiency and effectiveness to his farm operations.
- Project MT09040 was funded by Horticulture Innovation Australia Limited using the Potato and Onion Levies and funds from the Australian Government. It was coordinated by the Tasmanian Institute of Agriculture.

Yuri Wolfert

R&D driving gains



Photographs by Belle Young.

Growers are developing a strong appetite for research and development (R&D) information and it is hardly surprising, given the array of practical benefits it is producing at the farm gate.

Yuri Wolfert, 26, is among a growing number of farmers eagerly tapping into new industry R&D.

The young Tasmanian attended a Potato Industry Extension Program (PIEP, PT11004) workshop in May 2015, where he gained valuable insights into R&D findings that he could use to boost the efficiency and competitiveness of his family's business.

The Devonport workshops covered topics spanning seed potato disease control and DNA testing, on-farm innovations, business development strategies, cost of production management, control techniques for potato disease in Tasmania, biofumigation and biosecurity.

Yuri, who helps manage the Kindred Downs family farm at Forth in north-western Tasmania, says all growers should take advantage of local R&D programs.

"As a farmer, you always strive to have a better crop than the previous year, and that's where R&D comes in," he says.

"But the challenge for many growers is being able to understand the research and then apply it onto their own farms.

"Not many farmers have the time or are willing to sift through hundreds of pages of reports, which is why programs like PIEP are so useful because you can engage with real people working in your field."

Extension program benefits

Yuri says the business had already adopted a number of ideas from the extension programs, which were at the time coordinated by AUSVEG.

"The R&D highlighted the value of controlled traffic farming (CTF) – it showed that it would not lower our yield but instead, with wider rows near spray and irrigation runs, it would improve our crop saleable

size," he says.

Since implementing the CTF system, Yuri says potato yield had increased by 20 per cent in the CTF rows.

"We are seeing big improvements in the size and quality of our harvest at the end of the growing season," he says.

“As a farmer, you always strive to have a better crop than the previous year, and that's where R&D comes in.”

"The CTF system is built on permanent wheel tracks where the crop zone and traffic lanes are separated. This means we are doing considerably less damage to the crop and soil as we are not compacting our rows for harvest."

Tackling on-farm challenges

The farming operation has also recently invested in a new tractor, which has allowed Yuri to minimise paces on the soil as part of ground preparation.

He says he is now in a better position to tackle some of the key challenges presented by pests and diseases.

"We take disease control very seriously.



"When we bought the farm 16 years ago, we began the long recovery to minimise the impact [of pest and diseases – the farm had previously been affected by onion and carrot diseases].

"Biofumigation is an area we are very interested in. Through the workshops, we have learnt about suitable varieties of cover crops that will be a close fit for our program and our soil profile."

Face-to-face farm visits were also a cornerstone of the PIEP program, as well as exhibiting at the trade show during each AUSVEG National Convention from 2012-2015.

Summary:

- The Potato Industry Extension Program (PIEP) is the Australian potato industry's key source of R&D information.
- Specifically targeting growers, agronomists and processors, the program aimed to bridge the gap between R&D outcomes and these key stakeholders using different extension methods, including modern and traditional platforms.
- R&D workshops were a highly successful element of the program, bringing industry researchers to growing regions to discuss their work face-to-face with growers.
- Tasmanian potato grower Yuri Wolfert says the PIEP workshops were useful for learning new R&D information and networking with his peers.
- Project PT11004 was funded by Horticulture Innovation Australia Limited using the National Potato Levy and funds from the Australian Government. It was coordinated by AUSVEG from 2012-2015.

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