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# FRESH World Vegetable Center NEWSLETTER

Healthier lives, more resilient livelihoods through greater diversity in what we grow and eat

## A very warm welcome to 2024

Dear friends and colleagues

New year's greetings to all. For many, this begins on the 1<sup>st</sup> of January, whereas Indian, Iranian, Islamic, Jewish, Orthodox and other calendars mark the start of the year on other dates. Here at WorldVeg headquarters in Taiwan, we brought in the Lunar New Year on 10 February. Each year is associated with one of 12 animals in a cycle, alongside one of the five elements - earth, water, fire, wood and metal – with 2024 being the auspicious Year of the Wood Dragon, occurring only once every 60 years. And let us all hope that the twelve months to come, whatever our beliefs, bring us what the wood dragon represents - growth, adaptability, care and creativity – four things that we must all strive for!

This bumper edition begins with news of the celebrations and associated events surrounding the 50th anniversary of the World Vegetable Center. There are a dozen news items on workshops, conservation of genetic resources, new publications, and much more, followed by a dozen stories from around the world, reflecting so many successes. The edition ends, as always, with a list of upcoming events, new projects, and all WorldVeg publications from 2023.

Many thanks to all the contributors, research and communications staff, partners and donors, without whom none of this would be possible – and we sincerely hope that you enjoy what you read!

Nick Pasiecznik  
Communications lead

# News



## Celebrating 50 years of excellence in vegetable research and development

What a year of celebration, and reflection, on five decades of work – or 'sowing seeds, meeting needs' – as was the slogan of the golden anniversary year. Events were held all over the world, at WorldVeg regional centers and country offices - across Africa, in Benin, Burkina Faso, Eswatini, Ethiopia, Kenya, Mali and Tanzania; and Asia, in India, Taiwan and Thailand.



## Validation of a new African vegetable diversity 'rescue plan'

Representatives of plant genetic resources networks from across Africa validated a new African Vegetable Diversity Rescue Plan in Mbabane, Eswatini, on 15 December 2023. This followed a series of inclusive stakeholder consultations that helped to develop and review this crucial document. The two-day workshop was opened by the Minister of Agriculture of Eswatini, after welcome remarks from representatives of the African Union Commission, and the Taiwan Embassy in Eswatini, among others.



## "Seedbanks must be at the forefront" - the Global Crop Diversity Summit

Scientists issued a rallying cry for greater global cooperation to safeguard



## ICRISAT chickpea collections conserved at the WorldVeg genebank

On 31 October, a consignment of more

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Summit in Berlin on 14 November 2023. It raised political awareness of the important role that crop diversity plays in securing nutritious agrifood systems for everyone, and the need to strengthen cooperation among seedbanks.



### [WorldVeg leads the way in Africa – collecting, conserving and using vegetable diversity](#)

Tanzania is poised to become a Seed Conservation Hub, following the construction of a state-of-the-art seed bank in Arusha. Sitting within the World Vegetable Centre, the facility has been constructed to the tune of 1.2bn/- (\$400,000) and will see seeds stored to preserve genetic diversity for the future. The modern facility which also comprises of a seed preparation and testing room has a capacity of storing seeds for a period of 99 years and is expected to be up and running in February next year.

its headquarters in Shanhua Taiwan. This shipment was the second received from ICRISAT, containing 10,000 accessions of eight *Cicer* species (*C. arietinum*, *C. bijugum*, *C. chorassanicum*, *C. cuneatum*, *C. echinospermum*, *C. judaicum*, *C. pinnatifidum*, and *C. yamashitae*). This was immediately put into long term storage at -20°C, alongside the 10,5000 accessions received on 23 November 2022, making a total of 2.15 tonnes in 298 boxes.



### [The 40th International Vegetable Training Course](#)

The acronym IVTC has become well known in agricultural research circles in Asia over the years. The first International Vegetable Training Course (IVTC) was organized by the World Vegetable Center in 1983 at their Research and Training Station in the Kamphaengsaen Campus of Kasetsart University, Nakhon Pathom, Thailand. And held every year since in the same place, unbroken over four decades, the 40<sup>th</sup> was held on 13-24 November 2023.

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### [Strengthening capacities in Cambodia to increase off-season vegetable production](#)

The demand for vegetables in Cambodia is around 1.2 million tonnes per year, but current national output meets only about half of this, and the country has to import the difference from neighboring countries. In response, the Ministry of Agriculture, Forestry and Fisheries is working with WorldVeg and partners to increase the supply of vegetables year-round, focusing especially on off-season production when yields are generally low, but there is great potential for improvement.



### [Four new flyers show WorldVeg project impacts, by numbers](#)

As work on four of the largest projects managed by WorldVeg advances, they are reporting significant successes. These are often captured in long reports, short reports, and individual examples and stories as news items or blogs – some of which have appeared in this Fresh! Newsletter over the years, or can be found on [worldveg.org](http://worldveg.org) and partner websites.



### [Towards deeper collaboration between WorldVeg and the Republic of Korea](#)

During Vegetable Science Day on 2 November 2023, at the start of the golden jubilee celebrations of the World Vegetable Center at its headquarters in Shanhua, Taiwan, an important new Memorandum of Agreement was exchanged, between the Korea National Institute of Horticultural and Herbal Science (NIHHS) of the Rural Development Administration, and WorldVeg.



### [The underrated mungbean could improve food and nutrition security](#)

A recent article in the Guardian newspaper extols the virtues of mungbean, a crop on which WorldVeg has been working on for decades. Written by an Australian journalist who visited WorldVeg headquarters in November and published in the Australia new section – its leading title belies the Australian sense of humor – ‘Fibre-rich, with fewer farts...’

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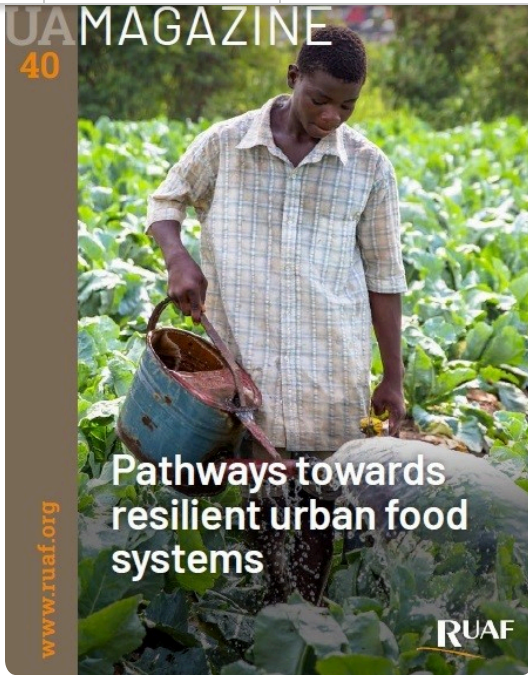
**Building bridges between plant breeders in Sri Lanka**

On average, Sri Lankans do not consume the daily recommended amount of fruit and vegetables. One means to address this, to increase the supply of safe and affordable vegetables and increase farmer incomes, by developing new improved varieties that are resistant to the major pests and diseases, and are more climate resilient. But to do so requires the strengthening of plant breeding capacities, in order for Sri Lanka to better address agricultural challenges, improve food security, and promote sustainable and more resilient farming into the future.



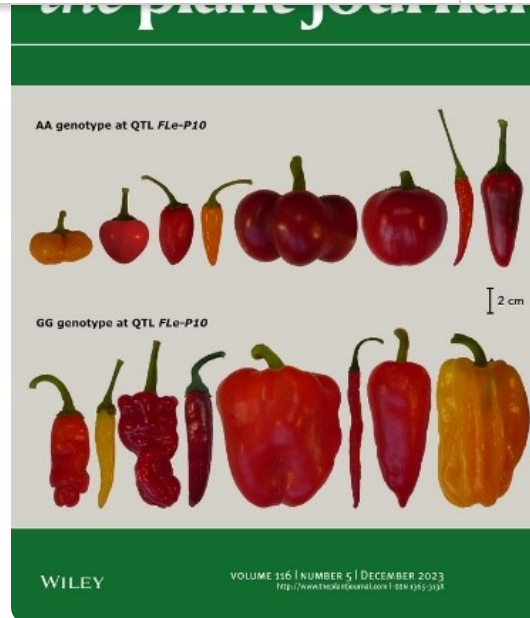
**New pepper varieties released in Taiwan and Nigeria**

In Taiwan, bell pepper seeds are mostly imported from abroad, are susceptible to impacts of international trade, and many varieties are not suitable to the conditions on the island. However, over six years, the Taichung District Agricultural Improvement Farm and WorldVeg developed two new improved F<sub>1</sub> hybrid varieties, 'Taichung WorldVeg No. 1' and 'Taichung WorldVeg No. 2', that produce fruit of excellent quality, and have multiple disease resistance to Tomato mosaic virus (ToMV), Chili veinal mottle virus (ChiVMV), Potato virus Y (PVY), phytophthora blight (*Phytophthora capsici*) and bacterial spot (*Xanthomonas campestris*), so farmers can reduce the amounts of pesticides applied.



**Towards resilient urban food systems - experiences from Nairobi and Dhaka**

The latest edition of the Urban Agriculture Magazine (issue 40, January 2024), showcases innovative approaches, actions, and initiatives for strengthening all aspects of urban and city region food systems. Part-funded by the CGIAR Resilient Cities Research Initiative, articles are drawn from experiences under this initiative, supplemented by others from the RUAF Global Partnership and other organizations.



**WorldVeg contributes to the breeding of better peppers**

The results were published in the December edition of the Plant Journal (<https://doi.org/10.1111/tbj.16425>), and a small sample of the diversity of fruit shape and the genetic base of this variation can be seen on the the journal cover.

## Stories



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## [Caribbean](#)

With the support of the Government of Taiwan, WorldVeg began a project in 2021 to conserve available vegetable biodiversity for future use and with a major focus on developing a vegetable network in the region to improve production and introduce and promote new vegetable varieties for domestic and export markets to sustainably improve the livelihoods of resource-poor populations in six seven countries in Latin America and the Caribbean, with some other countries added in later years. This reports just a few experiences from two of these countries - Haiti, and Saint Kitts and Nevis.



## [A quiet agricultural revolution is happening, in Zanzibar](#)

Zanzibar! The word conjures up in the mind of many, an exotic island paradise. But there is another side, not seen by the half a million tourists who visit every year. Widespread malnutrition – the ‘hidden hunger’ – and a real hunger, for more and healthier food, and more employment opportunities, from farmers and consumers alike.

## [Philippines](#)

In a pioneering initiative, WorldVeg collaborated with the University of the Philippines Los Baños (UPLB) and the Bureau of Plant Industry (BPI) to host a series of farmer field days to promote good agricultural practices for key vegetable crops, part of the Fruit and Vegetables for Sustainable Healthy Diets (FRESH) project. The first event was on 23 January 2024, when 108 farmers and three local government representatives came to Dolores barangay, Santo Domingo, Nueva Ecija, hosted by Aurelio Rodriguez on his farm to look at eggplant production.



## [WorldVeg seed kits proven to have a lasting impact in Africa](#)

Between 2013 and 2022, WorldVeg distributed an amazing 457,172 packets of seed of promising genetic material or that contains WorldVeg germplasm to farmers and schools in Eastern, Southern, and West Africa for direct cultivation.

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### [New amaranth varieties create impact at scale in Tanzania](#)

A recent impact study based on DNA analysis of plant samples and a survey of farmers shows that WorldVeg-developed amaranth varieties have become widely adopted in Tanzania. It found that 67% of amaranth producers grow these varieties and that they produced on average 6.1 tonnes per hectare more than local varieties. The results, published in the journal Food Security (Wanyama et al. 2023), provide important evidence for the significant positive impact of investing in the breeding of traditional vegetables.



### [Young Indian farmers embrace new vegetable production practices](#)

A hundred kilometers east of the bustling city of Hyderabad in rural Telangana, rice paddies stretch as far as the eye can see. Water is plentiful, the soil is rich, the sun shines... And since time immemorial farmers have grown rice, that has always fed their families, and gives a guaranteed income, every six months. But it requires much toil,



### [Rescuing and regenerating vegetable diversity in Benin](#)

The partner in Benin is the Genetics, Biotechnology and Seed Science Unit (GBioS) of the Faculty of Agricultural Sciences of the University of Abomey-Calavi), with activities anchored in the second project objective, to rescue genetic resources of traditional African vegetables by collecting at least 4,800 landraces and crop wild relatives of 25 species in the four project countries, which are 'hotspots' of vegetable biodiversity in Africa. However, by the end of 2023, a total of 15,883 accessions had been collected – more than triple the original target!



### [Beating back chili thrips in India, a pernicious pest for smallholder farmers](#)

In the face of a grave threat to the global chili industry, WorldVeg is taking decisive action against the invasive black thrips, a menacing insect pest devastating crops across India. As the second largest vegetable crop in the country with some 2 million tonnes produces annually, grown over more



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However, dreamed for jobs in 'the city' are not there, even for those with higher education.



### [Climate resilient technologies for more safer vegetable in northeastern India](#)

The geographical diversity of northeastern India translates into a wide range of agricultural practices, as farmers adapt to the varying terrain. From vast plains to rolling hills and elevated plateaus, each area demands a nuanced approach to crop cultivation. This underscores the importance of tailored solutions and innovative practices to ensure resilience and productivity. Within this context, Assam stands out as a crucial agricultural hub, though farmers must also contend with issues such as floods that profoundly impact crop yields and infrastructure.



national economy cannot be overstated. Black thrips was first reported in India in 2015, and over the past three years has caused widespread damage to chili crops in across many states in the country, from Gujarat in the west to Assam in the east, and south to Tamil Nadu.



### [Overcoming adversity with onion cultivation in Odisha, India](#)

A remarkable new farming activity has taken root in Odisha, with a growing number of farmers having enthusiastically embraced onion cultivation. In 2017, a strategic partnership began to strengthen onion production and increase farmer incomes, between WorldVeg and the Odisha Department of Horticulture. Starting with a comprehensive baseline study to understand existing production and postharvest practices, it identified challenges, and unveiled opportunities.



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### Series on the wonderful world of vegetables

This tells the story of the bitter melon, from its origins in Africa and its spread to Asia and beyond, its economic significance, health benefits and its importance to cultures and cuisines, before ending with the achievements of WorldVeg in breeding better bitter melon!

### internship...

After a three month long internship at WorldVeg headquarters, Fiadat Ibrahim shares her thoughts about her experience...

## Upcoming events



**INTERNATIONAL MUNGBEAN CONGRESS**

**DATE**  
5-7 March 2024

**LOCATION**  
MARUAY GARDEN HOTEL, BANGKOK, THAILAND

**WEBSITE**  
<https://avrdc.org/international-mungbean-congress-2024/>

### International Mungbean Congress 2024

📅 5-7 March  
Maruay Garden Hotel, Bangkok, and Kasetsart University, Kamphaeng Saen, Thailand



**INTERNATIONAL TRAINING WORKSHOP ON VEGETABLE GENETIC RESOURCES CONSERVATION AND USE**

**DATE**  
8-12 April 2024

**LOCATION**  
WORLDVEG HQ, TAIWAN

**GENEBANK WEBSITE**  
<https://avrdc.org/115782-2/>

### International training workshop on vegetable genetic resources conservation and use

📅 8-12 April  
WorldVeg HQ, Shanhua, Taiwan

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# IPRI2024

**DATE**  
22-25 April 2024

**LOCATION**  
WORLDVEG HQ, TAIWAN

**WEBSITE**

<https://avrdc.org/ipri-2024-about/>



## Symposium

📅 22-25 April  
WorldVeg HQ, Shanhua, Taiwan

World Vegetable Center **APSA**  
**APSA ANNUAL WORKSHOP**

**DATE**  
7-9 May 2024

**LOCATION**  
WORLDVEG HQ, TAIWAN

**WEBSITE**

<https://web.apsaseed.org/consortium/annual-workshop>

## APSA-WorldVeg Vegetable Breeding Consortium Annual Workshop, Taiwan

📅 7-9 May  
WorldVeg HQ, Shanhua, Taiwan

World Vegetable Center  
**PGPR**

**PGPR 2024**

**DATE**  
24-27 September 2024

**LOCATION**  
WORLDVEG HQ, TAIWAN

**WEBSITE**

<https://avrdc.org/pgpr-2024/>

## 8<sup>th</sup> Asian PGPR international conference for sustainable agriculture

📅 24-27 September  
WorldVeg HQ, Shanhua, Taiwan

# New projects



### **MAFF Cucurbits in Vietnam**

#### **-- Breeding better cucurbit crops in Vietnam**

Decreased genetic diversity among current commercial varieties of bitter melon and tropical pumpkin has led to the increased vulnerability of these crops to various biotic and abiotic stresses and reduced the potential of further yield gains. So, in partnership with Vietnam Fruit and Vegetables Research Institute (FAVRI), WorldVeg is selecting tropically-adapted lines and F1 hybrids these crops to improve productivity of the vegetable value chain in Vietnam. This project, funded by the Japan Ministry of Agriculture, Forestry and Fisheries (MAFF) is now in its third phase, building on earlier successes. Improved varieties with a broader genetic base will be identified from variety trials and promoted to stakeholders through crop field days. WorldVeg lines and F1 hybrids will also be transferred to Vietnamese institutes and private seed companies for incorporation into national variety trials for future registration and release.

### **NSTC-EU PROGRACE**

#### **-- Promoting a plant genetic resource community**

The wider PROGRACE project develops research infrastructure for plant genetic resources to addresses a multitude of challenges faced by genebanks, work by WorldVeg scientists will focus on two specific aspects. These are optimizing methods for detecting and eliminating seed borne pathogens on solanaceous crops that limit international seed distribution, and to support the implementation of phytosanitary standards for seed distribution. The second is collaborating with the PROGRACE team to construct a pangenome sequence of a well characterized pepper core collection to serve as a genomic resource for fundamental research and breeding, and will facilitate the mapping and introgression of new genes and traits from genetic resources

## **IITA TAAT - Djibouti**

### **-- Building resilience for food and nutritional security in Djibouti**

While collaborating with and supporting local partners in an earlier WorldVeg project on vegetable seed systems in Djibouti, it was found that there were two main constraints: (i) low diversity of locally adapted vegetable varieties, and (ii) limited technical knowledge and skills of staff of institutions in charge of seed production and seed producers. Partners include the International Institute of Tropical Agriculture (IITA), Directorate of Agriculture and Forestry (DAF, Djibouti), and Centre d'Etudes et de Recherche de Djibouti (CERD, Djibouti). The project will identify high performing and market preferred varieties of tomato, pepper, okra, onion, provide technical support to DAF and CERD for the production of early generation seeds of tomato, pepper, okra, and onion, capacity strengthening of DAF and CERD staff on seed quality assurance, and of local seed producers in the production of certified vegetable seeds. It is funded by The Djibouti Minister of Agriculture, Water, Fisheries, Livestock and Saline Resources.

## **ACIAR – SRA Southeast Asia**

### **-- Scoping opportunities for urban agriculture in the Philippines and Vietnam**

This project will identify opportunities for future support for urban and peri-urban agriculture and food systems in Southeast Asia, starting with Tagaytay in the Philippines and Hanoi in Vietnam, including large and small scale commercial farming, home gardening, and community gardens. It will build evidence about where and how people are producing food in cities, how it contributes to their income, and how it can influence access to and demand for fruits and vegetables by urban consumers. In both cities, around 300 people will complete a questionnaire about their farming, food production, food choices and diets, challenges, and decisions about eating fruits and vegetables. A group of stakeholders from different backgrounds will be convened to meet regularly in person to discuss findings, and ensure that the research aligns with local priorities and existing activities. Group members will be invited to pitch ideas for additional studies to test ideas and fill knowledge gaps. This project (2023-2025) is led by researchers at WorldVeg, in partnership with the International Institute of Rural Reconstruction (IIRR) in the Philippines, and the Fruit and Vegetable Research Institute (FAVRI) in Vietnam. It is funded by the Australian Government, through the Australian Centre for International Agricultural Research (ACIAR).

## **McKnight AV4Resilience**

### **-- Building resilience in Burkina Faso through African vegetables and women and youth empowerment**

In Burkina Faso, average adult vegetable consumption is 27 grams per day - among the lowest in West Africa, and well below the recommended 240 grams daily. African vegetables are highly nutritious and a promising option to increase the resilience of food systems to climatic and economic shocks, but require supply side and demand

vegetable diversity to support healthy diets, enhance opportunities for women and youth to benefit from African vegetable conservation and use, test preferred vegetables using citizen science approaches, and train women and youth farmers in African vegetable production, processing, seed saving and marketing, to strengthen the resilience of local production systems. This is a three-project running to the end of 2026, funded by the McKnight Foundation. The 'AV4Resilience' project partners include WorldVeg, the Institut de l'Environnement et de Recherches Agricoles (INERA); VARENA ASSO NGO, government extension services, universities, local seed enterprises and cooperatives.

## Our latest publications

(January-December 2023)

### ***Journal articles (64)***

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# Quotes of the quarter



***"The greatest service which can be rendered to any country is to add a useful plant to its culture"***

- Thomas Jefferson (1743-1826), primary author of the US [Declaration of Independence](#) (adopted in 1776), and US president (1801-1809).

***"The greatest fine art of the future will be the making of a comfortable living from a small piece of land."***

- Abraham Lincoln (1809-1865), US president (1861-1865) who lead victory in the Civil War and abolish slavery.

***"The doctor of the future will no longer treat the human frame with drugs, but rather will cure and prevent disease with nutrition."***

- Thomas Edison (1847-1931), inventor of the phonograph, electric light bulb, and the world's first power station.

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