

Biovision

Newsletter August 2019

The small farmers' hero

Jona Mutasa spreads hope in Zimbabwe



A future for all, naturally

Rosewiter Chikupe

Small farmer in Makuwe Village,
Masvingo District, Zimbabwe



“Our aim is to spread Push-Pull across
the whole of Zimbabwe.”

The spread of Push-Pull in sub-Saharan Africa

The Push-Pull method of cultivation has been used successfully in East Africa for maize and sorghum (millet) since 2006: it produces significantly higher yields thanks to biological pest control, improves soil fertility and generates healthy feed for livestock. An effort is now being made to spread the use of Push-Pull to other African countries south of the Sahara.

- **Aims of the current project phase:**
 - Improve access to seed for the Push-Pull intercrop companion plants
 - Establish Push-Pull demonstration fields
 - Disseminate the method widely, using roadshows, information days, agricultural shows and radio campaigns
- **Project Budget 2019:** CHF 750,000
- **Account for donations:** PC 87-1933093-4
- **Sustainable Development Goals (Agenda 2030):**
This project makes a direct or indirect contribution to two of the seventeen Sustainable Development Goals (SDGs):



Small farmers in the fast lane

Among the small farmers of Zimbabwe, Jona Mutasa and Rosewiter Chikupe are regarded as heroes. Thanks to them, thousands of people have become familiar with the Push-Pull method, which helps protect maize crops against dreaded pests.

Peter Lüthi, Biovision

This success story began in the Masvingo District of Zimbabwe in 2006. Small farmer Jona Mutasa (see title photo) read in a newspaper that an organic method called Push-Pull was being used successfully in Kenya to simultaneously combat the larvae of the stemborer moth and the dreaded striga weed.

This news came as a revelation to Mutasa, who had suffered from massive losses of crop yields for many years. The small farmer from Makuwe Village sought out the address, Prof Zeyaur Khan from *icipe** in Kenya, who had developed the Push-Pull method. Mutasa asked him for instructions and seed for the companion plants, desmodium and elephant grass, key to this method (see pages 4–5).

It all began with a handful of seed

Khan sent manuals for the Push-Pull method to Mutasa, but he was unable to send any seed without permission from the authorities. Finally, people at the university in Harare responded to Mutasa's request. Soon, he had a handful of the seed he wanted. He and his wife Rosewiter set up a seed nursery together for desmodium and elephant grass. They planted a Push-Pull field measuring 50 by 50 metres with some of the first harvest, but they used the rest for further propagation.

Their pioneering spirit has paid off; Push-Pull farmland is much less afflicted by pests than traditionally cultivated fields are. Accordingly, cobs of corn grow in abundance here – and the neighbours notice. Rosewiter and Jona never hold back from teaching them about the Push-Pull method, or supplying them with seed. “Ever since my childhood, I’ve seen how people here suffer from the drop in harvest caused by these pests and by soil depletion”, says the Push-Pull pioneer. “That’s why we do everything we can to solve these problems and to improve the lives of local people”.

Overcoming drought and the lack of seed

Word quickly got around to small farmers in Zimbabwe about the successes achieved by the Push-Pull method. By his own account, Mutasa alone has taught thousands of courses throughout the whole country. His and his wife's efforts to increase the spread of Push-Pull even further have only been hindered by the lack of viable desmodium seed and by extreme drought conditions. As a result, only about a fifth of those who have been trained can currently use the method.

In the meantime, Biovision, *icipe* and relevant authorities have been actively tackling problems with seed and drought. Firstly, more drought-resistant strains of companion plants are being distributed throughout the country; secondly, a commercial business called “Mukushi Seeds” from Harare is now producing and distributing high-quality seed. The prospects are therefore looking good for this farming couple and many other small farmers in Zimbabwe.

www.biovision.ch/simbabwe-en

* International Centre of Insect Physiology and Ecology,
a partner organisation of Biovision based in Nairobi, Kenya.



1 Jona Mutasa has already trained thousands of small farmers in the ecological Push-Pull farming method.

2 The scenery offered by the Masvingo District in the south of Zimbabwe is intoxicatingly beautiful – but families living on small farms suffer from hardship and poverty.

3 Just like many other children growing up on farms in Zimbabwe, Jona Mutasa's and Rosewiter Chikupe's son and grandson also help out in the family business.

4 Without Rosewiter Chikupe, the success achieved in Zimbabwe could never have happened; on top of her work as a Push-Pull instructor, she also does the housework, brings up the children and grandchildren and lends a hand on the family's small farm.

Push-Pull: A fatal attraction for pests and parasites

Plants and insects communicate extensively with each other. For example, they send out mating calls and false promises, and this is the characteristic used by Push-Pull.

Biodiversity does the trick!

Biological diversity is what makes our ecosystem sustainable. In intensively farmed monocultures, however, the ecosystem becomes unbalanced and has to be actively maintained, e.g. by fertilisation. The agro-ecological research we carry out at ETH Zurich investigates how an increase in biodiversity can contribute to more sustainable agricultural production.

Push-Pull technology is one impressive example that confirms our experimental results in practice. Thanks to biological diversity, nutrients are made more easily available and pests are kept under control. The variety of mixed cultivation systems, such as the Push-Pull method, is practically unbounded – the number of potential combinations of plant species and cultivars is almost infinite.

We look for solutions that not only increase production but also deliver other benefits to the ecosystem. The major challenge is to find the combinations suited to this task under a wide range of external conditions. In our work, therefore, we also use unconventional methods to identify and understand suitable combinations. The initial results are highly promising: the results for mixed cultivation systems show that their yields are about 30% higher than for corresponding monocultures.



Prof Christian Schöb
Professor in Agroecology, ETH Zurich

The effect of Push-Pull is based on communication by means of scents and messenger transmitters. Pest moths ready to lay their eggs are diverted out of the maize field and onto the elephant grass planted around the same field. The smell of the desmodium (the Push plant) growing in the soil between the maize repels the moths, so they avoid that particular field. The same scents are attractive to the beneficial parasitoid wasps,

which lay their eggs into the caterpillars of stemborer and fall armyworm that are also to be found in the maize. Should the wasp larvae hatch they will kill the pests. The moths that are driven away by the desmodium turn towards the attractive aroma of the elephant grass (the Pull plant). Perfectly tuned to the time of day when the pest is most active, this grass emits the enticing fragrances (E)-2-Hexenal, (Z)-3-Hexen-1-ol

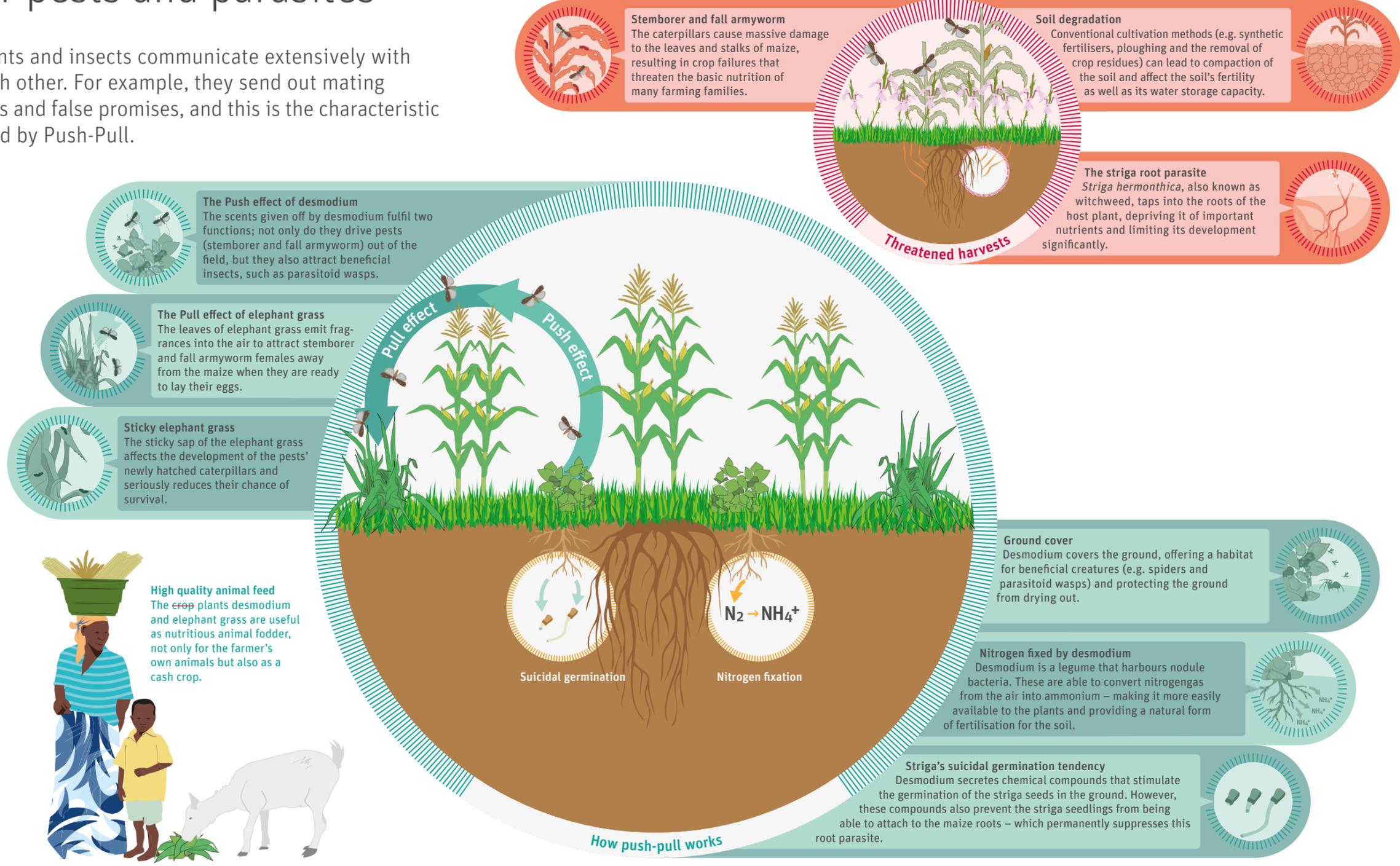
and (Z)-3-Hexen-1-yl acetate. The moths then unsuspectingly lay their eggs on the grass stalks – a decision that is fatal for their offspring. Once they hatch, the insects adhere to the sticky sap on the grass stalks and fail to develop any further. The second communication strategy adopted by desmodium is directed against the seeds of the “witchweed” (*Striga hermonthica*): it disperses chemicals from the flavonoid

and isoflavanoid group through its roots underground. These stimulate the striga seeds to germinate, but they also cause the striga roots to lose their ability to cling to the maize roots. Having succumbed to desmodium’s deadly enticement, the striga seedlings lose their essential nutritional basis and wither away.

www.biovision.ch/push-pull-en



Dr Stefan Diener
Biologist and entomologist, Biovision’s Push-Pull Programme Manager



Cooperation with the FAO

Martin Grossenbacher, Biovision

Climate change is increasingly causing problems for the small farmers of Kenya. Irregular rainy periods, droughts, storms and floods wreck their fields, leading to harvest losses and food insecurity. The rural population of Africa needs a strong network to protect itself better from the consequences of the climate crisis.

That's why Biovision has been working with other organisations to create a multi-stakeholder platform to exchange information and promote climate-adapted and climate-friendly agriculture. Over 30 experts from research, development organisations, the private sector, government and civil society in Nairobi gathered together for the kick-off meeting. The participants are looking for solutions for the implementation of Kenya's Climate Smart Agriculture Implementation Framework (KCSAIF).

With this aim in mind, Biovision launched a study in collaboration with the Food and Agriculture Organisation (FAO) in Rome and the Swiss Research Institute of Organic Agriculture (FiBL) in Frick in the Canton of Aargau at the beginning of May. This study is examining the ways in which agroecology increases the resilience of farmers in Kenya and Senegal and helps them to cope with increasingly irregular weather and climate patterns.



The beginning of the study in Kenya: a biovision employee and two representatives from local organisations develop an understanding of the current situation on the ground.



Exchanging views at the Spring Event: Biovision CEO Andreas Schriber in discussion with attendees.

Inspiring people

“Biovision and the public” is more than a mission statement – it’s an ongoing activity, whether at events like this one recently in Aarau, Switzerland, or through personal contact with partners and small farmers in Africa.

Martin Grossenbacher, Biovision

Murmuring voices from the 300 guests at Biovision's Spring Event filled the Culture and Convention Centre in Aarau at the end of May this year. Attendees enthusiastically discussed the theme of the event – the climate crisis and the challenges facing global nutrition – or visited the information stands, to find details about current projects and get answers to their questions from Biovision's employees.

“I thought it was great that they cast light upon the subject of climate change from different perspectives”, said Julia, a first-time visitor at the Spring Event. “I was also inspired by the Poetry Slam session because it communicated a serious subject in a fresh way”. Young climate strikers and slam poets communicated their views of the world in artistic form. Marie-Louise Schild, a long-term member of Biovision, said “For me, it was inspiring to see how the young people join in and make a commitment to climate protection”.

For any ecological transformation ever to happen, we need people who are inspired and have conviction. Biovision creates space for personal connections and exchange – at public occasions such as the Spring Event and through its advocacy work in Switzerland via the CLEVER and Sounding Soil projects. We can find out directly from local people what concerns them, and whether our work bears fruit, through the close contact established between project employees and partners in the project nations and from our highly experienced reporter Peter Lüthi's visits to Africa.

Tell us what you think!

We were enormously pleased to hear the enthusiastic voices of the public in Aarau – this is what motivates all of us at Biovision in our daily work. But critical voices are also extremely useful to us, and we're very interested in your opinion! We welcome any feedback that can contribute to Biovision's development in future. We look forward to greeting you in person – whether at CLEVER, Sounding Soil or the Biovision Symposium in Zurich on the 16th of November – and to replying to a message from you via social media, e-mail, post or telephone.

www.biovision.ch/events
www.biovision.ch/en/contact

Biovision Calendar 2020

Enjoy 13 top-quality images of our African projects in Biovision's Calendar for 2020! These photographs were taken by our Project Reporter Peter Lüthi. As a Biovision pioneer, he is familiar with the local population from his regular visits. These visits have also allowed him to nurture many friendships, as demonstrated by photographs and stories in our publications. Biovision's Calendar 2020 shows a cross-section of the past 20 years.



The 2020 Calendar will appear in October 2019. Secure your copy now:
www.biovision.ch/calendar2020
Tel. 044 512 58 58, info@biovision.ch

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Rahel Thommen, Project Officer for CLEVER at Biovision, says: “We don't have to give up give up our coffee – but we really should check the label.”

Organic and fairtrade – what else?

The average person in Switzerland drinks three cups of coffee every day. A sin against the environment? It depends.

Rahel Thommen, Project Officer for CLEVER

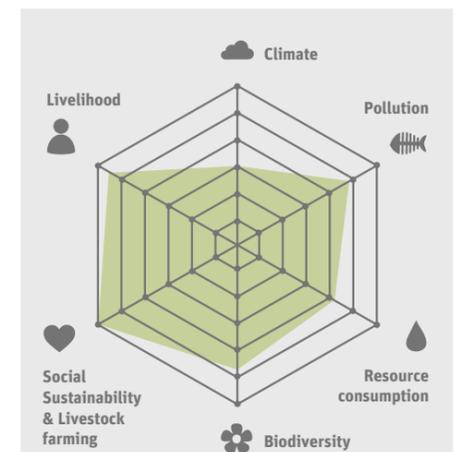
Coffee beans, the raw material for our daily kick of caffeine, are cultivated in massive monoculture plantations in South America and Africa. Not only do the long transportation routes and processing systems put a strain on the climate, forests are also cleared for this monoculture – leading to a loss of habitat for many plants and animals, including the orangutan.

60% child labour

The ecological footprint of these brown beans is certainly poor from a conventional production viewpoint, and it's hardly any better from the employment conditions perspective: According to the NGO earthlink e.V., 60% of coffee workers in Kenya are children, and the situation is not that much better in other countries. So, should we do without our beloved coffee?

No – as long as we check the labels. In traditional mixed cropping systems promoted in organic farming, the coffee grows alongside other crops and trees, which creates a stable, varied ecosystem.

Coffee growers can combine these crops with fruits and vegetables for their own farming business – and Fairtrade coffee enables them to earn an income that allows them and their families to live life with dignity.



In the CLEVER travelling exhibition, visitors are shown a spider chart for all their chosen products. The larger the area of green, the more sustainable the product. This diagram illustrates the environmental balance for the Marimba organic Fairtrade coffee from Coop.

Further information and spider chart:
www.biovision.ch/clever-en



A story from the life of Janet Dzimiri, a farmer in Masvingo, Zimbabwe “These days, we’ve got enough to eat”

Peter Lüthi, Biovision

Janet Dzimiri’s laugh is warm and infectious – but it disappears abruptly when she talks about the past. “Our life was very hard”, whispers the 49-year-old farmer and mother of four. “We often suffered from hunger and only ate in the evening”. When her husband died 19 years ago, she hit rock bottom. The farm produced too little to sustain the family, so they had to work for other farmers to earn money to make ends meet. Janet Dzimiri was only able to send her children to school thanks to the support she received from aid workers. Three of the children have now moved away and live in South Africa, while one daughter has stayed behind. She now helps her mother to raise four nieces and three nephews. Janet Dzimiri says that their parents had fallen ill and died.

The turning point arrived upon meeting Jona Mutasa. Janet Dzimiri met this small farmer from her region (see page 2) on a composting course. “Compost is a good thing”, she explains, “but unfortunately, it’s useless against the striga weed or the stemborer moth, which affected my maize very badly”.

In 2007, she was invited to visit Jona Mutasa and his wife to learn about the Push-Pull method for combating these pests. Together with a group of other farmers – most of whom were women – Janet Dzimiri successfully completed the training course. At the end, she was given some desmodium and elephant grass seeds, and she converted her cultivation system to Push-Pull. “Since then, my harvests have been very much better”, she says. “These days, we’ve got enough to eat. If there is sufficient rain, I can even bring in enough maize to sell some of it”.

Janet Dzimiri uses desmodium and elephant grass to produce nutritious hay that helps her two oxen, cow and calf survive drought periods. A varied flock of poultry also bustles about her farmyard. As a result, she can now send all her foster children to school out of her own resources. After all the years of struggle, the life of the Dzimiri family has at last taken a turn for the better – and she’s

hardly alone in her success. In Zimbabwe, female farmers in particular benefit from the advantages of the Push-Pull method. 75% of those who have undergone training are women, and a great many of them are widows. They all maintain the highest respect and gratitude for Jona Mutasa and Rosewiter Chikupe, who have made supporting small farmers in Zimbabwe their life’s work. Janet Dzimiri says that “I do not know how to tell Jona and Rosewiter how grateful I am.”

However, this brave woman still cherishes one great hope: “It would be wonderful if my own children came back from South Africa and started up again here”, she says. There is hope that this wish could come true now that Push-Pull allows her to offer them the prospect of successful lives as farmers.

“I do not know how to tell Jona and Rosewiter how grateful I am.”

