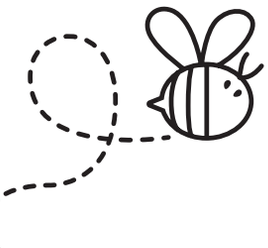
MANIFESTO

2025

ROOT ZERO

ROOT ZERO.CO.UK



CONTENTS

BUSINESS TOMORROW

IN 2021 WE LAUNCHED OUR SPECTACULAR SPUDS, THE UK'S FIRST CARBON NEUTRAL POTATO. FAST FORWARD TO TODAY AND OUR SIMPLE AIM REMAINS UNCHANGED. WE ARE STILL ON A MISSION TO HAVE A POSITIVE IMPACT ON OUR PLANET, GROW PLANET FRIENDLY POTATOES AND TO GIVE YOU THE POWER OF A BETTER CHOICE.

Despite the financial instability over the past two years, we have been and are still just as committed to monitoring, measuring, and implementing sustainable change across our entire business; to reduce our impact on the planet and help reach our ambitious climate targets.

At **ROOT ZERO** we have been exceedingly busy, since launching two years ago; from driving our regenerative agricultural practices forward through the creation of the 'Puffin Carbon Grower Scheme', to planting our first native woodland. We have also installed a 2 megawatt (MW) solar array and supported numerous community and nation-wide projects.

WHAT'S HAPPENED ON OUR MISSION SO FAR?

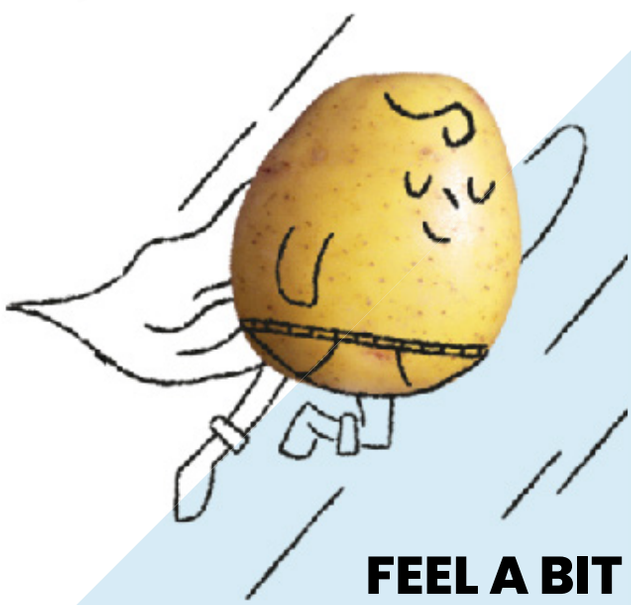
PACKAGING DESIGN CHANGE

If you have been following our journey from the very start, you will notice our packaging has changed a little.

In 2022 we spoke to our **ROOT ZERO** consumer about the brand and with their help, we decided to update our positioning to make it easier to understand the **ROOT ZERO** promise on sustainability. Consumers were looking for easy ways to feel good about what they buy. We decided to bust the jargon, keeping it simple and down to earth and we introduced our spud character as a vehicle to present sustainability in a friendly way.

This isn't all we changed. At **ROOT ZERO** reducing food waste is at the heart of our business; we hate to see the potatoes our growers carefully grow, go to waste. By being part of The Courtauld Commitment 2030, we have pledged to do our bit to reduce food waste across the entire supply chain. Each year a staggering 6.4 million tonnes of food is wasted across the UK. So, we decided to reduce our pack size from 2kg to 1.5kg to try and help reduce this waste in the home.

During this transformation our packaging team worked hard to make sure we stayed true to our 'roots' and that the new packaging was still produced from FSC® certified paper; that is 100% plastic free and fully compostable at home.



FEEL A BIT MORE HERO FOR CHOOSING ROOT ZERO

SCIENCE BASED TARGETS

We are currently in a state of climate emergency. The United Nations have described this period as a "code red for humanity" and that we are dangerously close to exceeding our threshold for change. However, the science has shown that if we all act now to limit global temperature rise by 1.5°C, we can avoid global climate disruption and its adverse effects on the place we all call home.

At **ROOT ZERO** we are 100% committed to reducing our carbon footprint across our entire business. As shared in our first manifesto we set targets to reduce the carbon intensity of our potatoes by 51% by 2030. We took this a step further by committing, through the Science Based Targets Initiative (SBTi), that our efforts would support the limit in global temperature rise even more. This gave us an additional target; to reduce operational emissions by 46% by 2030.

Since then, we have been even more 'hero' with our climate action and committed through the SBTi to a companywide net zero target to reduce our Scope 1, 2 and 3 emissions by at least 90% by 2040. At **ROOT ZERO** we want to help create a sustainable supply chain which extends beyond our factory gates. Therefore, we are focussing our effort on not only carbon removals in our supply chain, but working collaboratively with our supply chain partners to decarbonise the entire value chain.

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

For more information on SBTi and what this means for **ROOT ZERO**, please follow the link below:
sciencebasedtargets.org/about-us#what-we-do

CARBON FOOTPRINT REPORTING

The world of carbon accounting and emission reporting is evolving and has changed dramatically since we first launched in 2021. At **ROOT ZERO** we want to ensure that we follow the correct guidance and that we capture and report on every single emission that comes from the production of our spectacular spuds. Therefore, we have evolved and adapted the way we monitor, measure, and report our carbon emissions to reflect these changes. As a result, our initial baseline footprint reported in our first manifesto needed to be readjusted.

It is paramount that we are fully transparent on every stage of our carbon reduction journey, as well as how we report our actions. We now use the readjusted carbon footprint as our baseline to track and monitor our progress against. In this manifesto we will use the readjusted carbon footprint, shown below as our initial starting point to report our progress against.

So, how has our carbon footprint changed since our first Manifesto?

FARMING *kg of potatoes sold	Carbon footprint reported in first manifesto (CO_2e per Kg of **ROOT ZERO** potatoes)	Readjusted carbon footprint (CO_2e per Kg of **ROOT ZERO** potatoes)	HY22 **ROOT ZERO** carbon footprint (CO_2e per Kg of **ROOT ZERO** potatoes)
Pesticides	0.016	0.004	0.001
Residue	0.006	0.007	0.003
Fertiliser	0.044	0.054	0.019
Direct Energy	0.040	0.049	0.017
Irrigation	-	-	-
Transport	0.004	0.008	0.003
Land Management	-0.018	-0.044	-0.012
Seed	0.004	0.007	0.002
Farming total CO_2e kg / kg of potatoes sold	**0.096**	**0.086**	**0.035**

PRODUCTION & TRANSPORT *kg of potatoes sold	Carbon footprint reported in first manifesto (CO_2e per Kg of **ROOT ZERO** potatoes)	Readjusted carbon footprint (CO_2e per Kg of **ROOT ZERO** potatoes)	HY22 **ROOT ZERO** carbon footprint (CO_2e per Kg of **ROOT ZERO** potatoes)
Oil	0.001	0.001	0.000
Gas	0.000	0.004	0.003
Refrigerant Gas	0.004	0.002	-
Transport & Petrol	0.025	0.085	0.050
Electricity	0.017	0.026	0.022
Waste	0.001	0.000	0.000
Water	0.000	0.000	0.000
Packaging	0.009	0.008	0.007
Other purchased goods & services	-	0.021	0.019
Production & Transport Total CO_2e Kg/Kg of potatoes sold	**0.058**	**0.147**	**0.102**

CONSUMER *kg of potatoes sold	Carbon footprint reported in first manifesto (CO_2e per Kg of **ROOT ZERO** potatoes)	Readjusted carbon footprint (CO_2e per Kg of **ROOT ZERO** potatoes)	HY22 **ROOT ZERO** carbon footprint (CO_2e per Kg of **ROOT ZERO** potatoes)
Potato Waste - Land spread/Energy Recovery	0.001	0.006	0.006
Potato Waste - Landfill	0.179	0.046	0.049
Potato Waste - Composting	0.001	0.001	0.001
Cooking (Electricity)	0.081	0.156	0.162
Cooking (Gas)	0.002		
Washing (Supply)	0.047	0.004	0.002
Washing (Wastewater)	0.003		
Recycling	0.000	0.000	0.000
Incineration	0.000	0.000	0.000
Landfill	-	0.000	0.000
Consumer total CO_2e kg / kg of potatoes sold	**0.314**	**0.2132**	**0.219**

RETAIL *kg of potatoes sold	Carbon footprint reported in first manifesto (CO_2e per Kg of **ROOT ZERO** potatoes)	Readjusted carbon footprint (CO_2e per Kg of **ROOT ZERO** potatoes)	HY22 **ROOT ZERO** carbon footprint (CO_2e per Kg of **ROOT ZERO** potatoes)
Retail distribution centre	0.000	0.000	0.000
Transport	0.007	0.007	0.008
Refrigerated Storage	0.000	0.000	-
Lighting	0.010	0.010	0.011
Heating, ventilation & Air Conditioning	0.008	0.008	0.009
Retail Waste	0.005	0.005	0.005
Customers Trips to Store	0.034	0.034	0.034
Retail total CO_2e kg/ kg of potatoes sold	**0.064**	**0.064**	**0.067**
TOTAL CO_2e kg / kg of potatoes sold	0.532	0.510	0.423

***HY22: Harvest Year 2022** - Why is there a delay between the data and the year of reporting? To understand the precise carbon footprint of a bag of spuds, we need to wait until we have used all the crop from that particular field before we can do our calculations. Some of the potatoes harvested in 2022 would have been stored and used up until autumn 2023, hence the difference in dates.

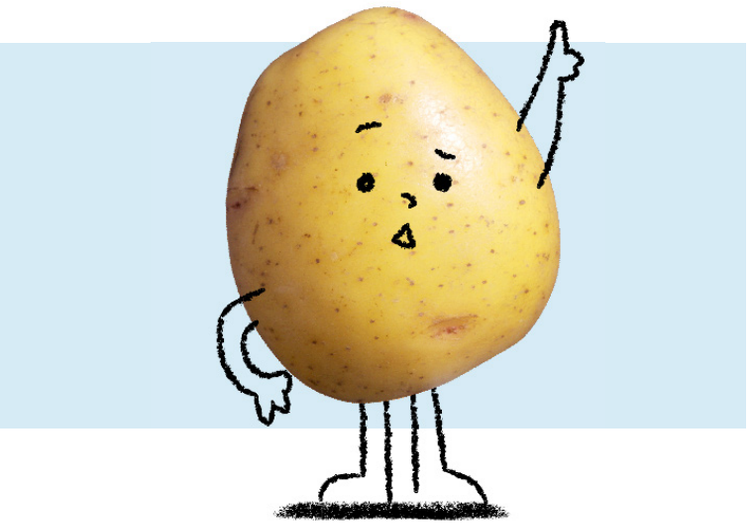
CARBON EMISSIONS – CARBON FOOTPRINT

OUR JOURNEY TO NET ZERO IS WELL UNDER WAY, HOWEVER THE HARD WORK DOESN'T STOP HERE. **IT'S ONLY JUST BEGUN.**

We continue to monitor and measure all our carbon emissions, from the lights in our offices, to the transport we use to take **ROOT ZERO** spuds to the supermarkets, even down to the way you cook your spuds at home. This allows us to highlight the areas of high carbon intensity and implement change to mitigate these emissions.

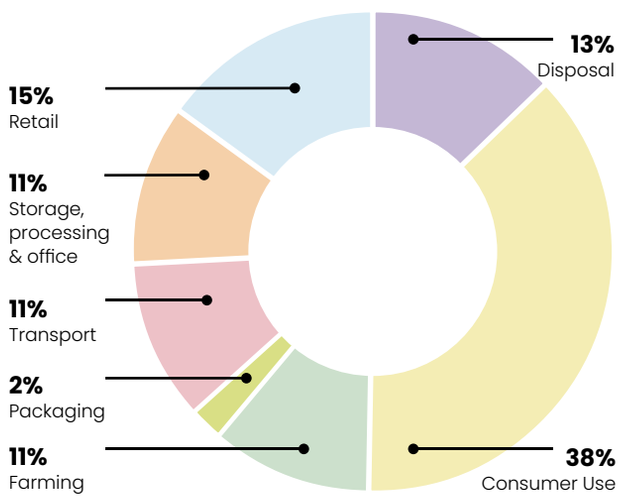
So, how have our emissions changed? Since we launched in 2021, we have reduced our company wide emissions by 6%, that's equivalent to removing the CO_2e emitted by flying from Cardiff to Paris eight times. We're on track, with this reduction being higher than the average annual reduction we will need to achieve, to reach our 2040 net zero target.

We are nearly halfway to achieving our 2030 target of reducing our **ROOT ZERO** emissions by 51%. Over the past two years we have reduced our **ROOT ZERO** emissions per kg of potatoes by 17%, from 0.510 kg CO_2e per kg of potatoes to 0.423 kg CO_2e per kg of potatoes.

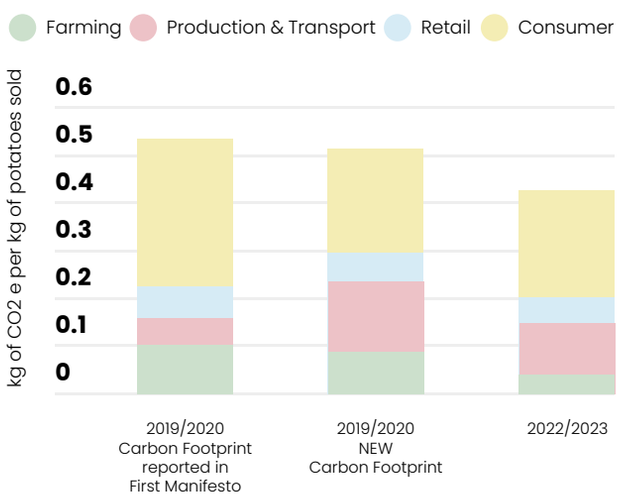


EMISSIONS BREAKDOWN BY VALUE CHAIN STAGE:

TOTAL EMISSIONS 0.423 KG C02E/KG



OUR PROGRESS TOWARDS NET ZERO



HOW HAVE WE ACHIEVED THIS?

SOLAR

At **ROOT ZERO** we will continue to set ourselves ambitious targets. Our highest area of operational emissions was in our energy use, so we installed 2 megawatts of solar panels on 6,000 m^2 of unused roof space. Over the summer months the business is expecting to use 100% self-generated energy to power both sites, which will save 2.4t of CO_2e per day*

*based on a usage of 10,000 kWh per day.

To hit our 46% reduction target by 2030, we need to reduce our energy usage by 386t of CO_2e per year. With the help of our solar panels our business is projected to achieve this ahead of schedule, with the business already saving >10% of our annual usage.

Unfortunately, the sun doesn't shine every day, so when we can't use the energy generated from solar, we will use energy purchased through our 'green energy' tariff, this way we can ensure it's from 'zero-carbon' sources and contributing to the renewable energy development across the UK.

GREEN ENERGY

For us to supply year-round spectacular spuds we need to keep our potatoes chilled. Did you know that even after a potato is harvested it continues to respire (like most

fruit and veg) and if it's not kept cool then it's respiration rate increases, and the potato begins to deteriorate.

This is why on the back of our packaging we encourage you to store our potatoes in the fridge, to keep them cool, extend their life and reduce food waste at home.

At **ROOT ZERO** we use a considerable amount of energy to power our cold storage, to keep our potatoes cool and stop this happening. This includes looking into alternative sources of energy and refrigerants with a lower GWP (Global Warming Potential) to reduce our emissions to as close to zero as possible.

ELECTRIC VEHICLES

We have started electrifying our fleet vehicles. In the past 2 years we've moved 56% of our fleet vehicles to electric or hybrid and installed electric charging points at our site, so staff can charge their vehicles on 'zero-carbon' energy.

We're staying true to our 'roots' and keeping the policy that any new vehicles purchased will be hybrid or electric, but we're not stopping there! We're currently working with our supply chain partners to assess our ability to decarbonise our fleet of forklift trucks, as well as working with our Growers to help them invest in new, more efficient farm machinery to reduce their fossil fuel use.

PLANTING TREES

In the heart of the Pembrokeshire countryside, our '**ROOT ZERO** Biodiversity Woodland' is under way. We have hand planted over 1400 trees, equating to 3 acres (nearly 2 full football pitches) of native species on land that you cannot produce food on. These trees have been lovingly managed, and the ground in between the trees has been left to grow wild, to provide a blooming habitat for beneficial insects, pollinators, and beloved farmland wildlife.

FARM CARBON EMISSIONS

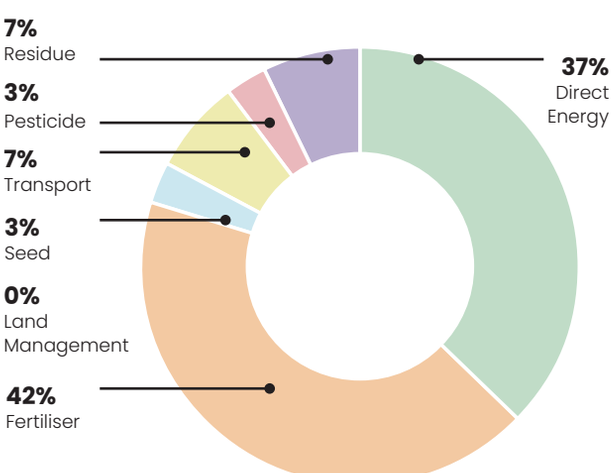
When you think about carbs (carbohydrate), you think of rice, pasta and potatoes but did you know that potatoes are the most environmentally friendly source of carbs, so you can eat them guilt free! However, this isn't enough for us at **ROOT ZERO**, as we want to continually reduce our impact on the environment by farming better.

By working with our **ROOT ZERO** growers, over the last couple of years, we have reduced our total farm carbon emissions by 59.3% (from 0.0857 kg CO_2e/kg CO_2e to 0.0349 kg CO_2e/kg CO_2e of potatoes).

How do we know this?

Each year at **ROOT ZERO** we gather primary data from our growers, about how and what they have used to grow our spectacular spuds. We analyse this data using the latest farm carbon footprinting software (Cool Farm Tool).

FARMING - EMISSIONS (%)
TOTAL EMISSIONS 0.348KG CO2 E/KG



How have we achieved this?

Over the past two years we have been working with our **ROOT ZERO** growers to test and implement regenerative farming practices, from long season cover cropping to testing low carbon fertilisers through to using irrigation probes for more precise water management. After the success that we had in testing, in 2023, we created the Puffin Carbon Plus Grower Scheme to help transition 'ALL' of our growers' farms to more sustainable farming practices.

At **ROOT ZERO** we understand that change takes time, and for that change to be effective it needs to be holistic. That's why when developing the scheme, we looked at every area of the emissions produced on farm, as well as emission sequestration. The scheme combats four key areas of high carbon intensity and carbon reduction potential:

- Optimising fertiliser use
- Optimising field management
- Building soil organic matter and soil health
- Increasing the number of trees and hedgerows on farm

The scheme also has associated benefits, helping to reduce production costs for our growers, whilst simultaneously improving water quality, increasing soil health and helping to boost wildlife on our growers' farms.

FARM CARBON EMISSIONS

VARIETAL DEVELOPMENT

We are dedicated to trialling new varieties for their agronomic benefits (and taste of course!). The varieties which we trial have good resistance to common potato pest and disease, are able to grow with minimal fertiliser, have good drought tolerance, as well as tasting great! If a variety performs well in these trials, we will include it in our main programme. This means that we can cut our inputs, without compromising on **ROOT ZERO's** great taste and quality.

COVER CROPS

Over the past two years our growers have been incorporating mixed species cover crops into their rotations to help build soil organic matter levels. Unfortunately, increasing soil organic matter levels doesn't happen overnight and isn't always a linear process. However, by increasing soil organic matter levels by just 0.1% we can increase the CO_2e sequestration across 1 hectare by 8.29t.

ORGANIC MATTER -DUMAS (%)

Sample Date	Milton Nursery	Milton Yard	The Cruft
Sampled 11/02/2021	5.1	4.5	3.5
Sampled 02/09/2021	4.5	4.3	3.8
Sampled 09/01/2022	4.8	4.6	3.9
Org. Matter increase in 1 yr.	**-0.3**	**0.1**	**0.4**
Sequestration ($t CO_2e$)	**(119.23)**	**33.52**	**260.71**

Since 2021, we have been measuring and monitoring the organic matter levels of several fields to see how our practices is impacting soil organic matters.

Cover cropping is not only critical to **ROOT ZERO's** carbon reductions, but it also promotes soil health, reduces erosion, improves water infiltration (which we need in Wales!) and supports a vast array of below and above ground biodiversity. As stated in our first manifesto we are still committed to planting a minimum of 455 acres of cover crops each year on our **ROOT ZERO** farms.

FARM CARBON EMISSIONS

FERTILISER

Fertiliser production and application makes up 55.7% of our farm carbon emissions. At **ROOT ZERO** we have been tackling this issue in several ways. Firstly, we have focused our effort on minimising the amount of fertiliser required by ensuring our cover crops include legume species (such as clover) to help fix nitrogen from the atmosphere back into the soil. We also minimise the use of fertiliser by matching the application amount to a specific potato variety, and field requirements. By working with agronomy experts, our growers estimate the soil nitrogen supply (SNS) of each field, so they only apply what is required. This means we only use what we need to, but it also reduces the risk of any excess fertiliser making its way into a local water course, where it can have adverse side effects.

Additionally, our growers have been taking advantage of foliar applications of fertiliser. This allows them to further tailor fertiliser applications and only apply it, as and when it is required by the crop, throughout the growing season.

At **ROOT ZERO** we benefit from some of our growers having livestock on farm. Where possible, we encourage our growers to put farmyard manure back into their soils, as this is an organic source of fertiliser. Advances in technology and varietal development have also helped us cut the emissions attributed to fertiliser use. In addition to variety trials, we have been testing a low carbon and net zero mineral fertilisers to see if they have any effect on potato yield and quality.

By adopting the above methods to minimise our fertiliser use we have reduced our fertiliser emission by 64.2% from 0.542kg/tonne of potatoes to 0.0194kg/tonne of potatoes.

SEED EMISSIONS

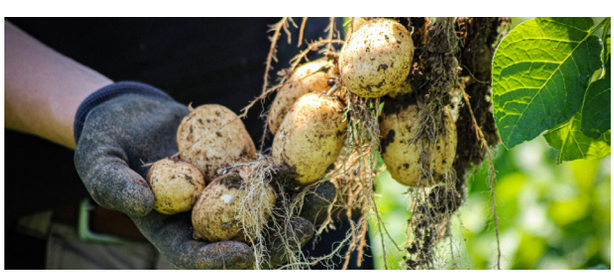
High quality potato seed is crucial to maintain the productive capacity, quality and minimal disease load of our **ROOT ZERO** crops. Most potato seed used across the UK is grown in regions far from our Welsh growers; therefore, this seed is transported across the country and sometimes across the sea to reach our growers' farms.

At **ROOT ZERO** we saw this as an opportunity to cut emissions and shorten our supply chain, by growing high quality seed right here in Pembrokeshire. Since launching in 2021 we have increased our seed production area by 60%. Our seed potatoes travel a maximum of 25 miles to reach our growers' farms. Reducing the carbon intensity of each tonne of seed potatoes used by 108 kg of CO_2e.
(**) – Reduction is based on data from the Cool Farm Tool & is based on seed transported from Holland. (Scope 1 emissions only included)

FARMER EDUCATION

Knowledge is power, especially when it comes to transforming an entire agricultural system. That's why at **ROOT ZERO** we are empowering our growers, by providing them with the skills, information, and the knowhow they need to implement sustainable and effective change on their farms.

Throughout the year we hold regular grower meetings, where we invite industry experts to discuss and answer questions on a variety of topics ranging from soil health right through to farm carbon accounting. Since launching in 2021 we have delivered over 30 hours of training to our growers.



BIODIVERSITY

Increasing biodiversity is as important to us, as reducing our carbon footprint. Biodiversity underpins our ability to produce high quality, spectacular spuds for us all to enjoy, whilst building an agroecosystem providing multiple ecosystem functions critical to food production. Over the past two years we have concentrated our efforts on increasing both above and below ground biodiversity across our ROOT ZERO farms, as both have equal importance to potato production.

So, what does two years of biodiversity improvement look like?

Since our launch in 2021 we have:

- Erected over 30 barn owl boxes.
- Conducted 7 farmland bird surveys and 3 in-depth bumble bee and insect surveys.
- Grown 970 acres of mixed variety cover crops (80 acres more than we planned!).
- Implemented 11 farmland bird feeders.
- Planted over 75 acres of wildflower margins to support pollinators and other beneficial insects.
- Supported habitat restoration products for Yellow Hammers.
- As well as planting 1,400 native tree species.

Our **ROOT ZERO** growers continue to manage their grassland, rough land and hedgerows appropriately. They rotationally cut their hedges every three to four years, instead of cutting more regularly. This increases the number of habitats, creates a network of corridors for animal movement and provides food for pollinators, birds, reptiles, mammals, and all our favourite farmland wildlife. Additionally, since launching all our **ROOT ZERO** Growers have met the LEAF (Linking Environment and Farming) Marque standards for environmental performance.

COMMUNITY PROJECTS

COMMUNITY PROJECTS

At **ROOT ZERO** we are not only trying to have a positive impact on our planet, but our surrounding community too. Since our launch in 2021 we have been on a mission to inspire a generation that genuinely cares about the environment. With the help of our **ROOT ZERO** growers over the past two years we have attended numerous school visits and community events across Pembrokeshire, to share how we produce our spectacular spuds, to encourage children (and their parents!) to reduce their food waste and champion the importance of eating a healthy balanced diet. We have supported several community projects with funding, guidance, and equipment across Pembrokeshire. Everything from providing plants to produce wildflower meadows to helping school children plant and nurture their own potato crops.

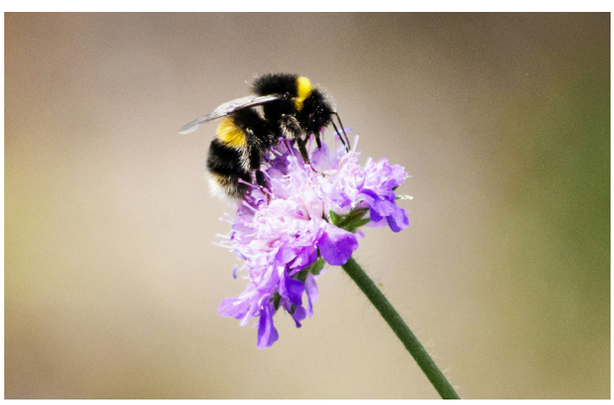
WIDER COMMUNITY

In 2022, we featured in Farmers Weekly magazine as part of a feature on **ROOT ZERO** grower, Morgan Scale. Championing the regenerative farming methods being used on Morgan's farm, the piece credits **ROOT ZERO** and our growers on being the UK's first carbon neutral potato.

In Spring 2023 our **ROOT ZERO** team were invited to 10 DOWNING STREET to take part in the 'Farm to Fork' food summit. The event focussed on food security and the resilience that the UK can play to be bigger and better. At **ROOT ZERO**, we are proud to be leading the way in showing that sustainable, local food production can be achieved, and we hope this is just the beginning of the change we need to see.

BUMBLEBEE CONSERVATION

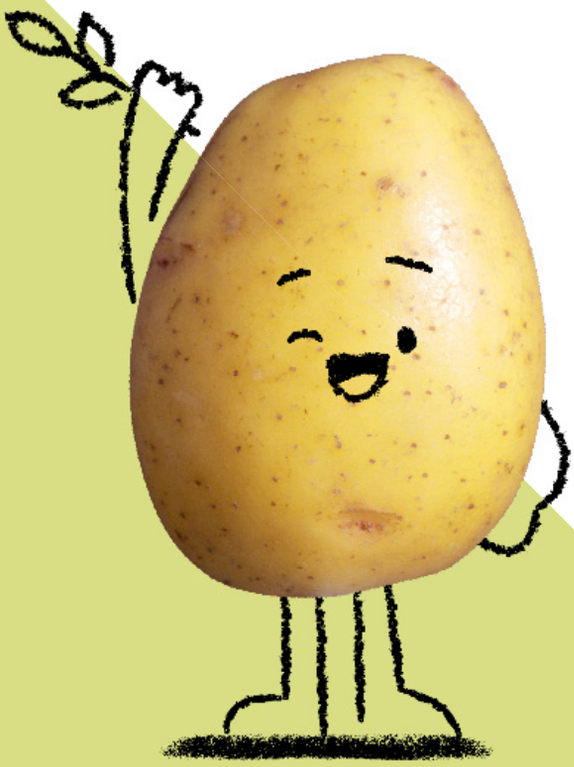
Bees play a critical role in agricultural lifecycles, 70% of global crop production relies on bees to transfer pollen. At **ROOT ZERO** we understand how vital these insects are. We're proud to help the bumblebees through annual donations to conservation charities, as well as our own conservation efforts. These include conducting on farm bee surveys to monitor and measure population sizes and support and encourage their development.



OFFSET PROJECTS

At **ROOT ZERO** we still see offsetting our CO_2e emissions as an important part of our holistic climate journey, alongside avoidance and reduction. Over the past two years we have worked with our trusted partners ClimatePartner, to carefully select projects to offset our greenhouse gas (GHG) emissions. We are still committed to above and beyond supply chain mitigation, that's why for every 1,000t of **ROOT ZERO** potatoes we sell we offset 10% more CO_2e than our carbon footprint: we want to do more than just our bit.

Since day one, and with the help of ClimatePartner we have supported numerous projects from forest protections in Brazil and Colombia, to native woodland restorations in Europe and helping provide fresh, cleaning drinking water and cooking stoves to villages in India and Rwanda. Over the two-year period we have offset 319,081 kg CO_2e. Today, we're focussed on supporting initiatives as close to home as possible.



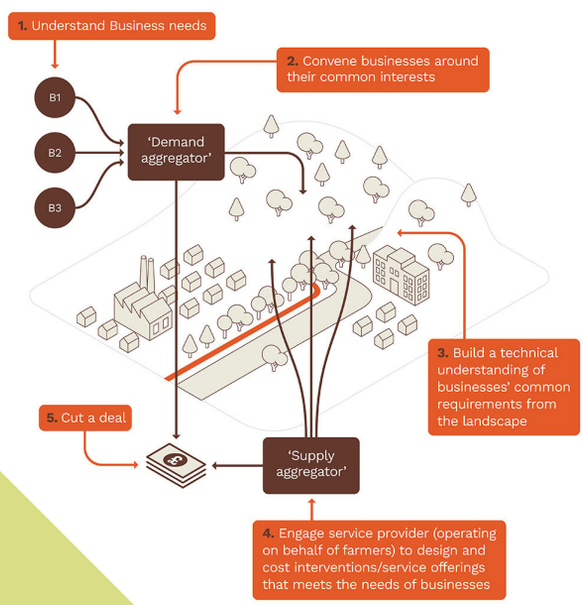
UK & INTERNATIONAL TREE PLANTING PROJECT

By purchasing our current **ROOT ZERO** potatoes you are helping to support tree planting in the UK, and international renewable energy development. For now, this is ok but our mission from the start was simple, create a framework that would support our strategy to shift from offsetting to investing in our own supply chain reduction plans.

We are at the core of an exciting new partnership here in Wales, via Landscape Enterprise Networks (LENs).

WHAT IS LENS?

LENs is a system for linking buyers and sellers of nature-based solutions. LENs enables businesses to share the cost of landscape solutions, which address material risks to their operations and commercial activities. LENs relies on shared interests in the landscape and cooperative action between businesses and farmers. It is a pragmatic and proven approach throughive change across rotations and beyond single farms.



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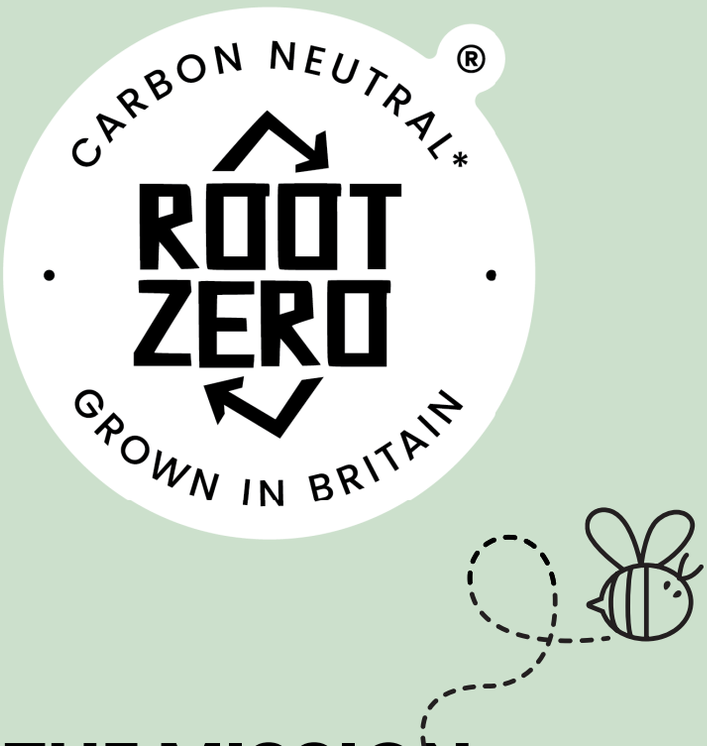

THE MISSION CONTINUES

If you would like to hear more about our mission progress, as we continue along this journey, then please join the conversation here:

@RootZeroUK

@RootZeroFood

linkedin.com/company/root-zero/