



UNIVERSITY OF
ABERDEEN

The Rowett Institute

A Taste of Plants

A collection of
plant based recipes

Introduction

The University of Aberdeen's Rowett Institute was founded in 1913 by Nobel Prize winning scientist Lord Boyd Orr. In its early years the institute played an important role in establishing the link between poverty, poor diet and ill health and much of this early work led to the establishment of the science of nutrition as we now know it.

Research at the institute has always reflected the big issues of the time and continues to do so. Much of our research is sponsored by the Scottish Government and supports both public health policy and the sustainable development of Scotland's food industry. Currently some of the issues being investigated are the impacts of life-stage and lifestyle, obesity and food inequalities and food security.

As part of this work we have recently been studying how different sources of protein may contribute to healthier diets, could help Scotland be more sustainable (both economically and environmentally) and help reduce its dependence on imported foods and ingredients. Our research has looked at the potential to use our land in different ways. One aspect of this work has been to investigate crops which present a high protein content and have historically been grown in Scotland or currently grown elsewhere in similar climates and could be introduced to Scotland. Having looked at many potential candidates, we have focused on pea, fava bean, hemp and buckwheat.

Due either to a decline in popularity or their current novelty some of the ingredients we have used in these recipes might be hard to find in mainstream supermarkets. We have provided more detailed information on where you might find them at the back of the book. This list is not exhaustive and suppliers are regularly changing so it is worth checking regularly, trying different places and asking your local shops to stock the products.

This book demonstrates some different ways to include these exciting ingredients into your cooking, both in traditional recipes and in new dishes. We can all be healthier and eat a sustainable diet by considering our dietary choices. In many of our recipes we have replaced all the animal protein. However, you could start by only partially replacing the animal protein and adapt them to suit your own taste by adding or changing ingredients.



Are you interested in science?

Come and join us as a study volunteer visit

<http://bit.ly/RowettVolunteer>

If you enjoy the recipes, let us know.



@rowettaberdeen



rowettinstitute



@rowett_abdn

Contents

What is a sustainable diet?	3
What ingredients are sustainable?	3
Benefits of plant-based diets	5

Recipes

Light Bites

Green pea dip.....	9
Sun dried tomato and fava bean hummus	11
Spicy bean soup.....	13
Green split pea soup.....	15
Kasha, hemp, beetroot and feta salad.....	17
Hemp and buckwheat noodle salad.....	19
Fava bean frittata.....	21

Main Dishes

Sweet potato and fava bean pie.....	23
Mushroom, leek and fava bean pie.....	25
Fava bean and buckwheat pizza.....	27
Crêpes with roasted butternut squash and spinach.....	29
Mushroom and pea risotto.....	31
Green pea pesto and buckwheat pasta.....	33
Fava bean chilli with buckwheat groats.....	35
Moroccan spiced fava bean and green pea stew.....	37
Cottage pie.....	39

Baking

Green pea bread.....	41
Hemp bread.....	43
Green pea crispbread.....	45
Hemp and buckwheat flapjack.....	47
Apple and apricot muffin.....	49
Pancakes.....	51

Sourcing the ingredients	52
---------------------------------------	-----------

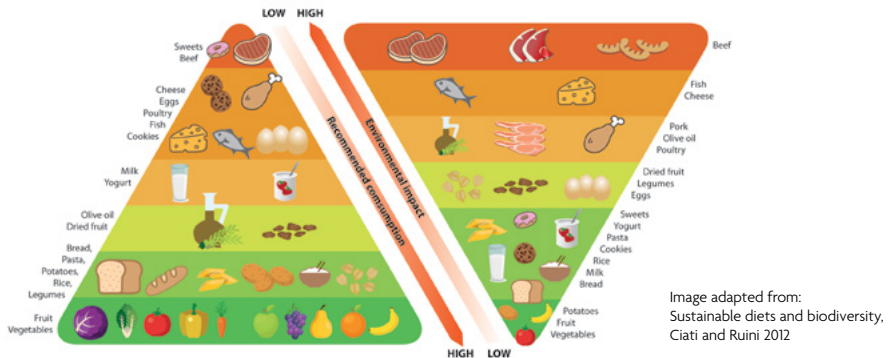
Acknowledgements/References	53
--	-----------

What is a Sustainable Diet?

We hear people speak about food security and sustainability of foods, but what does it really mean? Food security has been defined as the sustainable production of sufficient quantities of high quality, safe and affordable food needed to maintain the health and well-being of the population. Sustainability is a frequently used term, which probably means something different to everyone. For most of us, a sustainable diet is succinctly captured by the United Nations Food and Agriculture Organisation definition:

“Sustainable Diets are those with low environmental impacts which contribute to food and nutritional security and to healthy life for present and future generations. Sustainable Diets are protective and respectful of biodiversity and ecosystem, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; whilst optimising natural and human resources (FAO, 2012).

This is nicely highlighted in the “Double Food-Environmental Pyramid”(Sustainable diets and biodiversity, Ciati and Ruini 2012) which demonstrates the close link between nutritional value and environmental impact). To eat sustainably foods with low nutritional value and high environmental impact should be consumed in moderation.



What ingredients are sustainable?

Increasing the variety of locally produced ingredients, including high-protein crops, may help towards achieving sustainable diets, as well as providing opportunities for our food producers. In higher latitude countries, such as Scotland, there is an additional challenge to identify crops that can be successfully grown.

The Rowett Institute undertakes research supported by the Scottish Government, to investigate potential crops that are rich in protein that could be sustainably grown in Scotland. The following candidate crops were identified: fava bean (*Vicia faba*), green pea (*Pisum sativum*), hemp (*Cannabis sativa*) and buckwheat (*Fagopyrum esculentum*).

These crops offer an alternative to importing protein-rich crops such as soya bean, and they could contribute to enhance the diversity, and hence the economic stability, of local agricultural production. They represent a rich source of energy, provide complex carbohydrates and high-quality protein, and are also considered to be important sources of bioactive non-nutrient plant compounds and potential anti-nutrients, generally known as phytochemicals. All of these crops are gluten free and research at the Rowett Institute has characterised their nutritional and phytochemical composition (Multari *et al*, 2016).



- | | | |
|------------------------------------|------------------------|-----------------------|
| 1. Pea flour | 8. Buckwheat flakes | 15. Hemp seeds |
| 2. Frozen peas | 9. Buckwheat noodles | 16. Fava flour |
| 3. Hemp butter | 10. Hemp milk | 17. Fava beans tinned |
| 4. Hemp flour | 11. Buckwheat fustilli | 18. Buckwheat groats |
| 5. Dried fava beans | 12. Tinned peas | 19. Buckwheat flour |
| 6. Frozen green fava beans | 13. Dried split peas | |
| 7. Roasted buckwheat grain (Kasha) | 14. Hemp oil | |

Fava bean (*Vicia faba* L., Fabaceae family), also commonly known as field or **broad bean** in the UK, is a legume. It is a rich source of protein (20%), and dietary fibre (11%), has low fat content (4%).

Green pea (*Pisum sativum*, Fabaceae family) is also a legume with high content of protein (22%), and fibre (8%) and low in fat (2%).

Agricultural Hemp (*Cannabis sativa* L.) is a valuable source of protein, dietary fibre and oilseed. The hemp seed has 35% protein and 26% fibre. It is also a rich source of omega-3 to 6 fatty acids, their total fat content is 6%. Agricultural hemp is low (less than 0.3%) in active tetrahydrocannabinol (THC). This psychoactive ingredient is found in marijuana in levels between 3 to 30%.

Buckwheat (*Fagopyrum esculentum*) is a pseudocereal, meaning that it is used in a similar way to cereals but does not belong to the grass family. It is high in fibre (8%), but has a slightly lower protein content (18%) and a fat content of around 1.5%.

These crops can be sourced in a variety of forms including fresh, frozen, dried, tinned, flaked or ground into a flour; in the case of hemp, pressed and used as a milk or oil.

Benefits of plant-based diets

The Rowett Institute has been investigating the nutritional and health impacts of plant-based foods by supplementing diets with green pea, fava bean, hemp and buckwheat on various human dietary intervention studies. The recipes in this book have been taken from a wider selection of menus that were developed for these studies and demonstrates the versatility of these ingredients and how they can be incorporated into a wide range of different foods that are tasty, nutritious and sustainable.

Healthy eating can be achieved with a plant-based diet. Research has shown that high protein plant-based diets can be recommended for effective weight management (Neascu *et al*; 2014). Increasing the amount of plant-based foods in your diet may offer an advantage with respect to prevention of non-communicable diseases and is associated with a reduced risk of cardiovascular disease and mortality (US Report of the Dietary Guidelines, 2010).

The Eatwell Guide was launched in March 2016 and replaced the Eatwell plate as the UK's healthy eating tool. The guide illustrates the different types of foods and drinks, and in which proportions they should be consumed to achieve a healthy balanced diet. Fruit and vegetables (40%), potatoes, bread, rice, pasta and other starchy carbohydrates (38%), beans, pulses, fish, eggs, meat and other proteins (12%), dairy and alternatives (8%) and oils and spreads (1%), (Eatwell guide, 2016).

- Eat at least 5 portions of a variety of fruit and vegetables every day
- Base meals on starchy carbohydrates e.g. grains and potatoes, choosing wholegrain versions where possible
- Have some dairy or dairy alternatives (such as soya drinks), choosing lower fat and lower sugar options
- Eat some beans, pulses, fish, eggs, meat and other proteins (including 2 portions of fish every week, one of which should be oily)



Choose unsaturated oils and spreads and eat them in small amounts

Drink 6-8 cups/glasses of fluid a day

In addition to this we need to consider the environmental consequences of our dietary choices if our food system is to remain secure. The Livewell report by WWF demonstrated that we can significantly reduce our environmental impact by changing the balance of our diets. Livewell Plates are representative diets that meet national nutritional requirements while reducing the environmental footprint of the food system that produces them: they're diets that are good for both people and planet (New and Updated Livewell plates, 2017).

Two of the major principles of the Livewell Plate are to eat more plants and moderate your meat consumption. With agriculture and food responsible for around 20% of total global direct carbon emissions it is important that we make these changes, especially if we aim to keep the global temperature rise below two degrees Celsius (as stipulated by the Paris Agreement).



Diagram adapted from: New and Updated Livewell Plates 2017

The recipes within this book will help you contribute towards some of the dietary suggestions recommended in the Eatwell guide and Livewell report that could help cut greenhouse gas emissions by 30% by 2030 and achieve a healthy balanced diet.

The Recipes

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Green pea dip

(serves 6)

A delicious, easy-to-prepare light dip. An ingenious way to eat your “greens”. Try it with our green pea crispbreads A winning dish for any casual meal.

Ingredients

240g of frozen peas, uncooked

½ onion, diced

70g low fat plain yoghurt

Juice of half a lime

1 clove of garlic

6 sprigs of fresh mint

1 teaspoon of cumin seeds

½ chilli pepper

½ teaspoon of dried coriander

Pinch of salt and pepper

Method

1. Cook the peas according to packet instructions, then cool.
2. Place the peas and onion into a food processor and blend, a hand blender could also be used.
3. Add the yoghurt, mint and chilli and blend again.
4. Stir in all the other ingredients.
5. Spoon serving into a bowl and use as a spread or dip with nachos, crispbreads or crackers.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	260kJ 61kcal	4.7g	0.8g	0.2g	9.8g	6.0g	3.7g	0.1g
Per 55g Serving	143kJ 34kcal	2.6g	0.4g	0.1g	5.4g	3.3g	2.0g	0.06g

*Get Cooking
Get Social!*
Share your photos
#rowettrecipes



Sun dried tomato and fava bean hummus (serves 6)

If you are a hummus lover, then you will be pleasantly surprised by this hummus recipe with a twist. In this recipe the chickpeas were replaced with fava, but you could try a mixture. Enjoy this variation on a great dip.

Ingredients

200g of tinned fava beans, drained
80g of sundried tomatoes, drained weight
1 clove of garlic
2 tablespoons Lemon juice
1 dessert spoon of oil from sun dried tomato jar
Pinch of cayenne pepper
Pinch of salt and pepper

Method

1. Puree all ingredients together until smooth.
2. Season to taste.
3. Use as a spread or dip.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	588kJ 142kcal	6.4g	7g	1g	8.9g	2.3g	9.1g	0.1g
Per 50g Serving	294kJ 71kcal	3.2g	3.5g	0.5g	4.5g	1.2g	4.5g	0.06g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Spicy fava bean soup

(serves 4)

A flavoursome, filling, hearty soup for people who love a spicy kick. A nutritious, versatile recipe, for any winter day. Try it with our green pea bread. Enjoy!

Ingredients

1 diced onion	1 tin of fava beans
2 cloves of garlic	1 teaspoon of hemp oil
1 diced carrot	2 teaspoons chilli powder
1 small diced sweet potato	2 teaspoons ground cumin
1 diced red pepper	4 teaspoons of oregano
½ vegetable stock cube mixed with 400g of water	1 tin (400g) of chopped tomatoes
	Pinch of black pepper

Method

1. In a pot add the oil, onion, carrots, sweet potato and cook for 5 minutes.
2. Stir in the red pepper, garlic and spices.
3. Add the stock cube to water to make stock and add to pot.
4. Drain and rinse the fava beans.
5. Add the fava beans and tomatoes to pot.
6. Cook the vegetables to your desired texture.
7. Season with black pepper and serve.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	175kJ 42kcal	2.2g	0.6g	0.1g	7.0g	3.3g	2.9g	0.2g
Per 360g Serving	632kJ 150kcal	7.9g	2.1g	0.3g	25.0g	12.1g	10.8g	0.6g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Green split pea soup

(serves 4)

A delicious traditional soup which can be enjoyed on any occasion. Warm and welcoming, an ideal recipe for a meat free day! Goes well with our hemp bread.

Ingredients

250g green split peas

1 large chopped onion

1 diced celery stick

1 diced carrot

1 diced leek

1 tablespoon hemp oil

1 vegetable stock cube mixed with 2 pints of water

Bouquet garni

Pinch of salt and pepper

Method

1. Wash and drain the peas.
2. Heat the hemp oil and gently cook the onions and leeks.
3. Place all other ingredients into the pot and bring to the boil, then cover the pot with a lid and simmer for about 45 minutes, stirring frequently.
4. Once peas are soft remove from heat and take out the bouquet garni.
5. Blend the soup and season.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	292kj 42kcal	4.0g	1.2g	0.1g	11.4g	1.8g	2.1g	0.2g
Per 380g Serving	1110kj 261kcal	15.3g	4.6g	0.5g	43.1g	6.8g	8g	0.7g

*Get Cooking
Get Social!*
Share your photos
#rowetrecipes



Kasha, hemp, beetroot and feta salad (serves 2)

A colourful and flavoursome vegetarian salad, quick and easy to prepare, fresh and light to be enjoyed for lunch or dinner.

Ingredients

160g of kasha (roasted buckwheat grain)

100g cooked beetroot

2 stalks of celery

4 spring onions

1 teaspoon of parsley

40g feta cheese

10g Hemp seeds

Dressing

4 tablespoons of red wine vinegar

1 teaspoon of wholegrain mustard

1 tablespoon of honey

1 tablespoon of hemp oil

Pinch of salt and pepper

Method

1. Grate the beetroot and dice the spring onions and celery.
2. Weigh out the kasha and mix in with the vegetables.
3. In a small bowl whisk together the dressing ingredients, mix into the salad bowl.
4. Finish by crumbling feta on top along with hemp seeds and a sprinkle of parsley.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	772kJ 173kcal	7.1g	5.4g	0.9g	23.3g	5.2g	1.5g	0.3g
Per 260g Serving	2006kJ 450kcal	18.5g	14g	2.2g	76.1g	13.4g	3.8g	0.8g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Hemp and buckwheat noodle salad

(serves 2)

Quick and easy to make, this salad is delicious and filling, making it a perfect packed lunch for work.

Ingredients

160g cooked buckwheat soba noodles
(about 90g uncooked)

½ red pepper

1 small carrot

2 spring onions

1 tablespoon of hemp seeds

Dressing

2 teaspoons of soy sauce

2 tablespoons of balsamic vinegar

1 tablespoon of hemp oil

1 teaspoon of garlic puree

1 tablespoon of grated fresh ginger

Method

1. Cook the noodles according to packet instructions, rinse and cool.
2. Whisk all the dressing ingredients together.
3. Julienne the vegetables (cut into long thin strips).
4. Gently toss all ingredients together and serve.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	832kJ 185kcal	6.4g	4.3g	0.5g	35.1g	4.7g	2.8g	1.0g
Per 190g Serving	1580kJ 352kcal	12.2g	8.3g	0.9g	66.7g	9.0g	5.3g	1.9g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Fava bean frittata

(serves 2)

A great idea for a shared dish or a family recipe. This Mediterranean inspired dish is packed with healthy protein and flavours.

Ingredients

5 eggs
3 diced spring onions
½ diced red pepper
100g fresh or frozen green fava beans
Pinch of salt and pepper

Method

1. Preheat the oven to 190°C/170°C fan/gas 5.
2. Cook the fava beans following packet instructions.
3. Whisk the eggs in a bowl and stir in the vegetables.
4. Lightly grease a flan or brownie tin and pour in the egg mixture.
5. Cook in the oven for about 20-25 minutes.
6. Alternatively you could cook in a frying pan and finish under the grill.
7. Serve hot or cold.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	420kj 100kcal	9.5g	6.1g	1.7g	2.1g	1.1g	1.7g	0.3g
Per 190g Serving	899kj 215kcal	20.3g	13.1g	3.6g	4.4g	2.4g	3.7g	0.7g

*Get Cooking
Get Social!*
Share your photos
#rowettrecipes



Sweet potato and fava bean pie

(serves 2)

If you like traditional pies then try something different with these vegetarian versions. Here we replaced all the meat with fava beans and we supplemented the pie crust with buckwheat and fava bean flour. You will be impressed by how delicious a meat-free pie can taste!

Filling ingredients

1 teaspoon of hemp oil	70g drained fava beans
½ small onion	¼ of a cooked sweet potato, diced
¼ teaspoon of ground cumin	1 tablespoon of green peas
¼ teaspoon of ground coriander	1 tablespoon of chopped fresh coriander
¼ teaspoon of turmeric	1 teaspoon of lemon juice
Pinch of cayenne pepper	½ a beaten egg
½ clove of crushed garlic	2 tablespoons of water
½ teaspoon of grated fresh ginger	Pinch of salt
¼ teaspoon finely chopped fresh chilli	

Pastry

15g semi-skimmed milk
30g of water
11g Trex vegetable fat
10g low fat spread
35g strong white flour
40g fava or buckwheat flour
1 egg yolk
Pinch of salt

Method

1. Heat the oil in pan and gently fry onions for about 8 minutes, then add spices, garlic and chilli and fry for a further 2 minutes.
2. Add the peas and water and lightly crush the fava beans and sweet potato, add to the pan.
3. Add the coriander, salt and lemon juice. and the beaten egg and mix well. Leave the mixture to cool and move on to making the pastry.
4. Put the milk, water, fat and spread into small saucepan, heat until the fat has melted and the mix has just come to the boil.
5. Sift the flours together, stir in the salt and the egg yolk and mix well. Keep some of the egg yolk to glaze the pastry.
6. Mix the hot milk mixture into the flour bowl and stir well until the ingredients comes together.
7. Use a silicon muffin case as a mould to shape your pies.
8. Split the pastry into two balls, to make two individual pies, roll the pastry into circles and line the mould, trim the excess and keep for pie lid. Fill the pastry cases with the vegetable mix.
9. Roll out the pastry lids, moisten the edges with water, cover the pies and use your fingers to press the edges of pastry together, make a hole in the middle of each pie.
10. Bake in the oven for 20 minutes at 180°C/160°C fan/gas mark 4.
11. Let the pies cool for a few minutes, remove from mould, use the egg yolk to glaze top and sides of pies and put back in oven on a baking tray without the mould for a further 10 minutes.

Get Cooking

Get Social!

Share your photos
#rowettrecipes



Mushroom, leek and fava bean pie (serves 2)

Ingredients

15g lighter butter	1 teaspoon wholegrain mustard
¼ of a finely sliced leek	1 tablespoon of plain flour
4 diced mushrooms	130g semi-skimmed milk
50g cooked fava beans	Pinch of salt and pepper
2 thyme sprigs, leaves picked	

Method

1. Melt half the butter in a pan and gently fry the leeks for 5 minutes.
2. Add the mushrooms and fry for a further 6-8 minutes, stir through the fava beans, mustard and thyme, then empty into a bowl.
3. Using the same pan start to make a white sauce by mixing together the rest of the butter and the flour, stir for a few minutes then gradually mix in the milk and cook until sauce has thickened.
4. Season the white sauce and stir in the vegetable mix.
5. Use the same method to prepare and bake the pastry as for the sweet potato and fava bean pie but with the above mix as the filling.

Mushroom, leek and fava bean pie

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	687kj 164kcal	5.7g	9.1g	3.2g	15.4g	2.7g	3.7g	0.3g
Per Pie	1031kj 246kcal	8.5g	13.6g	4.8g	23g	4.1g	5.6g	0.5g

Sweet potato and fava bean pie (previous page)

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	854kj 204kcal	7.4g	10.0g	2.6g	20.6g	4.0g	5.7g	0.3g
Per 190g Serving	1153kj 276kcal	9.9g	13.4g	3.5g	27.8g	5.5g	7.6g	0.4g

Get Cooking
Get Social!
Share your photos
#rowettrecipes



Fava bean or buckwheat pizza

(serves 2)

A tasty and healthy alternative to the everyday pizzas. We use fava bean or buckwheat flour to partially replace some of the wheat flour. With all this protein packed into the base there is no need for meaty toppings!

Ingredients for base

60g fava flour or buckwheat flour
50g strong white flour
2g salt
3g dried yeast
60g warm Water

Topping

60g passata
Pinch of oregano
½ red pepper
A couple of mushrooms
½ onion
80g low fat mozzarella

Method

1. To make the base, put both flours into a bowl and stir in the salt and yeast. Make a well and pour in the warm water. Mix together until you have a sticky dough, turn out onto a lightly floured surface and knead until smooth. Cover and set aside.
2. Cut the peppers into thin strips, slice the mushrooms and onions and weigh out the cheese.
3. Preheat the oven to 220°C/200°C fan/gas 7.
4. Spilt the dough into two balls for 2 individual pizzas. On a floured surface roll out the dough into thin circles, place on a floured baking tray (or use greaseproof paper on the tray).
5. Part bake the base for 5 minutes.
6. Remove the base from oven and spread on the passata, sprinkle on the oregano, vegetables and cheese.
7. Return the pizzas to the oven and cook for 10 minutes.
8. The pizza is ready to serve.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	441kJ 104kcal	6.9g	2.1g	1.4g	14.6g	3.2g	3.2g	0.6g
Per 190g Serving	907kJ 215kcal	14.2g	4.3g	2.8g	30.1g	6.6g	6.5g	1.3g

*Get Cooking
Get Social!*

Share your photos
#rowtrecipes



Crêpes with roasted butternut squash and spinach (serves 2)

These savoury crêpes make a sophisticated starter for autumn entertaining but we think you will love them so much you will want them all year round. Experiment and create your own savoury vegetable filling to suit each season.

Ingredients for crepes

100g buckwheat, hemp or fava flour
½ teaspoon of baking powder
1 egg
200g skimmed milk
Juice from 1 lemon
2 teaspoon of hemp oil
Season with pinch of salt

Filling

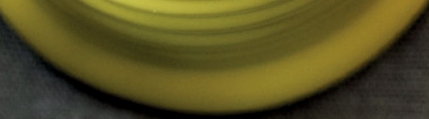
1 red onion
½ butternut squash
1 red pepper
Pinch of black pepper
30g spinach
50g light soft cheese

Method

1. Preheat the oven to 220°C/200°C fan/gas 7.
2. Cut the butternut squash into chunks, place on a baking tray and roast for about 25 minutes.
3. Add the roughly chopped peppers and onions to the butternut squash and cook for a further 10-15 minutes.
4. While the roast vegetables are cooking prepare the crêpe batter, mix all the dry ingredients together.
5. Whisk together the egg, lemon juice and milk.
6. Bring all the crêpe ingredients together and mix.
7. Sparingly use the hemp oil in a hot pan, use a ladle to thinly spread the crêpe mixture into pan, mix will give 4 crêpes.
8. Cook the crêpes for a couple minutes each side.
9. Once roast vegetables are ready, mix in soft cheese, spinach and season.
10. Fill the crêpes and roll them, serve 2 crêpes per person.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	470kJ 111kcal	6.8g	3.4g	0.9g	13.2g	5.4g	2g	0.27g
Per 376g Serving	1766kJ 419kcal	25.6g	12.9g	3.6g	49.4g	20.2g	7.6g	1.0g



*Get Cooking
Get Social!*
Share your photos
#rowettrecipes



Mushroom and pea risotto

(serves 2)

A traditional Italian dish with a twist, replacing the white rice with buckwheat groats. Your taste buds will be impressed with the results!

Ingredients

1 teaspoon of hemp oil	Juice of 1 lemon
150g buckwheat groats	Peel from 1 lemon
1 onion	20g dried mixed mushrooms
1 vegetable stock cube made with 400g water (stock)	60g peas
A few sprigs of fresh thyme	20g double light cream
1 minced garlic clove	20g parmesan shavings
	Season with salt and pepper

Method

1. Hydrate the mushrooms by covering in boiling water and soak for at least 30 minutes, drain any excess water.
2. Finely dice the onion and weight out the other ingredients.
3. Heat the oil in a pan and gently cook the onions and garlic for a few minutes.
4. Add the buckwheat groats to the pan with some of the stock and stir for a few minutes.
5. Add the remaining stock, thyme, mushrooms, lemon juice and peel to pan and cook for a further 20 minutes, stirring frequently.
6. Add some of the parmesan and keep some for serving.
7. Add in the cream and peas and cook for a further 5 minutes.
8. Season and serve with parmesan shavings.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	636kJ 152kcal	6.9g	4.2g	1.8g	23.8g	2.1g	4.1g	0.5g
Per 265g Serving	1684kJ 404kcal	18.3g	11.3g	4.9g	63.0g	5.5g	11.0g	1.4g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Green pea pesto with buckwheat pasta (serves 2)

This pea pesto and pasta dish is fresh and fragrant, a quick and easy weeknight meal. A great source of protein and fibre.

Ingredients

225g cooked buckwheat pasta

Handful of cherry tomatoes

Handful of rocket leaves

For the pesto

1 tablespoon of hemp oil

2 cloves garlic

1 tablespoon of pine nuts

1 tablespoon of lemon juice

140g boiled peas, cooled

1 teaspoon of dried basil

1 teaspoon of dried parsley

25g parmesan cheese

Pinch of black pepper

Method

1. Preheat the oven to 200°C/180°C fan/gas 6.
2. Place the cherry tomatoes on a baking tray and roast in the oven for approximately 10 minutes.
3. While the tomatoes are roasting, cook buckwheat pasta according to packet instructions.
4. Take the tomatoes out of the oven and leave to cool.
5. Mix all pesto ingredients in a blender until smooth, then mix in to the cooked pasta.
6. Serve with cherry tomatoes and rocket leaves.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	595kJ 142kcal	5.6g	6.2g	1.3g	14.8g	2.8g	3.3g	0.08g
Per 275g Serving	1635kJ 392kcal	15.4g	17.0g	3.7g	40.8g	7.7g	9.2g	0.23g

Get Cooking

Get Social!

Share your photos
#rowettrecipes



Fava bean chilli with buckwheat groats (serves 2)

If you love Mexican dishes, then try this this vegetarian alternative to the chilli con carne and rice dish. Here we have replaced the rice with buckwheat groats and the meat with fava bean. This dish is low in calories and rich in dietary fibre.

Ingredients - for the chilli

1 teaspoon of hemp oil	½ teaspoon paprika
½ onion	½ teaspoon chilli powder
2 cloves garlic	¼ teaspoon cumin
½ red pepper	½ teaspoon oregano
1 diced chilli pepper	Pinch of black pepper
175ml water	Pinch of salt
240g tinned tomatoes	½ can fava beans in water, drained
1 tablespoon of tomato puree	120g frozen green fava beans

Groats

75g buckwheat groats
200ml boiling water

Method

1. Heat the hemp oil in a pan and fry the onions for 8 minutes until softened, then add garlic, red pepper and chilli pepper for a further 2 minutes.
2. Add in water, tinned tomatoes, paprika, chilli powder, cumin, oregano, salt and pepper, bring to the boil and leave to simmer for 1 minute.
3. Add the tinned and frozen green fava beans to the pan and leave to simmer for 10 minutes.
4. In a separate pan, add the buckwheat groats with boiling water and cook for 15-20 minutes until the water is fully absorbed into the groats.
5. Serve the chilli and groats together.

Nutrition information

chilli 250g
groats 100g

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	342kj 81kcal	3.9g	0.8g	0.1g	14.4g	2.5g	3.7g	0.20g
Per 350g Serving	1197kj 283kcal	13.5g	2.7g	0.3g	50.4g	8.8g	13.0g	0.70g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Moroccan spiced fava and green pea stew

(serves 2)

An exotic combination of spices bring North African flavours to the humble casserole. We have replaced all the meat with fava beans. Indulge your taste buds with this healthy, low calorie vegetarian Moroccan dish.

Ingredients

1 teaspoon of hemp oil	¼ teaspoon of paprika
1 small onion, diced	½ teaspoon of ground cinnamon
2 cloves garlic, diced	½ teaspoon of ground nutmeg
1 carrot, peeled and diced	½ teaspoon of salt
5 new potatoes, chopped in halves	Pinch of black pepper
400g boiling water	1 can (400g) of tomatoes
1 teaspoon of ground turmeric	100g fava beans in water, drained
½ teaspoon of curry powder	140g frozen or fresh green peas
½ teaspoon of ground cumin	

Method

1. Heat the hemp oil in a saucepan and gently fry the onions for 8 minutes until softened, add the garlic and spices, cook for 2 minutes more.
2. Add the carrots and potatoes and fry for 2 minutes, add boiling water and cook for a further 15 minutes.
3. Add the tinned tomatoes to the pot with the fava beans and peas, simmer for a further 5 minutes.
4. Remove the pan from the heat and serve into bowls.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	242kj 57kcal	3.0g	1.0g	0.2g	9.5g	4.0g	3.5g	0.22g
Per 450g Serving	1087kj 258kcal	13.5g	4.4g	0.9g	42.9g	18.0g	15.4g	1.00g

*Get Cooking
Get Social!*
Share your photos
#rowettrecipes



Sweet potato cottage pie (serves 2)

A hearty vegetarian version of this traditional dish, perfectly combines the sweetness of the tubers with the tanginess of beans and peas, topped with a delicious pie crust. Another delicious vegetarian alternative for a meat free day.

Ingredients for the filling

7g hemp oil
½ onion, diced
2 cloves garlic, diced
½ carrot, peeled and diced
½ vegetable stock cube make with 110g of water
60ml red wine
½ can (200g) chopped tomatoes
Small bunch of fresh chopped thyme
100g fava beans in water, drained
75g tinned lentils in water, drained

Topping

1 sweet potato, peeled and diced
1 teaspoon of butter
35g low fat cheddar (matchbox size)

Serve with:
80g cooked green peas per person

Method

1. Preheat the oven to 200°C/180°C fan/gas 6.
2. Heat the hemp oil in a saucepan and gently fry the onions for 5 minutes until softened, add the garlic and cook for 2 minutes more.
3. Add the carrots and fry for a further 2 minutes, then add the thyme, vegetable stock and red wine for 10 minutes until the carrots have softened.
4. Add the fava beans and lentils and leave to simmer for a further 5 minutes, then ladle the mixture into an oven proof casserole dish.
5. Boil the sweet potatoes until soft, then drain and mash with the butter.
6. Spread the sweet potato mash over the filling in an even layer, then sprinkle the cheese on top and cook in the oven for 25-30 minutes.
7. Boil the peas in a pan for 2-3 minutes and serve with the cottage pie.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	406kj 97kcal	4.6g	2.4g	0.9g	13.6g	4.1g	4.3g	0.24g
Per 450g Serving	1951kj 463kcal	21.9g	11.5g	4.2g	65.1g	19.7g	20.5g	1.14g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Green pea bread

(makes 1 loaf)

For baking enthusiasts here are two recipes that are sure to become family favourites. Easy to make traditionally or in a bread machine, we have simply replaced part of the wheat flour with green pea and hemp flour. Two healthy, delicious and rich in fibre breads that you will definitely enjoy.

Ingredients

150g fresh or defrosted frozen peas
300g strong white bread flour
7g dried yeast
1g salt
150g tepid water (warm)
30g hemp oil

Method

1. Mix the yeast in warm water.
2. Heat the oven to 200°C/180°C fan/gas 6.
3. Blend the peas and mix together thoroughly with flour and salt.
4. Add the water/yeast mix and oil to the dry ingredients, mix and form a ball.
5. Knead the dough for 5-10 minutes or until firm and non-sticky.
6. Transfer to a greased loaf tin and cover with clean bag or tea towel.
7. Prove for about 60 minutes in warm area (or until doubled in size).
8. Transfer to the pre-heated oven and bake until done, approximately 25-30 minutes.
9. Cool on a wire rack, slice up into portions.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	1066kJ 252kcal	8.1g	6.2g	0.8g	43.9g	0.9g	3.7g	0.18g

*Get Cooking
Get Social!*
Share your photos
#rowettrecipes



Hemp bread

(makes 1 loaf)

Ingredients

320g strong white flour	1½ tablespoon of hemp oil
150g hemp flour	1½ tablespoons of brown sugar
55g shelled hemp seeds	7g of dried yeast
1 tsp of salt	350g of warm water (tepid)

Method

1. Stir the sugar, yeast and warm water together and leave to stand for about 10 minutes.
2. Mix the flours, some of the hemp seeds and salt in a bowl, make a well in the centre and drizzle round the oil.
3. Pour half of the wet mixture into the flour bowl and mix with a spoon, then add the remainder of the liquid and mix well.
4. Use some flour for dusting the worktop and knead the mix for about 8 minutes.
5. Roll the mix up tightly and place into an oiled loaf tin.
6. Dust your hands with flour if needed and knead the mix into the corner of the tin.
7. Preheat the oven to 200°C/ 180°C fan/gas 6.
8. Cover the tin with a dishcloth or clean polythene bag and place somewhere warm, to prove the loaf for about 40 minutes.
9. Once the loaf has proved sprinkle the rest of the hemp seeds on top and place the tin directly into the oven and cook for about 35 minutes.
10. If you feel the bread is not quite ready, remove it from the tin and put back in the oven until ready.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	1147kJ 236kcal	12.7g	7.2g	0.8g	42.1g	2.8g	8.9g	0.7g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Green pea crispbread

(makes 14-15)

A scrumptious and healthy alternative to conventional crisps. A light snack packed with dietary fibre. Great with dips, once tasted, you will crave for more!

Ingredients

160g peas fresh or frozen

Pinch of salt

Pinch of pepper

80g instant potato powder

18g water

1 tablespoon of hemp oil

Method

1. Preheat the oven to very low heat 90°C/70°C fan/gas ¼.
2. Roughly blend the raw peas and mix with salt, pepper, potato powder, water and oil.
3. Roll the mix out thinly in between sheets of cling film to stop the mixture sticking to the work surface.
4. Cut out shapes using a cookie cutter (about the size of a oatcake) and place on silicone baking mats or greaseproof paper.
5. Bake for 2 hours.
6. Remove from the oven and leave to cool on a wire rack.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	1560kJ 372kcal	13.8g	10g	1.5g	60.5g	5.4g	12.6g	1.0g
Per 40g/5 Serving	624kJ 149kcal	5.5g	4g	0.6g	24.2g	2.2g	5.1g	0.4g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Hemp and buckwheat flapjack (makes 10)

Great for those with a sweet tooth, this no added sugar flapjack recipe will be a winner. Try them as a snack or with fruit or yogurt at breakfast.

Ingredients

130g porridge oats

130g buckwheat flakes

3 tablespoons of shelled hemp seeds

200g dried dates

50g of boiling water

70g hemp seed butter

50g Flora light spread

Method

1. Preheat the oven to 190°C/170°C fan/gas 5.
2. Soak the dates in the boiling water for 5 minutes then blend with any excess water.
3. Melt the butter and flora light spread together.
4. Place all the ingredients into a bowl and stir until fully mixed.
5. Add the mixture to a lightly grease baking tray. Use the back of a spoon to press the mixture into the corners so the mixture lies flat.
6. Place in the oven for 15-20 minutes or until the flapjack is golden brown.
7. Leave to cool in the baking tray before cutting into portions as the brownie may still be crumbly whilst hot.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	1440kJ 342kcal	10.3g	12.6g	1.7g	35.2g	22.1g	6.7g	0.16g
Per 50g Serving	720kJ 171kcal	5.1g	6.3g	0.9g	26.6g	11.0g	3.3g	0.08g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Fava, apple and apricot muffins (makes 6)

These muffins have no added sugar, all the sweetness comes from the apple and apricots. What a great way to enjoy a sweet treat!

Ingredients

160g fava bean flour
½ teaspoon baking powder
½ teaspoon bicarbonate of soda
4g cinnamon
4 tablespoons semi-skimmed milk
2 large eggs
90g buttery spread
1 small apple grated with skin
120g dried apricots, diced

Method

1. Preheat the oven to 180°C/ 160°C fan/gas 4.
2. Whisk the buttery spread in a bowl until smooth.
3. In a separate bowl mix together the flour, baking powder, bicarbonate of soda and cinnamon.
4. Whisk the eggs and along with the dry ingredients start adding them to the spread. Finally stir in the milk to get a smooth batter.
5. Add the grated apple and chopped apricots to the cake batter.
6. Pour the mixture into muffin moulds or muffin paper cases and place in the oven for about 20 minutes, prick with a skewer to ensure the mixture is fully cooked inside.
7. Leave on a wire rack to cool.

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	1159kJ 277kcal	12.0g	13.9g	3.2g	25.3g	12.4g	5.5g	0.9g

*Get Cooking
Get Social!*

Share your photos
#rowettrecipes



Pancakes

(makes 8)

These pancakes can be made with buckwheat, hemp or fava bean flour, are very easy to prepare and a great alternative to traditional pancakes for breakfast or anytime of day. Enjoy them by themselves or with your favourite toppings.

Ingredients

75g (½ cup) buckwheat or hemp or fava flour	1 egg
25g (¼ cup) plain white flour	120g of semi-skimmed milk
1 tablespoon of castor sugar	3 teaspoons of lemon juice
1 teaspoon of baking powder	2 teaspoons of hemp oil
2 teaspoons of butter, melted	

Method

1. Mix together the dry ingredients.
2. Whisk together the egg, lemon juice, milk and butter.
3. Bring all the ingredients together to make the batter, mixture may be slightly lumpy.
4. Using a pastry brush, lightly coat a pan with hemp oil. Heat the pan to hot.
5. Use a small ladle to place batter into pan and reduce the heat. Cook on one side 2-3 minutes or until bubbles come to the surface. Flip the pancake and cook for another 1-2 minutes.

Buckwheat Pancakes

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	1141kj 277kcal	9.2g	10.1g	3.7g	39.1g	9.2g	2.5g	0.4g
Per Pancake	342kj 83kcal	2.8g	3.0g	1.1g	11.7g	2.8g	0.8g	0.1g

Hemp Pancakes

Nutrition information

	Energy	Protein	Fat	Saturates	CHO	Sugars	Fibre	Salt
Per 100g	1204kj 288kcal	15.4g	11.8g	3.8g	32.0g	9.4g	12.7g	0.4g
Per Pancake	373kj 89kcal	4.8g	3.6g	1.2g	9.9g	2.9g	3.9g	0.1g

Sourcing the ingredients

Fava beans

Possible suppliers: Hodmedods, www.hodmedods.co.uk, offers a variety of fava bean products as salty snacks, baked, tinned, fried and flour. Tesco supermarket offers fresh and frozen green fava bean, tinned and flour fava bean. Fresh pods (when in season) and frozen fava bean can also be purchased from the most supermarkets.

Hemp

Possible suppliers: www.healthysupplies.co.uk, offers shelled and unshelled hemp, and flour. Hemp butter could be found online at www.realfoods.co.uk. Tesco supermarket offers oil, milk and a selection of snacks bars.

Buckwheat

Possible suppliers: www.healthysupplies.co.uk offers cereals, soba noodles, groats, kasha; and the buckwheat flour and pasta can be supplied by most of the supermarkets.

Green Pea

Possible suppliers: Hodmedods, www.hodmedods.co.uk, offers a variety of green pea products as salty snacks, fried and flour. Most supermarkets offers frozen, tinned, dried and when in season fresh green peas.

Acknowledgements

This book has been produced by the following team at the University of Aberdeen's Rowett Institute.

Karen Taylor (Registered Dietitian, Head of kitchen facility)
Jean Bryce (Nutrition Assistant)
Melanie Hudson (Nutrition Assistant)
Dr Wendy R Russell (Senior Research Fellow)
Dr Madalina Neacsu (Research Fellow)
Sarah Christie (Photography)
Pat Bain (Graphics)

References

Food and Agricultural Organisation of the United Nations (FAO) www.fao.org/home/en/

Sustainable Diets and Biodiversity, Directions and solutions for policy, research and action, FAO, (2012) www.fao.org/docrep/016/i3004e/i3004e00.htm

Multari, S., Neacsu, M., Scobbie, L., Cantlay, L., Duncan, G., Vaughan, N., Stewart, D. Russell, WR. (2016). Nutritional and Phytochemical Content of High-Protein Crops. *Journal of Agricultural and Food Chemistry*, vol 64, no. 41, pp. 7800-7811.

Winston, J. C., Mangels, A. R. (2009). Position of the American Dietetic Association: Vegetarian Diets., *Journal of the American Dietetic Association*, vol 109, 1266-1282.

Report of the Dietary Guidelines Advisory Committee on the dietary guidelines for Americans, 2010: to the Secretary of Agriculture and the Secretary of Health and Human Services. Washington, DC: Agriculture Research Service, US Department of Agriculture, US Department of Health and Human Services.

From Plate to Guide: What, why and how for the eatwell model, Public Health England, 2016.

Eating for 2 degrees - New and updated Livewell Plates, WWF, 2017.

All information correct as of October 2019.

At the Rowett Institute, University of Aberdeen, we have been studying how different sources of protein may contribute to healthier diets. Aspects of this work has been to investigate crops with a high protein content which have historically been grown in Scotland or currently grow elsewhere in similar climates and could be introduced to Scotland. This could help Scotland become more sustainable (both economically and environmentally) and help reduce our dependence on imported foods and ingredients. Having looked at many potential candidates, we have focused on pea, fava bean, hemp and buckwheat. This book demonstrates some different ways to include these crops in your cooking, both in traditional recipes and in new dishes. We could all be healthier and eat a sustainable diet by considering our dietary choices.

SEFARI

LEADING IDEAS
FOR BETTER LIVES



The Rowett Institute forms part of the Scottish Environment, Food and Agriculture Research Institutes (SEFARI). This also includes Moredun Research Institute, Scotland's Rural College, Biomathematics and Statistics Scotland, Royal Botanic Garden Edinburgh and The James Hutton Institute. Together they are responsible for the delivery of the Scottish Government funded Strategic Research Portfolio on environment, food, agriculture, land and communities.