

Potato Notes 2013

I grow early or “new” potatoes because they are very popular with my family. Nothing surpasses the taste of a freshly dug new potato. Also, from an organic growing point of view, you can get a decent crop of early potatoes before the arrival of blight.

Summer 2012 was very wet – perfect conditions for the spread of blight. I was able to save my crop by simply cutting off the tops of the potatoes at the first sign of blight. As the crop below ground was fairly well developed by then we could just dig them up as required and they were as fresh and tasty as usual. Commercial potato growers spray their crops many times through the growing season to keep blight infections at bay. As I refuse to use any chemical intervention, I could lose my entire crop if I were to grow main crop varieties in a blight year (although a lady staying in the straw bale holiday cabin told me how a man on her allotment could manage to grow potatoes, despite blight on neighbouring plots, by covering them in some fine green mesh he recycled from building sites – I’ve made a note to try this next year!).

Growing potatoes

The table below details my 2013 potato harvest from three beds – one on my lawn at home (BG) and two on my new allotment at Village Farm (VF).

The wooden sided BG bed was new in 2012 with radishes and leeks grown then. The soil is quite sandy. The bed had a mulch layer of manure over winter. In April 2013 I planted 20 seed potatoes (5 rows of 4) at about 150mm deep. I put a good handful of compost under each potato and planted them, 1cm (ish) chits facing up. I rowed them up a bit so I knew where they were. When the tops had grown through, I pulled up more soil around them and filled between the rows with strawy farmyard manure and left them to grow.

The VF soil is cold, heavy clay. There was an excellent covering of dandelions where I wanted to put the potatoes! I didn’t have time to dig the ground so I made beds starting with a layer of cardboard on top of the dandelions followed by a thick layer of grass clippings and farmyard manure, followed by some clay topsoil that my brother in law dropped off and some sandy topsoil that I bought a load of. There was a handful of compost under each seed as in the BG bed. 46 seed potatoes were planted in each bed in staggered rows. When the potato tops grew through, I put another layer of farmyard manure around them (I have a very plentiful supply of manure) and left them to grow.

After the late, cold spring, summer 2013 was very dry and warm. Unfortunately the rain gauge didn’t get put up until September so I have no idea of the exact rainfall measurement - definitely on the “to do better next year” list.

In the hot dry summer of 2013, there were no signs of blight at all on my potatoes. I didn’t water the potatoes. I read online that on average, 40% of commercial crops are irrigated - perhaps higher this summer?



Photo A – VF potatoes (bed 12 in the foreground, bed 11 just behind)

Harvesting potatoes

Potatoes were not harvested with any particular science - just as required for meals, friends or visitors to our holiday cottages. The table below gives details of potatoes grown in one BG bed and two at VF in 2013.

Bed name	B4 BG	B11 VF	B12 VF
Variety	Rocket First early	Rocket - 20% Duke of York - 80% First early	Nadine - 50% Wilja - 50% Second early
Growing bed area (m ²)	2.42 (1.1m x 2.2m)	6.6 (1.1m x 6m)	6.6 (1.1m x 6m)
Planting date	07/04/2013	16/04/2013	10/05/2013
Date of first harvest	16/06/2013	04/07/2013	07/08/2013
Days - planting to first harvest	70	79	89
Date of last harvest	26/06/2013	07/08/2013	04/10/2013
Days - planting to last harvest	80	113	147
Potatoes harvested (kg)	9.633	32.168	42.273
Yield per m ² (kg)	3.9806	4.8739	6.4050
Per ha equivalent (t)	39.806	48.739	64.050
Per ha (t) – adjusted for paths	27.366	33.508	44.034

Very early potatoes take about 75 days to maturity (*Larkcom p298*). Eager for our first taste of fresh potatoes we dug out the first at BG after 70 days. Over the next 10 days we harvested 9.633kg of small, tasty tubers. In the table above, I scaled this up to a per hectare equivalent of nearly 40t/ha to ease comparison with commercial yields (see below). However, the bed system I use for growing requires a 0.5m path for my access to the crop so it only seems fair to adjust for this – giving an adjusted yield of nearly 27.4t/ha.

As we ate our way through a second bed of early potatoes at BG (un-weighed), the first bed at VF wasn't started until day 79 after planting. The yield increased 22% from B4 BG to B11 VF – but there was a 20% higher density of seed potato, the harvest was started later and lasted longer. The yield from B12 VF was 31% heavier than from B11 VF (and 61% heavier than B4 BG). However, the extra time in the ground was not all growing time as the tops had died down by mid-September. Luckily, I had no blight in 2013.

Another advantage of growing early potatoes is that there is time to grow a second crop to maximise production from the vegetable bed. After potatoes, the BG bed was planted with kale plants raised elsewhere in pots. However, I didn't have time to cover the kale with protective netting - the butterflies had unfettered access and their caterpillars completely devoured the crop!



Photo B – kale planted in B4 BG, stripped bare by caterpillars

Analysis

Yield

According to the GB Potato Council market intelligence (GB Potatoes 2012), early potatoes in the UK yielded on average 17-19t/ha in June 2012 (data not yet available for 2013). However, due to extreme weather in 2012, yields were poor so perhaps it is fairer to compare with the June 2011 national early potato yield of 19-31t/ha. The BG first early yield of 27.4t/ha falls near the top end of this range even though they were picked after only 70 days. The VF first early yield is well over the UK 2012 average at 33.5t/ha and the VF second early bed yielded much more at just over 44t/ha (but they had been left in the ground much longer than a normal "early" crop would have been).

So - all my potato beds yielded in excess of the average farm yield. However, my yields have been obtained in a small area. I wouldn't be physically able to grow large acreages this way - not that I'd want to because I'm hoping to show that having many more farmers growing a greater diversity of crops is a better way forward than a few farmers growing vast monocultures. In 2012 there were 2,306 registered potato growers. That's an awful lot less than the 30,000 plus growers in 1980 and the 76,000 plus in 1960 - for a similar planted acreage. Is it the huge capital investment required to grow potatoes commercially these days that is driving down the number of farmers growing them? Is it the industrialisation of the food supply chain? Is it the demands of the supermarkets or the expectations of consumers?

I grew great yields of potatoes without fossil fuels and without machines, artificial fertilisers or chemicals – there is no way a large scale grower could do this.

My yield of new potatoes over the 3 beds totalled just over 84kg, over 110 days from mid-June. Of that, my family ate 28kg – always two of us, sometimes three, four or five. According to the GB Potato Council, average consumption of fresh potatoes is approximately 40kg per capita per annum so we are probably about average in our family. However, average consumption of processed potatoes is a further 50kg per capita per annum! We like a fish and chip supper on the odd occasion and my husband is partial to a bag of crisps but even if he had a bag every single day that would only be 10 or 11 kg per annum!

Further notes on yield - the GB Potato Council 2012 figure for main crop potatoes was 37.4t/ha. In better years, 2009-2011, the average yields were more like 47t/ha. The potato council report also has average yield figures for other European countries, the highest of which is the Netherlands where the yield seems at least 12% higher than the UK each year. Wikipedia suggests that the world's highest potato yield has been recorded in New Zealand (60-80t/ha – just shows what might be possible!)).

Nutrition

Below are some potato related extracts from books or articles I've read whilst researching this crop - including my thoughts/comments in red;

1. The Potato Council website www.lovepotatoes.co.uk

Promoting the nutritional benefits of potatoes, the site claims that a 175g serving of boiled new potatoes with their skins on contains vitamin B6 (0.6mg – 41%RDA), potassium (753mg – 38% RDA), vitamin C (15.8mg – 20%RDA), vitamin B1 (0.2mg – 21%RDA), fibre (3.5g – 15%), folate (17% RDA) and magnesium (8% RDA). **The RDA above is for an average adult – daily need in reality differs according to age and health. Vitamin and mineral content will undoubtedly vary according to soil type, growing conditions, harvest and storage.**

2. The Worlds Healthiest foods website www.whfoods.org

Vitamin C content depends on ripeness and time between harvest and plate. Fresh and raw is best. **We can't eat potatoes raw!**

This website ranks vitamin C density of foods under excellent, very good or good. Excellent includes peppers, strawberries, broccoli, brussel sprouts, kale, cauliflower, raspberries, chard, cabbage, tomatoes, squash, spinach, beans, fennel and parsley. Very good includes peas, onions, leeks, carrots, beets, plums, garlic and celery. Good includes potatoes, apples, pears and cucumber. **Puts the Potato Council claims into perspective! I will compare the other vitamins when discussing other vegetables grown.**

3. The Resilient Gardener by Carol Deppe

This US based author grows with self-sufficiency in mind and saves her own seed. She has spent many years selecting the crops and varieties suitable for her climate and resilient lifestyle. The book concentrates on her staples – potatoes, beans, squash and corn (maize). She also keeps a laying flock of ducks (and they eat boiled potatoes too!).

P153 - potatoes are capable of yielding more calories per square foot than any other crop. They yield more protein per square foot except for legumes. They are easy to grow so are a high yield of calories and protein per hour of work. **I can confirm that early potatoes are easy to grow in the UK too. My waistline can confirm that that they are high in calories – for me this is a problem because I eat too many calories. The physically hard working men in my house need and enjoy the calories provided by potatoes! In the past, potato calories were a very important part of our diet. Nowadays, food is so plentiful in the UK that limiting our calorific intake is the hardest thing to do. Who knows what our future calorie demand will be. I will discuss this more in future posts and compare yields and calories to my other crops.**

P155 - 100g baked potato = 93 calories, 100g boiled with skin = 80 calories, 100g mashed with little bit of milk = 65 calories (94 with butter and milk). Fresh potatoes have 79.8% water, 2.1% protein – or 10.4g on dry weight basis. **How do calories change according to cooking method or when mashed as opposed to whole? There is probably less water in the longer cooked baked potato but why does mashing reduce calorific value?**

P156 - Wheat protein absorbed less easily than potatoes. Potatoes have high GI – digested easily causing fast release of sugar into bloodstream/over produce insulin (which can cause a multitude of health problems that I will blog about later). Having fat with potatoes slows down digestion and therefore reduces GI. Also eating with lower GI foods reduces overall effect. I knew there was a reason I liked butter on my potatoes! Also, I always eat them as part of a meal which includes meat and vegetables or salad so that seems a good thing to do.

P157 - Potatoes are Solanums and contain glycoalkaloids which makes them bitter (but keeps off pests). There are low levels in all potatoes but high levels in green ones which makes them very poisonous (even if you chop off the green bit!). Oops, I always thought they were ok if I chopped off the green bit! I will make a concentrated effort to make sure every potato is well earthed up in future.

P158 – Potato sprouts, leaves and stems are also poisonous. Raw potatoes are inedible for monogastrics (eg humans, pigs and poultry) but their digestive enzyme inhibitors are destroyed by cooking. (Potatoes in shops should not be exposed to light for more than 1 day or their glycoalkaloids increase to unsafe levels!!). A very good reason to only eat potatoes dug that day! I knew that potato peelings were boiled for chickens but didn't realise they had to be boiled for pigs.

Costs

Seed potatoes £20, two bags of compost £8. Value of crop harvested £84 (new potatoes seemed to retail at £1 per kilo during the summer (prices of up to £1.50 early and late in the season have been ignored for this purpose).

I could save a lot by keeping my own seed and making my own compost – especially if I don't find any paying customers - the 28kg we ate ourselves effectively cost £28 to grow and the other 56kg I gave away!

Carbon footprint

The carbon footprint of my potatoes is miniscule compared to commercially grown ones. I used no water, no fertiliser, no chemicals and no fossil fuels. Commercial growers use large machines to plough, to work the land to a fine seedbed (de-stoning is necessary on some soils), to plant the seed, to weed and fertilise, to irrigate and spray the growing crop, to harvest and then store in refrigerated warehouses. All these processes involve large amounts of energy, both to make and use the product/equipment.

Potato “to do list” for 2014

- Note the national commercial yields for 2013 when published in April
- Keep more detailed weather records
- For interest, research commercial planting densities and agronomy
- Plant more area next year so that there is more crop from which to select suitable potatoes to keep as seed for 2015
- Make sure all potatoes are well earthed up to ensure no green potatoes whatsoever.
- Try harder to get a second crop through to harvest in at least one bed (for example kale, cabbage, beans, leeks, lettuce, radish)

- Try a blight resistant main crop variety for winter storage. If conditions suggest blight is likely, cover part of the crop with fine netting to see if this makes any difference (a keen allotmenteer staying in the straw bale holiday cabin told me how a chap she knew was the only one to grow a crop of potatoes one year – he covered them in the fine green mesh used on building sites).
- Remove flowers from half crop in one bed or row to see if yield increased (River Cottage Veg Patch– p119)
- Try Pink Fir Apple variety (River Cottage Veg Patch– p117)

References

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River Cottage Handbook No 4 – Veg Patch by Mark Diacono. Bloomsbury Publishing 2009 ISBN 978-0-7475-9534-2