



## **Crop Gaps Research**

**An Exploration of How Agricultural Practices of the Past  
Can Assist Re-localising the Totnes Food System for the Future**

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## **EXECUTIVE SUMMARY**

Although a wide range of fruit, vegetables and cereals have been produced in the area in the past, participants identified labour issues and low economic margins as key disincentives to production today. Furthermore supermarket competition, limited consumer demand, inadequate processing infrastructure and inefficient distribution methods were identified as key constraints to local crop supply.

Participants identified co-operative working as a potential solution to address crop production issues and identified the need for improvements in supply chain infrastructure, enhanced distribution efficiency, and investment in consumer education to strengthen local markets and enhance demand for locally grown products.

It can be concluded that expanding local crop production and supply will implement a wider set of actors in local supply chains, and shall depend upon producer co-operation and consumer and community support.

Although based on a small sample, this study contributes to the food localisation debate, and identifies key constraints and solutions to the expansion of local crop production and supply in the Totnes locality.

## SETTING THE SCENE

Totnes has been identified as unique in the area and distinguished for its strong local and sustainable food networks. CPRE's 'From Field to Fork; Totnes' report identified that between £4-8 million is spent on local food sales in Totnes annually, supplied from over 160 local food producers. Furthermore approximately two thirds of local independent retailers supply local products, indicating that there is an adequate consumer demand for local food products.

Producers highlight that they can get a better price for vegetables sold in the town, than elsewhere in the locality, because of the existing high demand for local produce in Totnes. However despite this there are some clear gaps in the provision of locally sourced food. This is highlighted in the five shops in the town that sell wholefood products, very little of which is sourced from the UK, let alone Devon. The principle items stocked that are generally sourced within the UK are barley grain and flour, oats, some wheat and green and yellow split peas. More recently one of the shops has started stocking English fava beans and badger peas (<http://hodmedods.co.uk/>).

## RESEARCH RATIONALE

The Food-Link project identified the following crops as being under represented in local food provision:

- legumes, particularly dried
- nuts
- edible oils
- grains

as well as many producers providing a range of fruit and vegetables

Local farming in the South Hams region of Devon is dominated by livestock and dairy production, providing to both local markets and principally wholesalers and supermarkets further afield. There is reason to believe that local markets are flooded with locally sourced beef and lamb and that if farmers are to expand their markets; in order to meet local demand for other locally sourced commodities then they need to diversify outside these meats.

From a resource-use point-of-view Food-Link is interested in exploring the feasibility of growing produce that has good nutritional value with minimal resource input. It is widely accepted that in the western world the meat-based food system requires more energy, land, and water resources than a plant-based system. This is not to say that there is no room for meat production in Devon, as clearly there are different models of meat production and those less intensive methods, that graze animals on land for most of the year round, that is unsuitable for cultivation and do not require significant additional inputs provide a valuable source of protein. However in order to provide a healthy, locally sourced, low resource input diet we need more variety than meat and dairy.

From this starting point the need for more research was highlighted in order to identify:

1. the crops that have been grown for human consumption in the past, when local markets and the associated infrastructure still existed
2. the crops that could potentially be grown in the area for human consumption, but haven't previously been, newer crops such as quinoa, peas and various bean varieties.

This research aims to explore the first of these, namely the crops that have been suitable for local production in the past which are best suited for this climate and local conditions.

The research objectives were as follows:

- to identify the range and types of crops grown over the last 60 + years in the surrounding area of Totnes.
- To establish if and when certain varieties have ceased to be produced, and the reasons for this.
- To identify perceptions regarding the re-establishment of these crop varieties in the local area, for example whether re-introduction is perceived to be successful and identify the potential opportunities, challenges and constraints to the re-introduction of certain crop varieties.
- To identify crop processing and labour practices, and the ease of local access to, and availability of these facilities today.
- To establish produce that was sold locally and identify the chosen routes to market and the perceived success and feasibility of supplying local markets today.

Food-Link has made three assumptions that led to this piece of work<sup>1</sup>:

1. That local markets are largely saturated with local beef and lamb
2. That meat production that relies on animal feed imports is an inefficient use of resources and protein production.
3. In order to provide a varied, locally sourced diet and to increase local food security, there needs to be a wider range of production than is currently being undertaken in the area.

## **RESEARCH METHODOLOGY**

Transition Town Totnes' Food-Link project teamed up with an MSc student, studying Food Security and Sustainable Agriculture at Exeter University to carry out research amongst farmers based within a 30 mile radius of the town. It was hoped that by interviewing local, elderly farmers about the historic use of the land we could capture some of their wealth of knowledge on past practices, many of which could have applicability to future farming methods in the absence of cheap fossil fuels.

The study adopted a qualitative approach, using semi-structured interviews to analyse the past practices, perceptions and experiences of 12 producers, focusing on the range of crops grown, labour practices, routes to local markets, processing and supply chain infrastructure. In particular the study aimed to identify the perceived opportunities and constraints to local crop production and supply in order to gauge the feasibility of expanding local crop markets today.

Participants were initially sent a postal questionnaire. Over 320 questionnaires were sent out to known local farmers through the Food-Link project and South Hams District Council's Agricultural Forum contacts. A total of 36 questionnaires were returned. The 12 one-to-one interviews were made up of 9, that were selected from those that had filled in the questionnaire and had agreed to a more in-depth interview, and an additional 3, that were introduced to the research through the farmers that were interviewed. Due to time constraints farmers that indicated they had grown crops in the past for human consumption were targeted. The majority of these in-depth interviews were carried out face-to-face but a few were carried out over the telephone.

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1 Evidence for these assumptions can be found in appendix 1, taken from the Who Feeds Bristol report, March 2011

## OVERVIEW OF RESULTS

### Summary Table of Results

Below is a summary of the 12 in depth interviews.

Farmer	Size of farm	Previous principle farm type	Current principle farming practices	Organic?	Still Farming?	Past Crops grown for human consumption	Past Crops grown for fodder	Willing to grow crops for human consumption?
Farmer 1	195 acres	Dairy, pigs and poultry	Dairy and Beef	No	Yes	Potatoes and some veg e.g swedes. Apples for cider	Kale, maize, alfalfa	The son might be
Farmer 2	?	large scale veg, sheep and caulis	Sheep, Beef and leeks	No	Yes	Field-scale vegetables	None	No – too physically hard work
Farmer 3	100 acres	Dairy	Beef	Yes	Yes	some barley + other grains	barley, linseed, wheat and kale	No – too old
Farmer 4	26 acres	range of veg, herbs + livestock	Medicinal and edible herbs	Was but became too expensive	Now small scale horticulture	Shiitake mushrooms, Courgettes, French beans , lettuces, salads oats and wheat	None	No – sold the farm
Farmer 5	120 acres	Orchard fruits (previous owner)	Orchard fruits	No	Yes	Cider and juice	N/a	Already doing
Farmer 6	100 acres	?	Cattle and Sheep mixed farm	Biodynamic	Yes	?	oats and wheat	Yes, particularly interested to trial black oats
Farmer 7	380 acres	Mixed- beef, dairy, sheep, pigs, eggs and ducks	Cattle and Sheep	Yes	Yes	organic veg between 2000 - 2006	mangolds, grain, greens, oats and Barley	If available labour and the markets for the produce
Farmer 8	160 acres	Veg + dairy	Beef	Yes	Yes	potatoes, caulis, swedes + purple sprouting broccoli,	?	would be willing to grow veg again if guaranteed price/market
Farmer 9	200 acres	Dairy and pigs	Beef, haylage production and horse breeding	Tried it, no longer organic	Yes	None	None	Possibly
Farmer 10	300 acres	Dairy, Beef, Sheep	beef, sheep	No	Yes	apples, barley	barley, root crops	?
Farmer 11	72 acres	dairy, beef, poultry, pigs, arable, horse breeding livery	Rare breed poultry, some horse breeding and livery, some Beef	No	Yes	Wheat, oats, barley	Mangolds, fodder beet and kale, wheat, oats, triticale, barley	No
Farmer 12	153 acres	Beef, dairy and lamb	Beef, dairy and lamb	No	Yes	None	Kale and Mangolds	Milk round but not further into Totnes than the Steiner School

Nine of the 11 participants that responded could recall that the farm that they managed, had grown food directly for human consumption, whether cereal or vegetables crops. Of these, 3/9 used to grow some cereals that possibly went for human consumption (however it should be noted that the farmers sold surplus grain to a grain merchant and so could not be certain that it's final destination was for human consumption) and 7/9 grew fruit or vegetables. Today only 2/9 are growing plant based crops for human consumption, one is recent to farming and is managing a commercial orchard for principally fruit juice and the other has sold the farm and has now scaled back to a small horticulture holding growing edible and medicinal herbs.

Eight of the 11 farmers that responded used to have a dairy herd, today only 2/12 farmers have a dairy herd. Today, all but the fruit farmer and small-scale horticulturist produce beef. This shift in agricultural land use reflects the current land use trend of increased livestock and dairy production in the South Devon area (DEFRA).

## CROP PRODUCTION



*barley (left) and oats (right)*

### **Crops grown for human consumption:**

The 9 participants who grew, or continue to grow crops for human consumption predominantly specialised in field-scale vegetable production, other crops produced include orchard and soft fruit, herbs and malting barley. The research identified a wide range of vegetables that have been successfully grown in the locality. These include: Potatoes, swedes, carrots, cauliflowers, leeks, savoy cabbages, spring greens, purple-spouting broccoli, beetroot, onions, squashes, parsnips, runner beans, broad beans, french beans, sweet corn, courgettes, butter-head lettuce, iceberg lettuce, tomatoes, cucumber, shiitake mushrooms, oyster mushrooms, basil and parsley. Fruits grown include apples, strawberries, raspberries and rhubarb. Significantly the only cereal that anyone ever mentioned growing specifically for human consumption was malting barley. Clearly other grains must have been grown historically in the area for bread production, but none of the participants could recall their families growing grain specifically for this market.

There was a general consensus amongst participants that local growing conditions such as climate and soil type are well-suited to crop production, but not ideal for wheat production that is of a suitable grade for human consumption. The majority of local land, apart from Dartmoor, is classified as being of agricultural grade 3-2, and therefore has a moderate to good agricultural productivity and is suitable for crops. Participants perceived low-lying valleys in the South Hams to be particularly fertile:

*“All sorts of crops can be grown here...Veg, oats and barley all grow well in this part of the country”.*

Potatoes, swedes and cauliflowers were the most popular vegetable crop choice, having been grown by 7 of the 9 participants. All 7 producers claimed that these 3 crops generally

grew successfully and produced a high annual yield. Salad crops such as tomatoes, lettuces and cucumbers were another popular crop choice that were perceived to grow well in the area. However participants identified problems associated with their short seasonality and identified infrastructure such as polytunnels as important to extend crop seasonality. Nevertheless the popularity of these crops indicates that they may be particularly well suited to the soil type, climate and growing conditions of the Totnes locality, indeed many of the carparks in Totnes used to be market gardens, supplying the town with the majority of its demand for fruit and vegetables.

Several participants indicated an interest and viability in selling oats to local human markets:

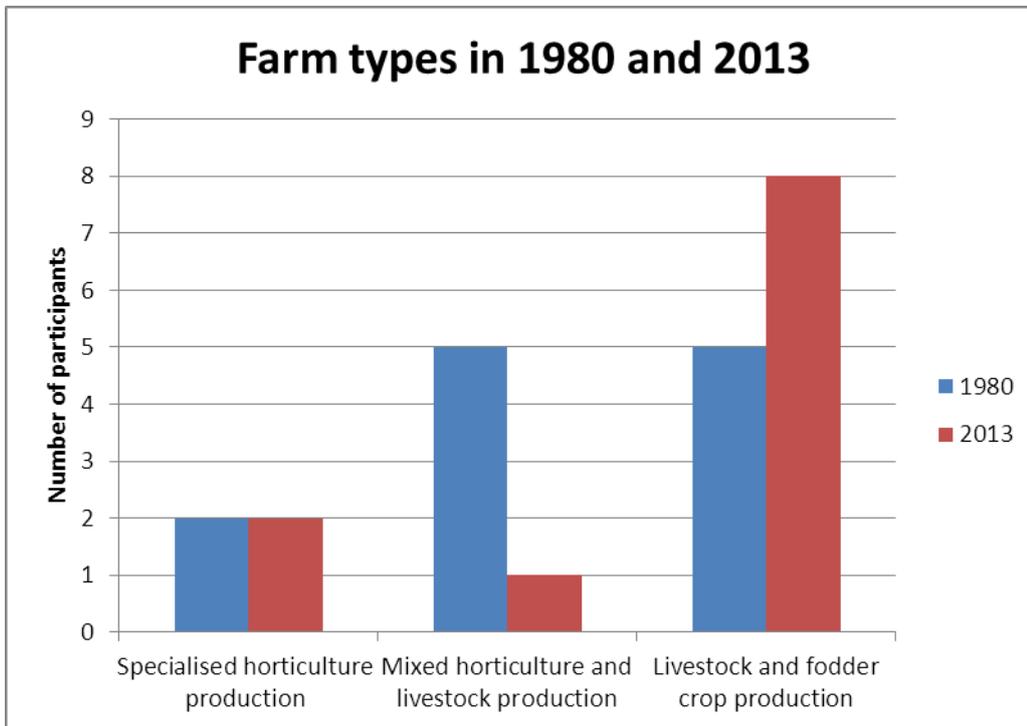
*“Oats are good for human consumption and I think locally produced oats would be a good, unique selling point, but we haven’t got the facilities in place, so somebody would need to roll it, process it and store it. But we would be very interested in doing that if the facilities were in place...it would be an ideal outlet for us.”*

### **Crops grown for livestock feed**

8 participants grew, and continue to grow crops for livestock fodder. The majority of fodder crops grown were cereals including oats, barley and wheat, vegetables such as swedes, kale and mangolds were also grown for fodder. The majority of participants identified oats as cereals particularly well suited to the area, due to the crop’s ability to withstand the damp local climate. Furthermore, 7 participants continue to produce oats today. Yet although oats are a popular crop choice, DEFRA farming data indicate that wheat and spring barley are the predominant cereal type in Devon, with more hectares grown than that of oats.

### **Changes in crop production**

Reasons for ceasing crop production were analysed in order to identify the key issues associated with crop production. This is important because, only then, can solutions to these problems be formed and implemented. Eight of 12 participants had produced horticultural produce; either in specialised systems or mixed-livestock systems growing fruit or vegetables or herbs for human consumption markets. Yet horticulture production has seen a significant decline over the past 15 years, with just 3 participants continuing to produce horticulture on a commercial scale today. These 3 participants include 2 specialist horticulturists and a mixed farmer who grows a greatly reduced acreage of leeks alongside livestock production. The remaining 5 participants have ceased commercial horticulture production entirely, with the majority shifting to livestock and fodder crop production. This is illustrated in the following graph:



The graph shows a recent reduction in local horticulture production and an increase in livestock and fodder crop production. It is important to note that only 11 participants continue to farm today, as one has changed profession entirely since 1980. Participants ceased crop production for largely the same reasons; decreased economic viability of horticulture production.

### Changes in Labour practices

The majority of participants perceive vegetable production to be more labour-intensive than livestock production. The associated issues are related to high personal labour inputs, rising labour costs, and the human capital and availability of quality casual labour pools. The demise in availability of full-time agricultural labour has led to a restructuring; shifting to a system where farmers are increasingly working in isolation.

*“If you want to grow veg and market them locally you have to be prepared to work very hard; I did 12 hour days, 7 days a week and no holidays, you have to have a passion for the job and there are very few people willing to do that.... We never had Sundays off, or any days off. You can do that for a few years but eventually you run out of steam.”*

*“I don’t know if I could physically do veg again because it’s really physical work and you have to be physically and mentally strong, particularly in the winter when its minus 2-3 degrees and you’ve got to be outside and pick leeks all day, that’s the beauty of sheep farming now, its less labour intensive.”*

All participants have decreased their farm labour force over the past 50 years: The majority of participants hired between 1-6 full time employees between 1950-1997. No full-time labour has been hired by any participant since 1998.

*“The biggest change is the labour issue. Today I’m running 160 acres on my own whereas Dad was running 160 acres with 6 staff... Good, reliable labour is hard to get hold of as there are less agricultural people around today... People now see that there is a different way of life so why should they be a farm labourer and work those hard, long hours?”*

Participants discussed potential solutions to improve casual labour supply and called for investments in local education and training programmes to improve labour quality.

## **OPPORTUNITIES, CONSTRAINTS AND POTENTIAL SOLUTIONS TO CROP PRODUCTION:**

### **Labour and machinery sharing practices**

Labour and machinery sharing practices were discussed including informal sharing agreements, and participation in formal co-operatives. Informal sharing practices generally referred to reciprocal labour or equipment exchange amongst farmers, whilst agricultural CO-OPS were a more formalised method of pooling and sharing labour, equipment and resources. The majority of participants had participated in informal sharing practices with family members or other neighbouring farms in the past.

*“In my father’s time they had a combine that they would share between a few farmers and there was also a silage maker and tractor that they would borrow and share, and I think that used to work well.”*

Although the majority of participants perceived informal sharing practices to have been successful in reducing labour and equipment costs in the past, many highlighted problems. These include conflicting time schedules, and incompatibility between different farm types.

*“Sharing is problematic because everybody wants to do their farm in the next dry spell and you want to do your own. Because the weather’s so wet everybody wants to do the same thing at the same time. So if you commit to helping someone else out, or lending out your equipment there are conflicting time schedules.”*

Numerous participants perceived the weather constraints to deter them from participating in sharing agreements. Participants also identified differentiation between farm types as another reason deterring them from sharing practices:

Four of the participants had been part of an agricultural CO-OP and perceived them to be a successful method in which to reduce labour, machinery and input costs.

*“We had a small CO-OP set up with an EU grant that we shared between 4 farms and it made things much more economic. It was very successful in terms of people helping each other with labour. We shared tools and tractors and we would all help each other- we had a very organised working event calendar that helped.”*

Some participants used co-operative buying practices to increase their economies of scale and buying power when purchasing farm inputs, thereby reducing individual farm costs. Two participants accessed grants via their co-operatives which provided them with business skills training, equipment, and storage and processing facilities; all of which contributed to the success and profitability of their businesses. One participant recalled a particularly successful co-operative model that he used to employ labour:

*“There were 3 of us farmers who shared the CO-OP, and we got together with a farm consultant who tried to make farmers work co-operatively together and between us we hired a guy and he would come to each of our farms a couple of days a week, organised by a rota, and we would pay his wage between us. And he had a good wage, a good job, and it was structured and we could trust him with the responsibility of looking after the farm, as he had farmed previously. Normally you can’t afford to employ people of that calibre full time.... It was a wonderful thing, we got a weekend off every 6 weeks and a week off each summer, it meant that we could have holidays. He was with us for a long time and it transformed our quality of*

*life...The model was very successful.”*

Interestingly, the participant claimed that third-party input was key to the success of the COOP, as it was a hired farm consultant who helped set up and organise the co-operative labour. This is perhaps particularly poignant as participants identified the independence of farmers as the key constraint to working co-operatively.

*“...and the problem is that some farmers are very independent people; we’re all anarchists really and if there are people not used to co-operating it can be problematic.”*

### **Economic issues**

Numerous participants cited issues related to poor earnings and decreased profit margins as key reasons for them to cease fruit and vegetable production. Participants implied that profits had decreased due to the disproportionately low commodity prices in comparison to rising prices of fuel, labour and agricultural inputs:

*“Back in 1977 we were selling cauliflowers at about 25p each, and today we sell them for about 30p each, so in that time they’ve only gone up by 5p. But in comparison the price of fuel, sprays and labour has gone up dramatically so we were getting less and less profit. We’re essentially having to run faster to stay in the same position.”*

In particular, participants blamed retailer control of supply chains, increased importation of cheap international goods, and farm specialisation as key reasons for low food prices and a subsequent decrease in profits.

*“Suppliers round here can get leeks cheaper from Holland than from us because they do it on such a huge scale; to be viable we need to sell leeks for £3.50 for 5 kilos, but the Dutch sell them for £2.20. They can sell leeks much cheaper so how can we compete?”*

Participants perceived that the greater economies of scale of specialised large-scale farms enabled them to reduce farm gate prices. This concept relates to the 'agricultural treadmill'; where producers are forced to increase production output, in order to maintain economies of scale and thus remain competitive. This model does not lend itself to the small-scale and often hilly nature of the typical Devon farm. The average farm size of the 10 farmers that provided this data was 165 acres. Dairy farmers appear to be the latest to fall victim to the 'agricultural treadmill' with only 2 dairies continuing out of an original 8 amongst participants. TB in cattle was frequently cited as a reason for this decline, coupled with low milk prices and the closure of the Dairy Crest site at Totnes.

### **Routes to market**

All 8 participants who grew, or continue to grow, crops for human consumption have supplied local markets between 1960-2013. All fruit and vegetables grown were sold through a variety of marketing outlets, these include direct producer-consumer outlets such as farmers markets, farm-gate sales and farm shops, as well as retail and distribution outlets including green grocers, village shops, hotels, restaurants and co-operative box schemes. The majority of participants supplied local retailers and distributors, who, in turn would sell direct to consumers. The majority of participants preferred this supply model to direct sales, as minimal time was spent on marketing, retailing and delivering activities.

Of the 9 participants who supplied local crop markets, only 2 continue to do so today. 5 participants entirely stopped commercial fruit and vegetable production. They identified this change as being associated with a reduction in local retail outlets, supermarket

competition and high distribution costs:

*“We didn’t want to stop selling locally but the market dwindled. We used to sell veg to local grocers but they all slowly closed. The small shops have been slowly shutting down and they used to be our main market. There used to be 4 shops in Dartmouth alone that we supplied and now there’s only one left.”*

### **Public Perception**

Participant perceptions regarding consumer demand and interest in local food were also analysed. Participant responses were mixed with some participants perceiving consumer interest and demand for local food to have declined due to supermarket competition.

*“Markets are about people, and about 90% of people shop at the supermarkets. Most customers have become addicted to cheap food which they can get at the supermarket one-stop-shop. People need educating about the value of local, sustainable food, because otherwise what is the point of increasing local food supply? You can take the most wonderful local produce to market but if people don’t want to come and buy it you’re wasting time and money.”*

Yet conversely, other participants perceived there to be a resurgence in consumer demand for local food and a recent increase in the number of local food outlets:

*“Over the past few years there have been a lot more local food shops opening, there are farmers markets everywhere, as well as local food initiatives being implemented from the Food-Link project. So I think local people have woken up to the benefits of local produce and the importance of adding value to the local economy. There has been a massive cultural shift where people care more about what they eat and buy more locally produced foods. People have better access to local food now.”*

This concept is supported by the CPRE research which estimates consumers living in and around Totnes spend £8-£10 million per annum on local food products and that of the 60 independent food shops in the district, two thirds supply locally produced food goods, indicating that there is a burgeoning local food demand in the area. However recent TTT research reported in the Economic Blueprint report, that despite Totnes having a thriving, independent high street, two thirds of all food and drink spend in the town goes to the town’s two supermarkets, £17 million to just one of these.

Recent research indicates that UK consumers prefer local foods over non-local and organic foods. Such perceived strong demand certainly increases the opportunity and potential to up-scale food supply in the area, yet negative participant perceptions regarding limited consumer demand cannot be ignored as others imply that demand is not adequate to warrant an up-scale of local food supply. Some participants called for consumer education as a potential solution to expand consumer demand for locally grown produce:

*“Education is where you’re energy really should be focused at: educating people about the real price of food, and how purchasing locally produced foods benefits the environment and local economies. That way, more consumers will get on board with eating local.”*

### **Distribution logistics**

Another key reason cited as affecting participants’ ability to sell crops locally is the high transport costs associated with local distribution.

*“It became uneconomical because of transport costs; By the time we gave up in 2011 the transport costs of distributing cauliflowers locally accounted for 50% of the*

*overall price we got for them! So it wasn't worth it."*

In particular, participants identified poor delivery co-ordination and poor logistical efficiencies as causing further increases in the costs of distribution, thereby lowering profit margins. In particular small vehicle load rates make it expensive and challenging for individual producers to distribute food economically.

*"It's not economic if you do a special drive to deliver a small amount of produce like a couple of crates of veg, but if its' already on the way then it can be a good way to get some extra income."*

A general lack of third party logistical providers in the area means many participants distribute produce themselves. These costs have deterred some participants from supplying to local markets, calling for the need to develop integrated logistical systems and networks. Indeed, when discussing ways in which to increase viability of local food supply, numerous participants identified the need for an independent distributing company to help reduce their time and fuel costs:

*"It takes time and money to haul produce around to lots of different people. So to sell locally we would need somebody else to take our produce off us... or perhaps an arrangement where we drop it at a central collection point and then somebody else distributes it from there."*

Research has found that using a third-party logistical provider dramatically improves the efficiency of local food supply and reduces driving distances by 50% in comparison to producers transporting their own goods. Other participants addressed high transportation costs by using co-operative transportation methods:

*"We had a CO-OP between 4 farms and between us we produced meat, vegetables and specialist mushrooms. And we sold to local hotels, restaurants, shops and we delivered to them, but we shared the delivery costs between the 4 of us and it made things much more economic."*

### **Supply chain infrastructure**

Processing activities were assessed but, because the majority of fruit and vegetable growers sold produce immediately after harvest, produce underwent little processing.

However, very few producers had storage facilities for storage of crops such as potatoes, apples and onions due to high costs, and increasingly strict hygiene regulations required of storage barns for storing crops destined for human consumption. Lack of local cereal processing and storage infrastructure, plus the increasingly stringent production and health regulations surrounding processing for human consumption all contribute to the reluctance of participants to engage in production for this market. Participants expressed the desire for large, communal storage facilities to help extend the seasonality of storage crops such as apples, potatoes, onions and grains.

*"If communal storage and processing facilities were put in place that would be great. And likewise, it would be great if a market was created where we could go to a website and sell our produce on there, that would be an ideal set up for us."*

Transition Town Totnes are currently trialling a similar web-based local food outlet, dubbed the "Food Hub", to which producers, processors and consumers can supply or purchase local food products. The vision is for this eventually to become a wholesale distribution hub for use by restauranteurs and retailers. Thus depending on its success, the local Food Hub could be a potential infra-structural solution to increase producer access to local food markets, and strengthen the links between producers and consumers.

## **CONCLUSIONS**

Findings show that a wide range of fruit, vegetables and cereals, as well as dairy production have previously all provided sufficient incomes for participants, however during the past 15 years the majority have discontinued both crop production for direct human consumption and dairy production, shifting instead to livestock and fodder crop production. Grain production, other than for animal fodder, does not appear to have been a significant income for any of the participants in living memory and this requires further research in order to establish where grain for bread was being grown and what types of bread was traditionally being made in the area.

Participants identified constraints associated with labour and economic issues as being key factors in decisions to cease fruit and vegetable production. In particular, high labour costs, workload intensity and low skilled labour were deemed problematic and key disincentives to vegetable production. Furthermore high energy and input costs and low commodity prices have lowered profit margins, causing many vegetable and dairy enterprises to be unprofitable and thus discontinued.

Potential solutions were discussed and co-operative working was highlighted as an effective method to address labour and economic issues. By facilitating organised labour and machinery sharing and by providing a means to increase collective economies of scale, farming co-operatively was perceived to address labour issues and reduce individual farm costs. Furthermore co-operatively employing labour between several farms was perceived to be an effective, affordable method to reduce farmer workload intensity, and reduce labour costs and help circumvent economic issues associated with small-scale production.

The key opportunities to crop production expansion include the high arable productivity of land, and a willingness of participants to grow crops for human consumption. Interestingly 9 out of 12 participants claimed that they would be willing to trial crops for local human consumption markets, as long as they receive a guaranteed price, or market for their commodity.

Though participants had largely mixed opinions about the feasibility of expanding local crop production and supply, the potential of the sector was identified, indicating that it could be a realistic possibility. Yet it is important to consider that small-scale crop production and supply face deep rooted challenges associated with enhanced farm specialisation and supermarket competition. The expansion of local crop production and supply will certainly be no mean feat, and will depend upon innovative solutions and farmer co-operation, effective marketing strategies and education dissemination and closer working with end markets; including restaurateurs retailers and members of the public, thus providing a wider set of supply chain actors to strengthen the links between producers and consumers.

Although based on a small sample, this study has provided a deeper insight into past crop production and supply practices in the Totnes locality and identified key opportunities and constraints towards an expansion of local crop production and supply.

## **SOLUTIONS:**

Alternative market models where greater community ownership and buy-in is secured at the outset may provide some solutions to the perceived lack of local market for local produce, this too will contribute to greater efficiencies of scale, giving growers working in co-operation, a competitive edge over individual businesses working in isolation. There are considerable pitfalls to pursuing markets for local food which this research has highlighted, however these pitfalls are associated with the current prevalent agricultural production and distribution systems and their associated ways of thinking and working. (see Appendix 2 – the case for Local Food)

The vision that Transition Town Totnes has for the future of food production is a shift away from the old 'business' orientated model to one that has community at the heart of it. The key principles to this vision of a localised food economy are:

- That food is sourced where possible and appropriate within 30 miles of Totnes.
- Enterprises and resources are owned by members of the community that have a personal investment in seeing them flourish beyond purely monetary gains.
- Producers are valued for their important role in producing food for the community and for their role in caring for the land on which survival depends and are paid in a manner that reflect this.
- That the various elements of the localised food system create an interdependent web, which in turn creates greater stability, resilience and ultimately sustainability than any single part working on it's own could.
- That all players in the web, both potential and realised, are informed of the wider vision beyond their part in it and encouraged through awareness raising, increasing skills, practical action and engagement to realise the importance of their role and the influence that they can have.
- That individual's and organisation's skills are recognised and sought locally to provide the expertise where it is needed and in this way no one person is required to produce, market and distribute goods, but instead feed their key skill in to the wider 'whole'.

This is not meant to be an exhaustive list but serves to compare some of the key differences between the vision and the current business-as-usual model and sets the scenes for the recommendations identified in this report.

## **RECOMMENDATIONS AND LINKS TO OTHER PROJECTS**

Further research needs to be undertaken to better understand the associated increased standards required for the growing of cereals for human consumption as well as understanding the associated different processing methods required by those crops that have been identified as being potentially suitable for growing in the area, these principally focus around barley and oats, mainly because these are crops that the participants were familiar with growing for animal fodder. Further research is also required to look in to those crops that have not traditionally been grown in the area but that would be suitable, these may include certain legumes such as fava beans, grains such as quinoa and other wheat varieties and to identify the viability of the associated processing requirements of these crops.

In order to see this work in the context of the wider local food economy it is important to mention the links with other Totnes food projects, it is outside the scope of this study to go in to the detail of these, but it goes without saying that the success of any of these projects, current and planned, are dependent on each other, it is also important to realise that not all of these projects are TTT led, but all create a valuable link in the web. TTT is working with all of these projects to encourage greater collaboration. Finally please note that many of these projects are at the early stages of their development, some are at the planning stages and are yet to be implemented.

- The Atmos project – conversion of the old 6 acre Dairycrest site in to a mixed use site to include food growing areas, food processing facilities and a food distribution hub
- The Food Hub – to provide an online platform for local food producers, initially to members of the public and eventually to provide access to wholesale local foods
- Food-Link – providing a linking role between producers and retailers and restaurateurs to encourage co-operative working

- Food in Community – sourcing grade outs and gleaned organic fruit and vegetables from fields to supply organisations working with vulnerable people with quality, fresh food
- 100% Totnes – provide a brand to enable customers to easily identify local food in shops, restaurants and amongst accommodation providers
- REconomy – supporting local entrepreneurs that are seeking to provide wider community benefit
- School Farm CSA – A no dig market garden based on the Dartington estate that provides shares in the harvest to 20 consumers and provides an educational resource for students studying horticulture
- Schumacher College – providing MSc courses in Horticulture and in Economics and Transition
- Bicton College – providing agricultural training in low fossil fuel farming on the Dartington estate
- A Community Farm – is currently being negotiated, which will work with local schools to educate about sustainable land management practices

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## Appendix 1

### Agricultural Patterns in the South West

The South West region most significant agriculture is red meat, dairy produce and certain vegetables. It produces more than 23% of England's cattle and Sheep, mainly in Cornwall, Devon and Somerset. Ninety percent of livestock slaughtered in the SW is sold to processors, wholesalers and supermarkets, around 10% is sold through independent retailers or direct to customers. The region provides 11.5% of English pork production and 13.5% of chicken production. The region provides 37% of England's milk supply from 5,500 dairy farms, sold through 3 large, national dairy processors. 70% of the cereals grown in the SW are destined for animal feed for the livestock industry in the region.

Sixty percent of agricultural land in the SW is used for livestock production. If the region was to become self-sufficient in animal feeds this would require a further 100,000 hectares of land to produce proteins of similar nutritional quality to soya.

The SW produces only 6% of the nation's vegetables, the main crops being brassicas and root crops, particularly cauliflowers, potatoes and swedes, also carrots, celeriac and parsnips. The extra sun hours of the SW allows crops to be harvested earlier than elsewhere in the country, providing competitive advantage to producers here.

The land is suitable for vegetable production but the farms tend to be too small to compete with large field-scale veg production and so has declined in favour of cattle, sheep and dairy production, as had fruit production. Devon farms used to supply local greengrocers but were unable to upscale to supply supermarkets due to the relatively small field and holding size.

The region is not renowned for producing wheat suitable for bread-making because the weather is too damp, and cool, but the volume of lower gluten wheats produced, suitable for biscuit making is on the increase. Crops grown widely for animal feeds in the region include rapeseed, beans, oats, wheat and spring and winter barley. Finding local millers and malsters prepared to keep SW produce separate has proven difficult for local processors.

Interestingly the SW has the highest concentration of organic producers and processor businesses in the UK, ie 26%.

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2 Taken From Who Feeds Bristol - Research report written by Joy Carey, A baseline study of the food system that serves Bristol and the Bristol city region March 2011

## Appendix 2

### The Case for Local Food

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#### Social

Social benefits of participating in Local Food Networks (LFNs) are largely associated with enhanced consumer knowledge and education, resulting in more healthy and sustainable eating behaviours. By facilitating direct selling relationships, LFNs provide opportunities for knowledge exchange between producers and consumers resulting in enhanced consumer knowledge about dietary health and food production. Numerous studies imply that enhanced consumer knowledge has led to their adoption of sustainable and healthy eating behaviours, improving dietary health and supporting sustainable consumption practices. Furthermore, direct producer-consumer relations are found to diminish consumer anxiety about the safety and origins of their food due to the high traceability of LFNs.

#### Economic

LFNs are also associated with economic benefits including enhanced producer profits and the local multiplier effect; by retaining money in local areas. Numerous studies imply that by supplying to LFNs, middle men are removed from supply chains and opportunities are provided for producers to add value to commodities. As a result, producers retain a greater proportion of profits, potentially enhancing their economic welfare.

Local food in the UK contribute approx 3.5% of the UK food and drink industry. In comparison it is estimated that supermarkets account for 81% of consumer expenditure. Despite the high academic and consumer interest in LFNs, they still account for a significantly small market share. Nevertheless, it is apparent that the local food sector is increasing, driven and supported by community approaches such as Transition Towns and the "Making local food work" campaign.

Totnes boasts a relatively diverse local food economy with findings in CPRE's From Field to Fork research implying that some £8 million is spent on local food products in Totnes, supplied by over 160 local food producers and approximately two thirds of local independent retailers supply locally sourced products, indicating that there is an adequate consumer demand for local food products.

#### Environmental

LFNs are recognised in policy to contribute to food resilience and security by providing alternative sources of food supply to mass globalised systems. By increasing domestic supply chains, UK food supply is more resilient to external shocks effecting globalised chains, such as political unrest and rising transportation costs. The concept of food miles has been contested with researchers, inferring that it is an inadequate method to calculate environmental impacts of food as it does not calculate emissions from production and manufacturing processes, however it is safe to assume that food grown locally, with minimum artificial inputs will have a lower environmental impact than those grown further afield and freighted long distances. There is however a case for slow freighted products from warmer countries being more environmentally benign than the local equivalent grown in heated greenhouses.

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3 Taken From Who Feeds Bristol - Research report written by Joy Carey, A baseline study of the food system that serves Bristol and the Bristol city region March 2011