

Interview with Participant G, 16th February 2018

Int: I've brought you a copy of [REDACTED] paper from a recent piece of work, I think you were probably involved in some of the interviews?

G: Probably! I get involved in most of these sort of things.

Int: Well, that's good.

[Signing of consent forms etc and introduction].

G: Do you want me to answer entirely from our own farm's point of view, or do you want me to include anecdotal evidence from people around and about.

Int: I'm really happy for you to include anecdotal evidence, so I might for example ask you something where you haven't experienced something personally, but you know someone it happened to, so explaining what happened to them, that would be really good. I'll start off with the quantitative questions. How many years have you been farming for?

G: Um, 67, which is how old I am.

Int: Since before you could walk?

G: Basically!

Int: Well you must have developed a huge amount of knowledge. And what size is the farm currently and how much of that is cropped?

G: We've personally here we've got 950 acres, of which just over 850 is cropped. It's all irrigatable. We also as a business hire in between 300 and 400 acres a year for annual cropping of irrigated crops.

Int: And what water sources do you use?

G: We are all groundwater here. This area is a mixture of groundwater and surface water. So we haven't got access, direct access to any water courses, or ones that are big enough anyway, and so we are all groundwater. Some of our neighbours who have access to the river, like our local river, the [REDACTED], they have surface water, either summer or winter water, and our river here is a supported river, or parts of it are. Not all of it is, but parts of it area.

Int: Does that mean parts of it are returned?

G: That means the river is augmented from groundwater when it is, if in summertime, river levels fall to a predetermined level, then the river is topped up with groundwater.

Int: Does that make the surface abstractors feel a bit more secure?

G: Yes. Basically it does because they pay for that privilege quite heavily. This area, the [REDACTED], the [REDACTED] and.... this pertains to anybody who is actually downstream of us too, this area is part of the [REDACTED] groundwater scheme, which was dreamt up in the 1970's to use the groundwater in this area for transfer to [REDACTED] through the river system to augment the public water supply in that area. And that, in inverted commas, still operates, in an odd way, and as part of that scheme the agricultural community who were at the time, and still are, abstracting from the rivers, you can't differentiate between public water supply water and agricultural water, and so, all the agricultural people had this increased abstraction charge to pay for this augmentation during dry times. And it does make their supply much more secure. I wouldn't say it's 100% secure because there's no such thing as that, but they don't get shut off during, at times when other people get shut off.

Int: And how do groundwater abstractors feel about that?

G: It doesn't make any difference to us.

Int: It doesn't affect groundwater levels?

G: Not particularly, no. Because the augmentation boreholes, which are operated by the EA, they have a license, the same as anyone who's using the groundwater has a license, and so their licenses, and agricultural licenses, and public water supply licenses, if they are out of the chalk, are all in an area, all on the same sort of level, roughly, and so it's all taken into account. The water is all accounted for. Now if they suddenly shut off the, or stopped using the groundwater support boreholes, then that would affect other growers. In effect it would make their supply, potentially, more resilient, because you've taken away one source of abstraction, so by definition it should make the others more resilient. Whether it would happen in practice, I don't know. Well, obviously, if that happened it would make the surface water supply people, much less resilient. They would have

to very rapidly change the way they did things, because in a dry time they would soon find themselves cut off. The groundwater support scheme is, at the moment it's operating as it always has done, roughly. It's up for renewal in, where are we, 8 years time I think in 2026 it's up for renewal. And if somebody asked me I think it will be taken away then.

Int: Right, what makes you think that?

G: Well, the agency have told me. Because basically the direction of travel is to have as little taken out from the groundwater as possible.

Int: Because?

G: Well, there's been a complete 360 degree turn on this because at one time groundwater was thought to be more sustainable and all this sort of thing, and now the feeling is that if you take groundwater out it affects the surface water, which it does, and therefore you should discourage groundwater. Particularly it's going to affect public water supply, because although they don't have many licenses, their licenses tend to be huge, and are big compared to, well, to the area they're in. That's not quite the right analogy, but it's nearly right. Their licenses are very large, they dwarf all the combination of agricultural extractions in an area by a long way. If you happen to have one nearby, not everyone has got one. There's one about 5 or 6 miles away, quite a large one. There's another one over here. But they are relatively in number small, in quantity, very large. The agency in their wisdom, don't like them, and would like them to all disappear. This will take decades effectively because you are taking away sources of drinking supply and that's not allowed legislatively, effectively, so that the agency have got to, and the government for that matter, have got to allow the water supply industry to have alternative supplies. Effectively, they've got to replace groundwater with surface water storage. Effectively, coming from somewhere. And/or transfers. But when the public water supply ones go, that water will not (in inverted commas) 'be given to agriculture', that water will be lost, or given to the environment, or whatever words you want to say, because the direction of travel is to make groundwater abstraction as small as possible.

Int: And do you feel then that your abstraction here, since it's dependent on groundwater, is threatened in the future?

G: Well, all the groundwater abstractors in this area have in the last twelve months been subject to a review of their abstractions, erm, and the system has been that individual abstractors have been given new licenses that are based on their maximum abstraction for the last 18 years, since the year 2000. So whatever you've abstracted on a license, to the maximum amount, that is what your new license will be.

Int: So basically you can't have a drier year than you have had in the last 18 years?

G: Correct. And so, anybody who's extracted 100% of their license, they've got 100% in the new one, and if you've got less than that, you've got less.

Int: And I take it you are not that happy about that?

G: Well. There are relative problems with this. The last years since 2000 have been on average, they have been relatively wet years when you compare them to a run of years in the 90's or a run of years in the 70's, they've been wet. And [REDACTED] work for irrigation demand in potatoes will tell you that, so almost by definition, if you base your abstraction on a run of wet years, when you come to a dry year, you won't have enough water.

Int: So was it possible to object to the decision-making in this regard?

G: Well I don't know anybody who did object to be honest. One gets the impression, rightly or wrongly, that you would have to have a very strong case to object to it.

Int: Why do you think that people didn't try to object to it. Are farmers now worried about running out of water in a dry year?

G: In a way, the people who went from 100%-100% by definition will run out of water in a dry year, because they've still got what they've got, and they would have to change management if they came to a dry year. When irrigation demand was much higher. The additional problem to that is, because the water is not guaranteed. If you have a run of dry winters, so the supply is not there in the aquifer, you could also get turned off. So you have a problem in two ways. a) you have a dry time, as in, increased demand for irrigation because the weather's hot, or the water's not there so you get stopped that way. So you have two things you have to look out for. The irrigation demand you can do something about (in inverted commas), you have to manage the water you've got, you won't irrigate so and so, or if you had enough warning of it you'd not plant something or whatever. If the groundwater wasn't at a sufficient level and the agency wanted you to stop, then hopefully you'd have some notice of that so you could make some changes. The changes you would make are the same in both cases, if you've got enough warning of it. Effectively with weather you don't get enough warning of it, it just happens. The agency have been quite good in warning people, much better in warning, communications in the latter years, "look out guys, you know, we've got a problem here, be aware, monitor the situation, listen to what we are telling you, be prepared to make changes", we get back to where we were in Spring 2012.

Int: So your licenses are all time-limited licenses? And when are they up for renewal?

G: Actually we are getting new licenses now. We should get new licenses by March of this year.

Int: And how long do you have again before they would be renewed after that do you know?

G: I think it's 2026, but I could be wrong. It's all to do with the end of the [REDACTED] cycle. I think it's 2026.

Int: And are you satisfied with how the EA determines how much water is required for the environment?

G: In effect you have to trust them. Absolutely no way that individuals could challenge them without immensely deep pockets, and even challenging them as a collective is fraught with difficulties, extremely costly, erm, with no guarantee of success whatsoever, and so it tends not to happen.

Int: And so you'd have to go down a legal route you think? There's not the kind of relationship to just...

G: To properly challenge them, yes. There are two ways you have dialogue with the agency. One is the ongoing meetings that we have, we being NFU in this case and CLA, with the agency at various levels to discuss their policies, up and coming legislation, what this legislation might mean, how they are interpreting it. All these sorts of things in discussion is coming up to them implementing, for example, new legislation. WFD is absolutely typical, which is what we've been going through for our new licenses. Our new licenses are all to do with the WFD. And so we've had discussions with them over these last 3 or 4 years, to do with the WFD and renewing licenses, and we were able to reach a compromise so to speak with them as regards the, well, effectively, they came up with a proposal, which we agreed to, that they would use the best year in the last, since year 2000. As the basis. Because at one time it was much more Draconian than that. It was much more narrow than that and would have led to bigger cuts, people getting bigger cuts. Effectively. Now, this all this work has been based on the WFD, and the no deterioration of part of the WFD. Now that is completely open to interpretation, and this is supposed to be a Europe wide bit of legislation. Whether everybody is remotely implementing it the same I don't know. If you talk to them in Spain they say, "WFD, what's that?". Effectively. So, you know. Challenging them on WFD, if you issued a challenge to them you'd object to a license effectively, appeal to a license, that's what you'd have to do. Or that would be one way of doing it. You could take them to a review or any other legal thing, but an appeal against the license would be the normal way of doing it. And then it would all come out in the appeal as to, then you could put all your case about, "we've talked to them but they haven't done it right", and they should do it like this and etc etc. If you were really strongly of the opinion, and I mean really strongly, that they had done something wrong, and you hadn't been able to fix it in these other discussions that I talked about. But you hope to be able to, through those general discussions with the agency to sort all these things out, because nobody wants to go to legislation, it's just a waste of time and effort on everybody's part.

Int: And do you think they make information readily enough available to farmers so farmers can understand why they are making the decisions they are making?

G: They are much much much better than they were. And I think they do as much as they can to help us. Because obviously they have two or three sides to this. They've got the farmers on one side. They've got the Government on the other. They've got all the environmental NGOs on the other. So if they environmental NGOs think that they haven't been doing things right then they get on their backs. They have to reach a reasonable compromise.

Int: And why do you think their approach has improved over time?

G: Well, basically it all came about because way back in the 1990's their approach was so bad and they came under so much stick from farmers and because farmers talked to their MPs and because MPs were getting onto them, they had to, that's the short answer.

Int: So what they were imposing was causing farmers economic losses... or?

G: It was more the way they go about it, you'd get a letter saying you had to stop irrigating tomorrow and that's the first you'd heard about it. And so it is much better, you have huge lead ups and we are talking... there was a meeting yesterday in London about winter droughts that's happening at the moment in the southeast of England, reservoirs are less than 50% full and that sort of thing, so they were already talking about it, priming people, getting people to think about it. Which never happened before, never happened before. It was just like getting blood out of a stone in the past.

Int: So going back the farm here, do you think that the proportion of your business income from irrigated cropping is increasing over time, or decreasing, or staying the same?

G: As a business, including all our rented land, it's increasing all the time.

Int: Because it's more profitable? Or what would be the reason driving that?

G: Erm, basically, agriculture is no different to any other business. You have to get bigger and more efficient to succeed. And that's seemingly what's driving everything, and so effectively, if you have to, either you have to go out and buy land, or you have to go out and hire land. And on the other side of it, you get people who are, er, typical case is you have an elderly farmer who's got nobody to take over. They for whatever reason don't want to sell the farm, but they've got nobody providing energy to take over the farm. And so, what do they do? They hire out, they contract out their land,

and you get a chance to either do the whole farming contract, or you split it and one lot of people will do the irrigated cropping and another lot of people will do the non-irrigated cropping. And, if you go to... there are very very few dairy farms in [REDACTED]. I can more or less guarantee you that every dairy farm has got somebody on it who's under 30, and if they haven't then basically, the ones who have got youngsters coming up will keep going. The ones who haven't, go. Effectively.

Int: So an ongoing change in farming is that farms, or areas that are being farmed by single businesses are getting larger, there's more contracting and presumably fewer people involved?

G: Yes, fewer people involved, we are getting more efficient. Er, rule and regulation is another thing that's driving it. You know the more and more rules and regulations you put on, people think, "I'm sorry, I can't be putting up with this". But that's to do with getting old as well as everything else. Um, but there's nothing drives people more nuts than rules and regulations.

Int: Well, I guess it's difficult to be taking on more and more information and be having to jump through more and more hoops?

G: You have to be big enough to cope with all that legislation and be able to deal with it and process and put it in place. And more elderly farmers don't want to deal with it. You can't blame them is the short answer.

Int: And what are the implications for agricultural water use?

G: To be honest, not a lot. That's to do with farm size, and enterprise size as opposed to farm size. So you have farmers such as ourselves who are hiring land from their neighbours. And then you have the big farming companies who are doing the same, not necessarily in the area, they are coming from anywhere. They are hiring land. And then you have also you have the processing companies who are also doing the same, they are running their own growing operations, and so, that's basically everything's getting bigger, everything's getting bigger. You know. And everybody bemoans the lack of the family farm. But sorry, hey ho, that's the way life is I'm afraid.

Int: And how do you feel about it?

G: Well, that's the way it is. That's the way it is. You go with the flow. You can't go against it. There's absolutely no way you can go against it.

Int: So do you think farms are becoming more reliant on large machinery and precision technology in order to manage larger areas of land, because for example if you are farming something much much

bigger I assume you either have to employ a lot more people who have the skill and knowledge to visit each field and understand what's going on in it, or you have to rely more on computerised systems and probes and sensors to some extent.

G: There's no doubt about it, computerised systems and remote technology have a part to play, and I guess will have an increasing part to play. They are quite good, or potentially quite good at some things. Some people think... in my opinion... they are much better at doing things than in fact they are.

Int: The computer systems?

G: Yeah.

Int: So what do you think they are not so good at?

G: I'll give you an example. When we first got yield monitors on combines, many many years ago, everybody thought that oh, okay we've got this bit over here, that's giving me 3 tonnes an acre, and that bit over there's only giving me 2.5 tonnes an acre, so what I'm going to do is put more nitrogen on that bit over there and low and behold that bit'll be 3 tonne and that bit'll be 3 tonne. Didn't happen. Didn't happen. Because they made the wrong assumption. There's nothing wrong with yield. But why is that yield different to that one. Sometimes what you can do drives the answer, instead of finding the answer and getting the answer and doing something about it. And it's like variable rate technology, oh you can put on variable fertiliser and variable this and variable that. Just because you can do it doesn't make it correct.

Int: Well yes. It seems like you have strong opinions about it!

G: People find the answer and then find a reason that that is the answer, instead of the other way round. Instead of that's a wet hole and that's why it's... Or it's got a sand base instead of a chalk base. Or the drain's blocked up or something. "We'll just give it more nitrogen because it's easy".

Int: So there's a limit to how much you can find the answer within technology? Or people have just go to assess things more carefully?

G: People have got to assess things more carefully. Essentially. They've got to assess them much more carefully. And there's nothing wrong with finding out that you've got a yield that's better here than it is here. But that's only the start of it.

Int: I guess it's a complicated world that we live in, it's not just two things in and two things out.

G: Of all the things in the world we know least about the soils that we farm. And that about says it all.

Int: And what is the destination for your produce? Are you selling to retailers or packers or...

G: It depends on what crop it is. All our potatoes go to processors. All our irrigated carrots and parsnips go to processors, on fixed price contracts.

Int: So they are not to be sold fresh, they are all for processing?

G: They don't end up in supermarkets as... they end up in supermarkets, but they are processed. I'll get there.

Int: Okay.

G: All the onions that we grow are part of basically a co-op and they will end up in supermarkets. Why does this matter? More and more produce is getting grown on either fixed price contracts, which are basically cost-plus models. So somebody... the industry gets together... or the processors and the growers... the groups of growers, and they say how much does it cost you to grow this crop of potatoes, there is so much money, so much profit. We think you are going to get 20 tonnes an acre, therefore the price is so and so. Nothing wrong with that, at all. So you've got that for... all our potatoes get grown on that, so it's Walker's, McCain's, any potato product basically, crisps, chips, all those sort of things are grown on essentially fixed price contracts and fixed tonnages too. Erm, and the same for carrots and parsnips. It takes the risk out of what you do. The downside is that if you have a year... the price can't go up and down, effectively. So you are on a fixed price. The onions, and to a greater extent now, lots of fruit and veg, or particularly veg that are grown for supermarkets, they are more and more grown on that sort of contract price package. Because basically everybody thinks that the open market situation is too risky. So either you make a hatful of money, or you lose a hatful of money, in inverted commas. Or potentially you do. So people are going away from that and more and more to these fixed price contracts.

Int: So people's appetite for risks is less than it was in the past, or there's just more opportunity to have fixed price contracts than there was in the past?

G: I guess it's a bit of both.

Int: And so you don't grow anything expressly for the open market?

G: All our stuff has a home before we put a seed in the ground. Definitely.

Int: We've covered quite a lot of my questions just through chatting, but I'm just going to carry on working through them and I hope I won't be repeating anything. So the first thing was to think about the water related risks that you face. Obviously we talked a bit about water scarcity, but are there any other water risks that you worry about and how do those compare to the general risks that your business faces, how important are they?

G: Well, obviously the water risk is just one risk that you face in a whole raft of risks, some of which are higher than others. Where would I put it in terms of risk. I guess it's probably one of the higher risks that growers face. Personally we don't get involved in salad type crops and I wouldn't presume to speak for the people who do, whether it's salads or herbs or whatever, they are just in a whole different ball game as regards possible contamination and all those sort of things. I know my neighbour who grows herbs and things for fresh stuff, I wouldn't want to pay his water quality bills, let's put it like that. Because they run into tens and tens of thousands of pounds every year, just to test water. Water runoff is not a huge problem to us, being on very very light land, so water tends to infiltrate quite well on this land. One problem that we have is that where we do get water runoff it tends to be where we've got pigs on the farm, because pigs are wonderful things to a certain extent but they have a problem, they basically create runoff or allow runoff to take place. It basically happens because, particularly with our system of pigs. And they are not our pigs, we rent the land out to everybody, but effectively it's us. We have fattening pigs and so we've got probably 5 or 10 thousand on the farm at any one time. And all those feet on the ground basically pad the whole thing down, you get a heavy rain and it just runs off. Even with basically a flat field, it will runoff. So on the one hand they are wonderful, people like the thought of pigs being outside, they are good for cleaning up weeds, they are good for manure and all those sort of things, but the downside is that you have this problem with runoff. It's not a huge problem but it's something you've got to be aware of, and when it happens there's extremely little you can do about it.

Int: But that compared with possible water scarcity is a minor concern?

G: Yes, it's not a major concern to us, because basically we can do something about it, we just tell the pigs to go away.

Int: So have you ever experienced any major issues with water scarcity in the past?

G: We have. Way back in the nineties, which is when I got involved in water politics in its widest extent, we had a lot of problems, local problems with environmental sites locally. And basically because it was so dry and the agency threatened to shut us off, not give us licenses, and because it was dry they did curtail us, god it was so long ago I can't remember. We have been curtailed once or twice, albeit not for very long. And certainly not as much as surface water people have. Perhaps not quite so much now, but in the past the agency were reluctant to stop groundwater people because the legislation under which they could do it said they had to prove a connection between that stopping of the groundwater and surface water, and basically they were reluctant to put that to the test. And so they tended not to do it. Except in extreme circumstances. My thoughts are that if the nineties came back again, they would be much more active in shutting people down.

Int: So in the past when they have slightly curtailed your water use, how did you cope in the short term and did you change anything about your water use in the longer term?

G: Well, if I can answer that generally in terms of, going back to 2012, because in the first three months of 2012 we were faced with very low groundwater levels. People in the area had reservoirs they hadn't put a drop of water in during the winter time, so they had empty reservoirs, effectively. And things were looking bad, so there was a variety of responses. The agency said to us, well, you know, we can foresee a problem. Can we ask you to reduce your, um what did they ask us now, I can't remember exactly, but basically they said can you reduce by 10%, take 10% off your licenses. Personally, we've got big licenses, or at that time we had big licenses, so that didn't affect us. Now if you had use for 100% of your license, then 10-20% is quite a big chunk. Then those people were saying, because we are talking now, pre-planting anything, so they had this lead up... now what are we going to do about this. We are faced with 10-20% reduction in our licenses, if we get anything like a normal summer, let alone a hot summer, we are going to have problems. And if you're a relatively small irrigator and you rent your land out, then you have a, not a guarantee, but you would need to discuss with the people who rent your land and say, look guys, we've got a potential 20% cut coming up, what are we going to do about it? Are you prepared to put in... do you want to still put in all of the area that you booked, knowing that 20% of it might not get water, or we'll only irrigate it to 80% of its capacity. What do you want to do? So effectively, what people did is either they took a punt, said, "oh, it'll be fine". Fine. But many people said, "well, we'll only put in 75-80% of what we would normally put in. If you had a reservoir and your reservoir was basically empty, what are you going to do? You know, taking a punt's a big risk, putting all of it in and hoping it rains. No that's not going to happen. So there were people who I guess put in nothing, up to people who put in 100% on a punt, and it's just what people are prepared to do given their farm circumstances and their attitude to risk.

Int: And so do you see people seeking to put in more reservoirs as a way to increase their capacity to withstand bad years.

G: I'll answer that from a personal point of view, for a start, and then I'll get on to wider. Because groundwater has been relatively untroubled up til now, people with groundwater supplies have felt relatively well off, and they are, er, I don't know anybody who's got a groundwater supply who is

putting in a reservoir. And that, we, every year, practically every week, we are thinking about our personal situation, and whether we should put in a reservoir. Because basically there's two things. A) it's whether the weather is going to be hot enough, will you have enough water. Or now, more importantly, will the agency, because the groundwater levels are low, shut you off. Now that second scenario is becoming much more important. Basically because seemingly this last 15 years, although the summers have been relatively wet, we've had now two instances, this being the second one, and the winter's of 11-12 being the other ones, where relatively low winter water means groundwater is not getting filled up, that this is literally the second situation in a decade where we have the potential that we will get shut off, or partially shut off, or some sort of curtailment because of low water levels. And that scenario is not one that people have faced before really. The older ones of us can go back to 1976 and 1995 and 1996 when it was blisteringly hot and everybody, you know you couldn't get around fast enough, you didn't have enough water, weather, we haven't had that. We just literally have not had that. And, so personally we are really concentrating on that second scenario, will the agency shut us off and what will we do about it. And the thought process that people go through, you know, do we need it. And depending on who you are and your own circumstances this could take days, it could take weeks, or in our case it takes years! Because we are trying to assess the risk, assess the cost of mitigating that risk, and assess the reward for spending all that money.

Int: Yes, because I guess it's the kind of thing where you might not need to use it for... it's only one bad year out of many.

G: Effectively it's a really expensive insurance policy. And so as an individual you have to assess whether the market will effectively will pay you for that. And I think if you talked to the buyers, the processors, the McCain's of this world and the Walkers of this world. Push comes to shove, they will tell you that that is not in their calculation.

Int: Okay, so you are saying it's for the farmers to pay for that insurance policy and not for anyone else within the supply chain?

G: The farmers will pay for it if they feel that they will get rewarded for that. And/or, there is not a comeback to them for not producing, if you see what I mean. Because the contracts that we have with our customers for potatoes are, if push came to shove they are legally enforceable. But nobody wants to do that, because it's not good for general relations or whatever, and so there's always a bit of give and take about areas and tonnages and stuff, and we didn't quite make it this year, we'll put a bit more in next year, that sort of idea. The thing about drought is, they don't just happen on one farm. They are ubiquitous aren't they? And in a way it's the same thing has happened in 2012, for exactly the opposite reason. It wasn't too little water it was too much water, and so we had a potato shortage because there was too much water, and since 2000 all the potato shortages have been caused by too much water and not too little water. Which is what some people don't realise, but effectively that's what's happened. And potato processors find themselves in a huge muddle then, because in 2012 it cost them millions of pounds, and I'm talking... tens of millions of pounds to go

and buy very expensive potatoes from the continent, because they knew we couldn't supply them, they just weren't in the country.

Int: But they didn't enforce any part of your contract that said that you had to pay for this?

G: No.

Int: But could they have done that? Was it within the contract to say you must cover that additional cost?

G: That's a very very interesting point. I am not aware of any buyers who enforced that. They will only normally enforce that sort of thing if they find that people are selling their spuds out the back door to somebody else for more money. So if they are not playing the game, then, which is absolutely fair, then they get a bit narked about it. But I'm sure it happens occasionally, that they will enforce contracts, but it's not normal. It's not normal. And in 2012, yes, okay farmers lost money because the land was so wet and whatever they just couldn't... yields were so bad, they lost money. But the processors also lost a huge amount of money. And the processors realised that... what's the point, the farmers had already lost money, what's the point in giving him extra costs, all you'll do is drive them out of business. There's no point in that.

Int: So they took a longer term viewpoint?

G: Yeah, absolutely they do. And to give them their due that's the way they operate, and I think that's a very reasonable way of doing it. And most farmers know that.

Int: I guess in a situation where everything is bad for everyone, you don't want to alienate all of your suppliers in the one year? But I suppose in a situation where you have a producer who's consistently not supplying on that contract when other producers are, then...

G: If they consistently don't do it, they are out the door.

Int: And do you know people that that has happened to?

G: Not personally, but it is and you cannot as any business if you've got a hierarchy of suppliers you are not going to go to the bloke down the bottom are you? You're going to go to the bloke up the top. No matter what. Because you are not going to go to Sainsbury's if you can get it cheaper in Tesco are you? It's the same argument

Int: What we were saying earlier was that the EA has assessed water use for the last 18 years and said that the most amount of water that was used, that's going to be your license size. It sounds to me that that disincentivizes for farmers to use less water? I mean that seems to go against efforts to promote irrigation efficiency I suppose?

G: [Sighs] That's not an argument that has been used very often, but I think your point has relevance, is the answer. Erm, but effectively the amount of water that you require for crop irrigation is fixed by the weather, and if your equipment, whatever your equipment is, is relatively good, then no matter what sort of system you have you'll put on that amount of water. Don't believe the hype. Just because you've got trickle does not mean to say you can get away with half the amount of water. It doesn't.

Int: Right. Because... I mean trickle is supposed to be more efficient?

G: Who says?

Int: Because there is supposed to be less evaporation from surface of the plant and from soil that's not right next to the roots, but it's not my area of specialist knowledge.

G: As I say, don't believe the hype. Because the amount of water you use in any system is down to management and not the system. And you can 'waste' as much water as you want with any system you use. And it is 99.9% down to management of the system.

Int: Okay, so what do you understand specifically by the term irrigation efficiency, what's your definition of it?

G: Hahahah. I could give you half a dozen. I could give you half a dozen definitions of irrigation efficiency. Um. Loosely it is getting the maximum amount of crop, however you define that, for the optimum level of irrigation water input.

Int: So is that something you aim for here?

G: Yes, everybody does. Because if you don't then you go out of business.

Int: So you are aiming to increase the productivity of the water that you apply, not to decrease the amount of water overall that you use?

G: We aim to put on water with the greatest efficiency that we can, and thereby get the maximum output that we can. So, because the output is determined not solely by the water, the output is dependent on the soil and the rain and when it comes and how much comes, the sunlight, how long the crop is. All those things determine your output, not just the water. How much fertiliser you put on and... water is only just one part, an important part, but only one part of growing one crop.

Int: So are you looking to introduce new technologies or new management approaches that will increase your irrigation efficiency. Is that something that you do on a regular basis?

G: We, yes, we are always looking at ways to make our business more efficient, in whatever way that is, because talking of efficiency, you know, I can grow variety A of potatoes, and I switch to variety B, I change nothing else and get 10% more yield. Have I made myself more efficient? Is my water more efficient? Of course it is? Is it because I've done any water, no. It's because I changed variety.

Int: Although that could be seen as a management approach that has implications for water.

G: Of course, but effectively, if I want to grow 1000 tonnes and I can get 10% more out of an acre, then I can grow 10% less acres or however many it is and so save water, can't I? Effectively.

Int: And what do you think looking back at your experience of growing vegetables, is there anything that has particularly increased your irrigation efficiency, or any changes to management that you've done. Is there one thing that stands out in particular?

G: We've made better use of irrigation scheduling, and particularly in potato crops and now we basically run, effectively, two systems side by side for scheduling.

Int: So do you use a computerised calculation?

G: Yes, we use a Penman computer calculation on the one hand and we use probes on the other hand. And, ooh, we've got 3, because we have spade, we've got the spade. The spade is the best tool that anybody ever invented for irrigation. They are not used enough. So you use all the aides that you've got. And this is, to a certain extent, why you can't rely on, at the moment, lots of drones and artificial intelligence and stuff, because they don't tell you enough about what goes on in the field. They may do in future, but they don't do that now. So everything has to be more hands on at the moment to enable you to get to the right answer. But even then you can get down to

management. Because if you decide as a manager that I'm going to start irrigating come what may when my soil deficit is 3/4 inch (18mm), that is a completely different management approach to saying well I'll start off at 15 mm and I'll gradually work it up and I'll make the end of season it may be at 30 mm or something, because if you keep it at 18mm and you get rain, you are much more likely to over water. And so that's a management approach rather than a technology approach, and last year, er 2017, I think I'm right, there was a farmer not far from here who put in 10 inches of irrigation water, but their scheduling told them over the course of the summer as a whole, they needed no water. And that doesn't make sense. It doesn't make sense does it? But if you get 2 inches of water in one thunderstorm, effectively all that goes through, so that's added to one side, but it hasn't done anything to your plant thing, because it's come at the wrong time.

Int: Sounds like there was something wrong with their system

G: No no it's... there's nothing wrong with the system. It's to do with the fact that you can't... weather forecasts are imprecise and you can't forecast efficiently enough where the rains going to fall and how much you are going to get. So for instance, if I'm in the middle of summer and it comes to Sunday and I think ooh, perhaps on Wednesday we need to start irrigating that field, alright, my scheduling service tells me that on Wednesday you need to start irrigating it. But I look at the forecast and say, ooh, it's going to take me three days to go over that field. Ooh, Friday's going to rain. So what do I do? How much rain are we going to get? Don't know really. So I start irrigating on Wednesday and we get an inch of rain on Friday. Effectively I've wasted all that water that I put on before that, because effectively it's over-irrigated, so what am I to do? So the next time, I don't irrigate on Wednesday and it's meant to rain on Friday, but oh dear, it didn't rain at all. So now I'm two days behind and it's 30 degrees.

Int: But how do you make those decisions? Without forecasts being more accurate?

G: That's the problem in a nutshell. If you could have better forecasting. Much better forecasting, then you would be more certain in either irrigating or delaying, but that's not going to happen for a few years. And so you can very easily get yourself into that situation I was explaining, you start irrigating a bit more, then you get that inch of rain, and all of a sudden, anything you've done, you've wasted, effectively. And it goes down as, yeah, you can put it down as waste because it just goes down into the groundwater.

Int: We just have to grow everything in polytunnels, and then catch the water and apply it...

G: oof, okay fine!

Int: I don't know, what do you think? Apart from getting more accurate weather forecasts?

G: You'll never get it right. In our climate you'll never get it right. That's why it is much easier to irrigate when it doesn't rain at all. Because you are much more certain.

Int: So thinking about your business, who do you see as your main competitors? Are they other growers in this area, or other growers in the UK, or other growers overseas?

G: It's a little bit of both is the short answer. It's very expensive to bring stuff in from abroad. That's not to say it doesn't happen. Because there's lots and lots of frozen chips coming over from the continent. Loads. Far more than there ought to be. So that gives us a 'buffer'. But that shouldn't make us complacent. Yes, my fellow growers are competitors of ours. They are also in my 'co-op', but there is always a degree of competitiveness. Because if you are no good you'll get dropped.

Int: So do you think consumers care about how water has been used to produce their food? Do you think they have an interest in it? Because if they were to buy potatoes that have been grown in Egypt, obviously the implications of that water use is greater environmental impacts than potatoes produced in the UK. Do you think that consumers as a whole are worried about that, or not really interested?

G: I don't think they understand it, is the short answer. I assume (and I have no knowledge of this), that they think that wherever their produce comes from, that rules and regulation, and environmental control is about equal, otherwise they wouldn't be on the shelf.

Int: So do you think consumers need to be better informed in order to make a decision about what they buy, or is it up to the retailers to make a judgement about what they'll stock, or setting the prices differently? Or do you think it's just up to Governments to be implementing those environmental standards in each country, and we should leave it up to them? I'm just wondering if you have any opinion on where the responsibility should lie?

G: The responsibility lies with all those people effectively. Doesn't it? And there is no one short answer to it. You cannot continue to export all your environmental problems. Which is one way of looking at the fact that you're more and more growing produce, whether it's fruit, veg or whatever it is, in more southern countries, which are potentially more drought-stressed. Um, you can't keep doing that over the long run because.... But on the other hand, that consumers have got extremely used to buying what they buy whenever they want it, there's never a shortage, and so effectively they think everything's fine. That's really one of the potential big problems, is that because there is never a supply interruption, everybody thinks everything is fine. And last year, you know 12 months ago just before Christmas they had horrendous rains in the southern part of Spain, it washed all the salad crops and everything out, and the only reason that people were interested was because there wasn't any bagged salad on the shelves. And they were only interested in the fact that there wasn't,

not the fact that some farmer in Spain had gone broke, or a haulier hadn't got a job. They wasn't, you know, whatever it is they wanted wasn't on the shelf, or it cost them too much.

Int: I guess they don't think about the whole supply chain?

G: No, they don't.

Int: I mean maybe supermarkets are almost set up in that way. Everything is there, you can just go in...

G: Absolutely, that's their reason for being isn't it? Everything is there all the time, whenever you want it, in whatever quantities you want it, guaranteed. And until that situation changes they have got no incentive whatsoever to think about anything else.

Int: So it sounds as though you think aspects of the current food system are not very sustainable looking to the future, or that there's risks in the size of the water footprint of the UK. Do you have any ideas about how we could increase the resilience of the system in future?

G: Well, part of the reason that we are exporting water is the fact that people want stuff out of season, they want stuff that we can't grow in this country, all those sort of things, you know... salads in the winter time. And we just cannot supply them. So you could say well, stop eating salads and eat more carrots and parsnips, and automatically that brings back production into this country, and if you have a water problem, it's in this country and not in Southern Spain. Yes, you can address that to a certain extent. It would take an awful lot to do it. It would go against every trend for the last twenty, thirty, forty years. And judging by... according to my informants how much brussels sprouts and parsnips there were left in the supermarkets just before Christmas, those sales didn't go too well, so that's not a trend that's going to be reversed any time soon.

Int: I love brussels sprouts... how could they be left?

G: Oh they just mount them, apparently in Tesco in town here there were mountains of them, absolutely mountains of them. And parsnips. 95% of parsnips are eaten on Christmas day or on Sunday.

Int: I guess these things take longer, the way life is now, people are so busy, they want to eat vegetables, the quickest thing to do is open a bag and put some dressing on it. I'm definitely guilty of doing a bit of that myself because I have a small child and I also want us to continue to eat vegetables and I'm working full time, so I guess these things are quite deep-seated.

G: Of course, of course, absolutely. And consumers have to make up their own minds with the information they have, don't they? In whatever situation they find themselves in?

Int: But ultimately that makes it sound a little bit as though ultimately you think it is down to the consumers needing to change, rather than it being the responsibility of the retailers to influence them by changing prices, or the government...?

G: It's very difficult at the end of the day, for government or retailers to tell consumers what to do. That goes across all the ethos of the open market economy and everything. You can influence consumers into thinking one thing or another. You can influence them into the non-smoking. Nobody's banned smoking, okay, you make it more difficult for them in various places, and encourage them and give them this information and that information, but you don't ban them. And so the only way to do it... the most likely way to do it is to influence and educate.

Int: That's brilliant, I think I have covered all my questions. Do you have anything else you'd want to say?

G: I'm just going to say one more thing. Erm, I talked about personally whether we were thinking how we would deal with this insurance policy issue, and this affects everybody who irrigates, whether they are surface or groundwater, in whatever situation they are. What are you going to do? Do you invest in this insurance policy? And what is the investment you need to do? From my point of view, there's no more groundwater, so I have only one option, and most people have only one option. They have to get water from somewhere else and that somewhere else is the local river during the winter time, because you won't get a license during the summer time, so that brings onto, we have no access, we can't force our neighbour to give us access. So we might be completely stuck before we've even started, but assuming we've got access to the local river, what's the likelihood of us getting water? We'll only get effectively high flow water, which is as more and more people access it, it becomes more and more remote and more and more risky and less and less resilient, and therefore more and more costly and therefore you have to have bigger and bigger reservoirs to mitigate that risk and you can see where I'm getting to. And therefore you have this risk profile of abstraction. The abstraction risk profile. Therefore, how big's your reservoir going to be, and therefore, who's going to pay for it? And the processor's, or our customers, I think they would agree there is no mechanism for paying for that. And some would obviously, they would be reluctant to pay for that because it just puts their costs up. On the other hand, if suddenly during 2018 we have a hot dry summer and we can't irrigate, they haven't got any spuds. So they're doing this balancing act, and, you can imagine, one processor can't move because automatically that puts him at a competitive disadvantage against the bloke who hasn't done it, and so you can see where I'm going to, so alright there's that aspect to it. And then there's the aspect of... really it's not just the farmer, it's the complete supply chain that effectively the government has to look at. And how resilient do they want to make the supply chain, because if if, how much money are the government going to lose in taxes etc etc during one drought year because the farmers haven't got anything, Walker's haven't got supply, so is there a fiscal equation that the government needs to do, to

mitigate that risk to them? And I would suggest that the smallest amount of money, risk to them, is to have a policy that enables farmers to put in extra reservoir capacity under different fiscal rules than they have at the moment, to enable reservoirs to be built out of current money and not investment money. So that's something that the government could do, to help, not only us, but the supply chain as a whole, because of the risk involved in doing it. Effectively, the public water supply, because of their rules of engagement, they are not allowed standpipes more than one year in 25 etc - their conditions of service. We don't have that in agriculture, and there is an argument that say we should not have that, but go some way along the lines of that to have er to enable us not to shock the system too hard when we get a shock. And you know I think the government could potentially help in that?

Int: So at the moment there's no real relief for building a reservoir from government?

G: Well, it's like investing in a building, it's spread over 25 years or something, and you can't build a reservoir out of current money, so effectively you are paying for a reservoir over 25 years instead of in year 1. Because effectively if you pay for it out of current money, it reduces the government's tax take in that year. And that's what they are afraid of.

Int: So they won't let you do that? Even though you might be able to?

G: No, yeah you might be able to, but you are not allowed to because the rules don't allow you to do that.

Int: So they are taking more tax

G: They are taking tax earlier effectively.

Int: Sounds complicated.

G: It's to do.. I'm not getting the right... If i put a buidling up, I have to spread that depreciation over 25 years. If I can depreciate that all in the first year and put that under current spending, the government wouldn't get so much tax in that one year, but it would. Effectively that's what would happen, the government gets less tax in that first year.

Int: So the government doesn't want to make it easier for farmers in that respect?

G: No they don't. They feel as though they want the tax revenue in that one year, they are short of money, but it is a very risky insurance policy and so farmers are always balancing up all those things we've talked about - you know - can I get a license, how am I going to fill it, how big the reservoirs going to be. You know, government's not helping very much. You can get a grant, but you know. We shouldn't be in an industry that relies on grants all the time. That's not a very sustainable way to operate. And you know if you can get, the rules and regulations about getting grants are so onerous anyway.

Int: I will write up all that (well, I'll type up everything), but I'll probably write a summary of what you've just tried to tell me, and send it to you so you can check if I've understood, because I think my brain for understanding tax...

G: I didn't explain it very well, I didn't get the right terminology.

Int: No, no, it's me. My husband gets annoyed with me whenever we are talking about tax - his dad's an accountant so he seems to know a lot about tax! Whereas I just have a normal job and I don't have to do tax returns, so...

G: Well, each to their own is the answer! You know stick to what you are good at!

Int: Thank you very much - that was really really useful.

G: If there's anything else you want just send me an email or whatever, and we'll see what else we can do.