
The Best Practice Guide for UK Plum Production

Economic analysis of UK plum production

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Introduction

The UK plum industry has been in decline for several decades and now only 14% (8,000 t/annum) of the plums consumed in the UK are home produced. The fruit value of plums back to the grower is also low (typically £700/t after picking costs are deducted). Below we provide a basic gross margin analysis of plum production under different scenarios. Typical average values are used to illustrate differences and in most cases the effects of inflation or costs of borrowing are not included. The analyses show the need for increased yields and/or fruit value to improve the prospects for the UK plum industry. They also show how the improved yields obtained by the intensive systems developed and trialed in the Innovate UK sustainable intensification of plums project substantively improve the profitability of plum growing in the UK, making the crop competitive to grow in comparison with apples or protected cherries. The very adverse projected effects of greater inflation in costs than in returns accumulated over the life of an orchard are also demonstrated. The analyses also show the costs of protecting the crop can only be justified if they enable very early or late cropping resulting in substantially increased fruit value when the market is empty or greatly undersupplied.

Gross margins of competing tree fruit crops

The gross margin of Victoria plums versus Gala apple and protected cherries based on UK average yields (taken from Defra statistics), good yields and best yields (Table 1) is less than either Gala or protected cherry. This is due to a combination of low yields and low fruit value. Under these circumstances there is little incentive for growers to plant new plum orchards as growing other crops is more profitable. Plums only perform well if the best yields (30 t/ha) are achieved.

Effects of increased yield, fruit value or both on gross margins of plum

Best average yields in plum orchards are typically 22.5 t/ha which yields an annual gross margin return of £2563/ha/annum (Table 2). Whereas a 20% increase in yield to £27 t/ha leads to an increased gross margin of £4475/ha/annum, a 20% increase in fruit value to £840/ha back to the farm leads to an increased gross margin of £5713/ha/annum. A 20% increase in both yield and fruit value is transformative increasing the gross margin from £2563/ha/annum to £8255/ha/annum.

Effects of yield increases of best systems in year 3 (2018) of Innovate UK rootstock – tree architecture trial at FAST Brogdale Farm

In year 3 (2018) of the Innovate UK rootstock-tree architecture trial at Brogdale the best performing system that gave the highest yield of 32 t/ha was the Wavit rootstock A frame system. However, the Wavit Narrow Table Top or Spindle systems, which are easier to manage, gave a yield of 27 t/ha (Table 3). The best and recommended systems have gross margin returns of £8400 and £5050/ha/year, respectively, a marked improvement compared to the current average and best performing existing lower intensity orchards. Note that, in common with other fruit crops, production costs tend to increase at a higher rate than output values, thereby eroding margins over time.”

Can protected cropping be justified?

Providing protection in the form of polythene tunnels or rain covers varies considerably depending on the system of protection chosen, but typically costs an additional £50,000 per ha in establishment costs on top of the £20,000 per ha cost of establishing a non-protected intensive plum orchard. Additionally, growing and fixed costs increase with protected cropping (Table 4). Results of work in the Innovate UK sustainable intensification of plums project indicate that increases in yield are unlikely to arise from protection and though losses due to splitting and disease are likely to decrease these effects are likely to be variable and difficult to predict. The substantially increased costs of protection can only be justified if very early or late cropping can be achieved, allowing access to empty or greatly undersupplied markets where the fruit value is greatly increased. If a 50% increase in fruit value is obtained, the gross margin returns for good and best performing orchards increase from £5050 to £9650/ha/annum and from £8400 to £15100/ha per annum, respectively, after taking into account the increased establishment, growing and fixed costs associated with protection (Table 5).

Caution

The information contained within this Best Practice Guide is correct to the best of the authors' knowledge at the time of compilation but it must be understood that the biological material/systems and the regulatory framework referred to within these guides are subject to change over time. Anyone looking to make use of the information should check it against prevailing local conditions.

All pesticide recommendations and approvals are subject to change over time and the user of this Guide is reminded that it is his/her responsibility to ensure that any chemical intended for use by them is approved for use at the time of the intended application. The user is reminded that they must carefully read and follow the label on each chemical before applying any treatments.

Table 1. Gross margins of competing tree crops based on UK average (Defra statistics), good and best UK yields									
	Competitive profitability of growing different tree fruit crops - UK av yields			Competitive profitability of growing different tree fruit crops - UK good yields			Competitive profitability of growing different tree fruit crops - UK top yields		
	Apple (Gala)	Cherry (protected)	Plum (Victoria)	Apple (Gala)	Cherry (protected)	Plum (Victoria)	Apple (Gala)	Cherry (protected)	Plum (Victoria)
Yield (t/ha/y)	35	10	15	50	15	23	65	20	30
Value (£/t back to farm)	350	3000	700	350	3000	700	350	3000	700
Harvesting costs (£/t)	78	1000	300	78	1000	275	78	1000	250
Gross output (£/ha/y)	9516	20000	6000	13594	30000	9563	17672	40000	13500
Establishment costs (£/ha)	20000	70000	15000	25000	70000	20000	30000	70000	20000
Orchard life (y)	20	20	20	15	20	20	15	20	20
Annual establishment costs (£/ha/y)	1000	3500	750	1667	3500	1000	2000	3500	1000
Growing costs (£/ha/y)	4500	8500	3000	5500	8500	4000	6000	8500	4000
Fixed costs (£/ha/y)	2000	2000	2000	2000	2000	2000	2000	2000	2000
Gross margin (£/ha/y)	£2016	£6000	£250	£4427	£16000	£2563	£7672	£26000	£6500

Table 2. Gross margins of competing tree crops based on UK best UK yields showing the effect of a 20% yield, 20% price or both increase for plum						
	Apple (Gala)	Cherry (protected)	Plum			
			Existing best	20% yield increase	20% price increase	both
Yield (t/ha/y)	50	15	22.5	27	22.5	27
Value (£/t back to farm)	350	3000	700	700	840	840
Harvesting costs (£/t)	78	1000	275	275	275	275
Gross output (£/ha/y)	13594	30000	9563	11475	12713	15255
Establishment costs (£/ha)	25000	70000	20000	20000	20000	20000
Orchard life (y)	15	20	20	20	20	20
Annual establishment costs (£/ha/y)	1667	3500	1000	1000	1000	1000
Growing costs (£/ha/y)	5500	8500	4000	4000	4000	4000
Fixed costs (£/ha/y)	2000	2000	2000	2000	2000	2000
Gross margin (£/ha/y)	£4427	£16000	£2563	£4475	£5713	£8255

Table 3. Economic performance of best systems in year 3 (2018) of Innovate UK rootstock – tree architecture trial at FAST Brogdale Farm		
	HIGHEST YIELD (Wavit A Frame)	RECOMMENDED (Wavit Narrow Table Top or Spindle)
Yield (t/ha/year)	32	26
Value (£/t back to farm)	700	700
Harvest cost (£/t)	250	275
Gross Output (£/ha/year)	14400	11050
Establishment cost (£/ha)	20000	20000
Orchard Life (years)	20	20
Annual establishment costs (£/ha/year)	1000	1000
Growing costs (£/ha/year)	4000	4000
Fixed costs (£/ha/year)	1000	1000
Gross Margin (£/ha/year)	8400	5050

Table 4. Economic performance of intensive plum orchards having good versus best yields grown unprotected versus under protection. The £50,000 increase in establishment costs and increased growing and fixed costs for growing under protection can be more than offset by a 50% increase in price if fruit accessed very early or very late markets, but this strategy has a high risk.

	Unprotected		Protected	
	good	best	good	best
Yield (t/ha/year)	26	32	26	32
Value (£/t back to farm)	700	700	1050	1050
Harvest cost (£/t)	275	250	275	250
Gross Output (£/ha/year)	11050	14400	20150	25600
Establishment cost (£/ha)	20000	20000	70000	70000
Orchard Life (years)	20	20	20	20
Annual establishment costs (£/ha/year)	1000	1000	3500	3500
Growing costs (£/ha/year)	4000	4000	5000	5000
Fixed costs (£/ha/year)	1000	1000	2000	2000
Gross Margin (£/ha/year)	5050	8400	9650	15100