

# Estimation of the economic impact of drought of summer 2018 in the Netherlands

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# Introduction

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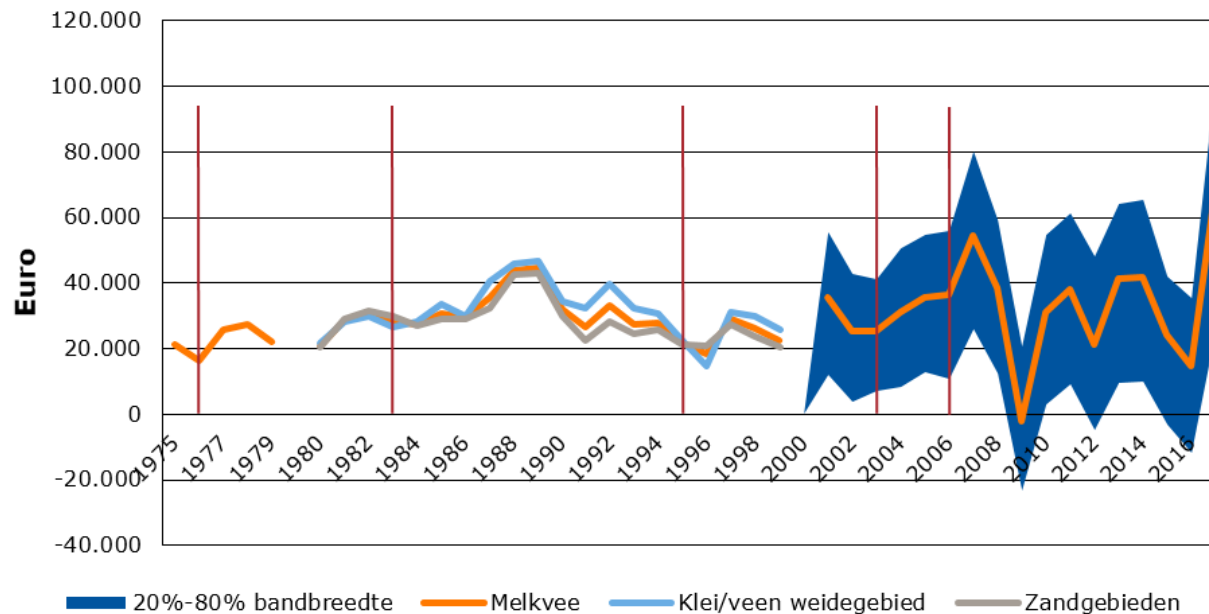
- The period of heat and drought in the summer of 2018 has major consequences for agricultural production. Driest and most sunny since 1970 in the Netherlands.
- The Ministry of Agriculture, Nature and Food Quality has contracted Wageningen Economic Research to provide a picture of the impact of dry and hot wetter on the income of farmers in the Netherlands.
- Follows up the request from the Directorate-General for Agriculture and Rural Development (DG Agri) to all Member States. Focus on the scale of the loss of yield and mitigating and adaptive measures taken on farms.

# Method

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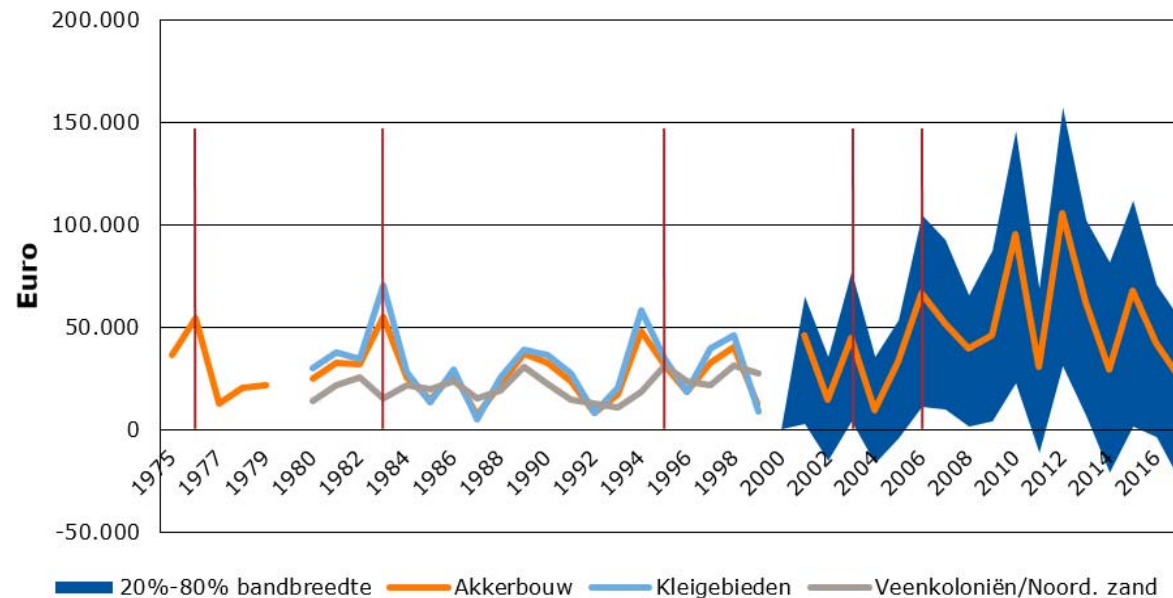
- An analysis of income, crop yields and prices in the five previous extremely dry years based on data from the Farm Accountancy Data Network (FADN) + historical data from Central Bureau of Statistics (CBS). The income, yields in kilogrammes and prices have been compared to the average in the surrounding years (two preceding and the two following years).
- An expert judgement, in which more than 25 sector experts were consulted. They were asked to relativise the revenues to the average situation in the past three years (2015, 2016 and 2017).
- Reference date mid-August 2018

# Income results – dairy farms 1975-2017



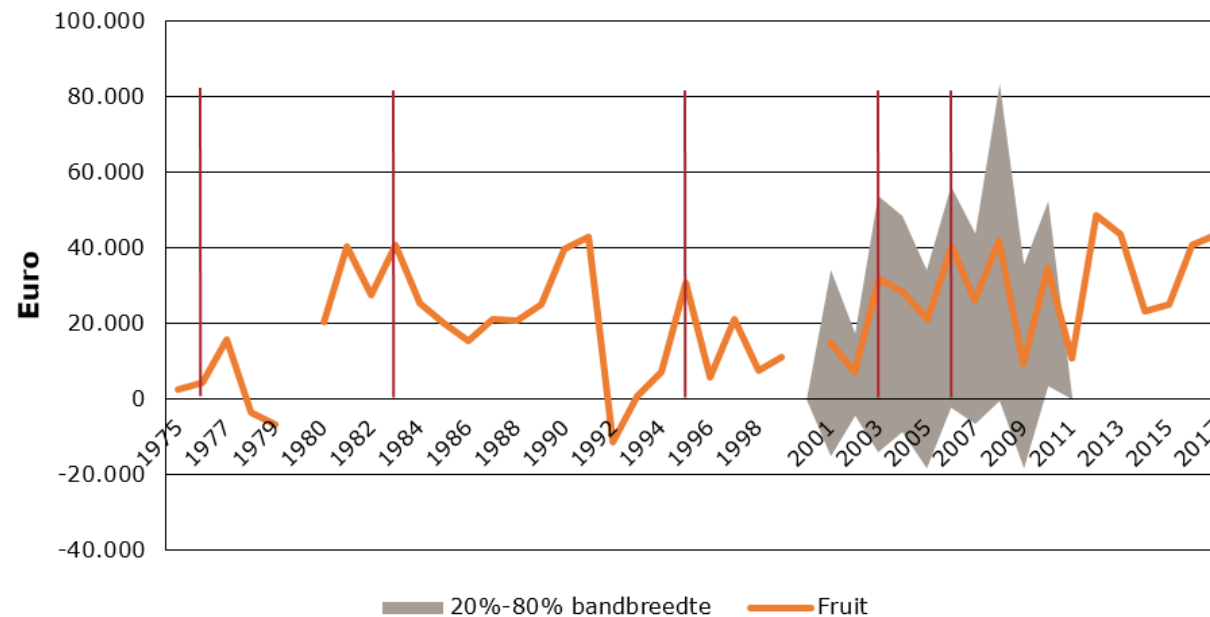
- Average income per entrepreneur in dry years on average minus 16% compared to surrounding years

# Income results – arable farms 1975-2017



- Average income per entrepreneur in dry years on average plus 85% compared to surrounding years

# Income results – fruit cultivation 1975-2017



- Average income per entrepreneur in dry years on average plus 105% compared to surrounding years.

# Results – yields in kilogrammes per hectare

calculated as change in % compared to surrounding years; source FADN & CBS

	1976	1983	1995	2003	2006	Average	2018 (estimation)
Grass							-20/-30
Green maize	-17	-3	-11	1	-3	-7	-35
Ware potatoes	-7	-14	-12	-11	-11	-11	-20
Seed potatoes	8	-26	-2	4	-3	-4	-5
Starch potatoes	-13	-15	3	-17	-13	-11	-25
Sugar beet	7	-15	-2	-4	6	-1	-12
Onions	-58	-16	-19	-14	-21	-26	-50
Winter wheat	-2	-3	3	1	-1	0	-2
Apples	-8	-5	17	-5	-6	-1	-10
Pears	21	4	2	-2	7	7	-10



# Conclusions yield effect

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- The expected loss of yield due to the drought in 2018 is generally higher than in previous dry years.
- Large differences in yield loss are expected between farms, depending on the crop, the sensitivity of the soil to drought, the varieties used and the application of irrigation. In practice, the damage ranges from a complete crop failure to almost normal yields.
- The production of grassland and fodder crops is significantly lower. Large regional differences. If the weather conditions in the rest of the season are favourable the loss could be less than what is currently expected.
- In fruit cultivation, the fruit remains smaller than normal.

# Results – prices in kilogrammes per product

calculated as change in % compared to surrounding years; source FADN & CBS

	1976/' 77	1983/' 84	1995/' 96	2003/' 04	2006/' 07	Average	2018/'19 (estimation)
Grass							
Green maize		14	20	15	-8	10	25
Ware potatoes	102	166	1	41	69	76	11
Seed potatoes	77	70	36	10	31	45	50
Starch potatoes	10	5	3	-2	-13	1	5
Sugar beet	-6	15	-5	4	2	2	5
Onions	264	218	-57	98	190	143	100
Winter wheat	3	8	4	26	-2	8	10
Apples	62	22	45	4		33	30
Pears	39	1	8	-2		12	15

# Conclusions price effect

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- The expected product prices are in 2018 generally higher than in previous dry years.
- It is also taken into account that the fruit and vegetable products are now sold much more than in the past through seasonal contracts with the purchasing organizations of supermarket chains. So that the price effects will be less extreme than in the past.

# Effect of drought and heat on production costs

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- Irrigation: A lot of the area has been irrigated much more often. Only marginal costs (fuel, paid labour, extra maintenance costs) are calculated. On average 50 euro / ha.
- Cattle feed: due to the lower yield of grass and silage maize the remaining feed stock will have to be addressed and / or additional raw and concentrated feed must be purchased. Estimated increase by an average of more than 30,000 euros per dairy farm.
- Crop protection: Because of the dry weather, fungal infections are less likely and the number of crop sprays is less than in a typical year. The corresponding cost savings per spraying is estimated at 40 euros per hectare.

## Estimation of income effects of drought and heat in 2018 – Dairy farms

	Average 2015-2017	2018	Effect
Total revenues	383,000	385,900	2,900
Total paid costs	329,500	356,800	27,300
feed costs	89,900	121,700	31,800
Farm Income	53,600	29,100	-24,500
Income per unpaid entrepreneur	35,500	19,600	-15,900

## Estimation of income effects of drought and heat in 2018 – Arable farms

	Average 2015-2017	2018	Effect
Total revenues	303,400	315,800	12,400
Total paid costs	262,700	261,300	-1,400
Farm Income	40,700	54,500	13,800
Income per unpaid entrepreneur	45,300	57,600	12,300

## Estimation of income effects of drought and heat in 2018 – Starch potato farms

	Average 2015-2017	2018	Effect
Total revenues	332,000	292,900	-39,100
Total paid costs	271,300	265,500	-5,800
Farm Income	60,700	27,400	-33,300
Income per unpaid entrepreneur	67,300	36,600	-30,700

## Estimation of income effects of drought and heat in 2018 – Fruit cultivation

	Average 2015-2017	2018	Effect
Total revenues	383,300	412,900	29,600
Total paid costs	331,400	331,700	300
Farm Income	51,900	81,200	29,300
Income per unpaid entrepreneur	36,400	57,500	21,100



# Reflection (1)

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- The drought and heat often leads to scarcity on the European market with rising prices. In the Netherlands the possibilities for irrigation are significantly greater than in the surrounding countries. Drought and scarcity, especially in the vegetable sectors, can provide a considerable financial benefit.
- An entrepreneur can only profit from the high product prices if he has not fully pre-sold his produce to his customers at more or less fixed prices for an entire season. In the current sales chain of fresh produce products, it is estimated that roughly 75% of the volume is fixed in sales contracts per season with the supermarket chains.

## Reflection (2)

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- Last week the Ministry of Agriculture, Nature and Food Quality has asked a follow up research with reference data mid-October.
- More attention for regional differences.

# Role of the government

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Despite the damage suffered the farmers and growers in the Netherlands do not have to count on compensation (at this moment).

Reason:

The government encourages farmers to participate in a weather insurance scheme by granting a premium subsidy, thus trying to create a commercial market for weather insurances.

- Situation in other countries?

# Thank you for your attention: Questions?

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See also:

<http://edepot.wur.nl/458511>

<http://edepot.wur.nl/457939>

(Dutch factsheet)

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