

Estimation of agricultural traffic intensity on the Dutch road network

Illustrations and appendix





Annet Hospers 27-02-2015 GRS-2015-06

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Illustrations and appendix

Master Thesis 27-02-2015



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Cover: Sluitgatweg, by Annet Hospers

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Figure 2.1: Cause-effect diagram, showing different factors influencing the number of rides







Figure 2.3: Relations between the factors and the fixed and bulk activities



Figure 2.4: Location map of the Noordoostpolder

Figure 2.5: Location map of Zeeland





Figure 2.6: Crop types in the Noordoostpolder



Figure 2.8: Crop types in Zeeland



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Figure 2.7: Soil types in the Noordoostpolder



Figure 2.9: Soil types in Zeeland





Crop category	Examples of crop types	Surface in ares
	(all in Appendix 6.5	
Agricultural crops	Sugar corn, sun flowers	7.928.554
Cereals	Wheat, barely, corn corn-	20.928.612
	cob mix	
Flower bulbs	Flower bulbs	2.280.685
Grassland	Permanent, temporary	91.810.591
Green fodder plants	Lucerne, cutting corn,	23.517.495
	fodder beet	
Onions	Sow, seeds, plant	2.805.406
Potatoes,	Consumption potatoes	7.144.000
consumption		
Potatoes,	Plant potatoes	4.032.835
plant		
Potatoes,	Starch potatoes	4.381.038
starch		
Sugar beets	Sugar beets	7.262.144
Fallow ground	Fallow, natural grassland	5.520.109
Not researched	Forrest, fruit, nut tree,	7.892.188
	fauna edge	

Table 3.1: Twelve categories for crop type with an example and surface in 2013

Table 3.2: On which soil types dominate the different crop categories with how much percent

Crop category	Soil type	Percentage
Agricultural crops	Sea clay area	59
	Higher sandy soils	35
Cereals	Sea clay area	60
	Higher sandy soils	28
Flower bulbs	Sea clay area	44
	Dunes	33
	Higher sandy soils	23
Grassland	Higher sandy soils	45
	Sea clay area	25
	Low peaty area	14
	River area	14
Green fodder plants	Higher sandy soils	71
	Sea clay area	13
	River area	12
Onions	Sea clay area	90
Potatoes, consumption	Sea clay area	44
	Higher sandy soils	16
Potatoes, seed	Sea clay area	25
Potatoes, starch	Higher sandy soils	98
Sugar beets	Sea clay area	54
	Higher sandy soils	36
Fallow ground	Higher sandy soils	36
	Sea clay area	18
	River area	14
	Low peaty area	12

Figure 3.1: Different soil types in the Netherlands



Table 3.3: Old and new classification soil types

Old classification	Old classification	New classification
English	Dutch	English
Closed estuary	Afgesloten Zeearmen	Clay
Dunes	Duinen	Sand
Tides area	Getijdengebied	Clay
Hilly country	Heuvelland	Rest
Higher sandy soils	Hogere Zandgronden	Sand
Low peaty soil	Laagveengebied	Peat
Non-identifiable	Niet indeelbaar	Rest
North Sea clay	Noordzee	Rest
River clay	Rivierengebied	Clay
Sea clay	Zeekleigebied	Clay
Sea clay IJsselmeer	Zeekleigebied	Clay IJsselmeer
	IJsselmeer	

Table 3.4: Crop production per hectare in kilograms per year (a 5-year-mean) and soil

	Clay,	Clay,	Sand	Peat	Mean*	Source
	IJsselmeer	other				
Agricultural	15000	15000	15000		15000	PPO,
crops						2012
Cereals	9300	8600	7600		8500	PPO,
						2012
Flower bulbs					65000	PAGV,
						1995
Grassland**	60000	60000	65000***	55000	60000	PPO,
						2014
Green fodder	45000	45000	44000		45000	WUR,
plants						2014
Onions	63000	50000	57000		57000	WUR,
						2012
Potatoes,	55000	47500	56000		53000	PPO,
consumption						2012
Potatoes,	40000	34000	33000		36000	PPO,
plant						2012
Potatoes,	43000	43000	43000		43000	PPO,
starch						2012
Sugar beets	83000	73000	70000		75500	PPO,
						2012

* The average of the soil types, used for peat if there was no information available.

** Based on five mowing moments in a year

*** Average of wet and dry sand, unweighted. Based on five mowing moments.

Table 3.5: Fixed activities per crop category divided over the seasons and if applicable soil category

	Soil	Spring	Summer	Autumn	Winter	Total
Agricultural		4	8	2	3	17
crops						
Cereals		5	7	5	2	19
Flower bulbs		15	18	2	0	35
Grassland		2	23	1	1	27
Green fodder plants	Clay	4	2	2	1.5	9.5
	Sand	4.5	3.5	1.5	0	9.5
	Peat	6	0	2	0	8
Onions		5	11	2	0	18
Potatoes, consumption		9	14	3	0	26
Potatoes, plant		8	14	3	0	25
Potatoes, starch		9	11	2	1	23
Sugar beets	Clay	6.5	5.5	3	0	15
	Sand	5.5	6.5	3	0	15
	Peat	6	6	3	0	13
Fallow ground		1.5	0.5	1	0	3

Table 3.6: Dump truck size for the crop categories

Dump truck size	Crop category
11 ton	Green fodder plants
	Grassland
18 ton	Seed potatoes
	Consumption potatoes
	Starch potatoes
	Sugar beets
	Agricultural crops
	Cereals
	Onions

Figure 3.2: Workflow creation owner data



Figure 3.3: Clustering lots and selecting home parcels



Figure 3.4: Workflow creation user data set



Figure 3.5: Difference between a cadastral parcel drawn and a topographical drawn parcel



Figure 3.6: User lots clustered geographically



Figure 3.7: ACN buffer (green) reaches over the road (purple)

Road

ACN Buffer



Figure 3.8: Workflow route calculation



Figure 3.9: Workflow calculation traffic density



Figure 3.10: effect combing a crop lot with the soil category



Crop lot combined with soil





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Table 4.1: Crop production per hectare in kilograms per year (a 5-year-mean) and soil

Table 4.2: New crop production per hectare per year in kilograms, for crop category divided over soil and season

	Clay,	Clay,	Sand	Peat	Mean*	Source
	IJsselmeer	other				
Agricultural	15000	15000	15000		15000	PPO,
crops						2012
Cereals	9300	8600	7600		8500	PPO,
						2012
Flower bulbs					65000	PAGV,
						1995
Grassland**	60000	60000	65000***	55000	60000	PPO,
						2014
Green fodder	45000	45000	44000		45000	WUR,
plants						2014
Onions	63000	50000	57000		57000	WUR,
						2012
Potatoes,	55000	47500	56000		53000	PPO,
consumption						2012
Potatoes,	40000	34000	33000		36000	PPO,
plant						2012
Potatoes,	43000	43000	43000		43000	PPO,
starch						2012
Sugar beets	83000	73000	70000		75500	PPO,
						2012

* The average of the soil types, used for peat if there was no information available.

** Based on five mowing moments in a year

*** Average of wet and dry sand, unweighted. Based on five mowing moments.

		Clay,	Clay,	Sand	Peat/
		IJsselmeer	other		General*
Agricultural crops	Summer	40000	40000	40000	40000
Cereals	Summer	9500	8500	7500	7500
Flower bulbs	Summer	65000	65000	75000 (15% tare)	65000
Grassland	Spring	14000**	14000**	15000***	13000**
	Summer	37000**	37000**	40000***	34000**
	Autumn	9000**	9000**	10000***	8000**
Green fodder plants	Autumn	45000	45000	45000	45000
Onions	Autumn	65500 (1%)	58000 (1%)	55500 (1%)	55500 (1% tare)
Potatoes,	Autumn	59000	50500	60500	50500
consumption		(7% tare)	(7% tare)	(8% tare)	(7% tare)
Potatoes,	Summer	45000	38000	35000	35000
seed		(5% tare)	(5% tare)	(5% tare)	(5% tare)
Potatoes,	Autumn	45000	45000	44000	44000
starch		(5% tare)	(5% tare)	(8% tare)	(8% tare)
Sugar beets	Autumn	110000	100000	95000	95000
		(15%)	(15%)	(9% tare)	(9% tare)

* The lowest production estimation, used for peat if there was no information available.

** Based on five mowing moments in a year

*** Average of wet and dry sand, unweighted. Based on five mowing moments.

Table 4.3: Fixed activities per crop category divided over the seasons and if applicable soil category

		Spring	Summer	Autumn	Winter	Total
Agricultural crops		4	8	2	3	17
Cereals		5	7	5	2	19
Flower bulbs		15	18	2	0	35
Grassland		2	23	1	1	27
Green fodder plants	Clay	4	2	2	1.5	9.5
	Sand	4.5	3.5	1.5	0	9.5
	Peat	6	0	2	0	8
Onions		5	11	2	0	18
Potatoes, consumption		9	14	3	0	26
Potatoes, plant		8	14	3	0	25
Potatoes, starch		9	11	2	1	23
Sugar beets	Clay	6.5	5.5	3	0	15
	Sand	5.5	6.5	3	0	15
	Peat	6	6	3	0	13
Fallow ground		1.5	0.5	1	0	3

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Table 4.4: New fixed activities per crop category divided over the seasons

	Spring	Summer	Autumn	Winter	Total
Agricultural crops	9	9	2	1	21
Cereals	3	7	5	0	15
Flower bulbs	20	21	2	0	43
Grassland	8	17	6	2	33
Green fodder plants	6	1	3	1	11
Onions	9	16	2	1	28
Potatoes, consumption	10	15	4	0	26
Potatoes, plant	12	17	5	0	33
Potatoes, starch	8	10	2	1	21
Sugar beets	7	9	4	0	20
Fallow ground	2	2	1	0	5

Table 4.5: Change cereals activities

Cultivation	Fertilizer	Spraying	Straw	Total
Sowing			pressing	
4 to 3	4 to 3	8 to 4	1 to 2	21 to 16
-1	-1	-4	+1	-5

Table 4.7: Change grassland activities

Cultivating	Mowing	Fertilizer	Mowing	Mowing	Total
	spring		summer	winter	
0 to 2	0 to 5	3 to 5	1 to 2	0 to 4	27 to 33
+1	+ 5	+2	-5	+4	+6

Table 4.9: Change seed potatoes activities

Planting	Spraying	Selecting	Leaves removal	Harvesting	Total
1 to 3	13 to 15	3 to 4	1 to 2	1 to 3	25 to 33
+2	+2	+1	+1	+2	+8

Table 4.11: Change onions activities

Fertilizer	Fertilizer	Spraying	Total
winter	Spring		
1 to 0	1 to 2	13 to 18	23 to 28
-1	+1	+5	+5

Table 4.6: Change flower bulbs activities

Harrowing	Leaves	'Hood'	Irrigation	Harvesting	Total
	removal	removal			
1 to 0	1 to 0	1 to 2	1 to 7	1 to 4	35 to 43
-1	-1	+1	+6	+3	+8

Table 4.8: Change consumption potatoes activities

Planting	Spraying	Harvesting	Total
1 to 2	16 to 17	1 to 2	26 to 29
+1	+1	+1	+3

Table 4.10: Change starch potatoes activities

Soil	Ploughing	Fertilizer	Spraying	Harvesting	Total
disinfection					
1 to 0	1 to 0	3 to 2	15 to 14	1 to 2	26 to 23
-1	-1	-1	-1	+1	-3

Table 4.12: Change sugar beets activities

Spraying	Harvesting	Total
5 to 10	1 to 2	14 to 20
+5	+1	+6

Figure 4.1: Explanation double counting

Situation 1





JSC Le L esul



Table 5.1: Summary analysis, made maps (time columns)

Region	Parcel	Parcel	Crop	Time	Time	Time
	owner/user	Year	year	Year	Average	Summer
					workday	
Noordoostpolder	Owner	2013	2012	Х	X	
	Owner	2013	2013	Х	Х	
	Owner	2014	2014	Х	Х	
	Owner	2014	2013	Х	Х	
	Owner	2014	2014	Х	Х	
	User	2014	2013	Х	Х	Х
	User	2014	2014	Х	Х	Х
Zeeland	Owner	2014	2013	Х	Х	
	Owner	2014	2014	Х	X	
	User	2014	2013	X	X	X
	User	2014	2014	X	X	X



Figure 5.1: Boxplots showing the analysis result distribution in the Noordoostpolder, in numbers of agricultural vehicles over a road segment in a year

Figure 5.2: Total number of kilometres in a year in the Noordoostpolder



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	Crop2 Parcel	2012 2014	Crop2 Parcel	2013 2014	Crop2 Parcel	2014 2014	Crop2 Parcel	2013	Crop2 Parcel	2014
	Owner	User	Owner	User	Owner	User	Owner	User	Owner	User
Annual	3729	X	4013	6298	5782	9959	3100	X	3681	X
Maximum										
Annual	609	Х	600	670	630	985	505	Х	510	X
Mean										
Annual	426	Х	404	276	400	366	360	Х	351	Х
Median										
Workday	14	Х	15	24	22	38	12	Х	14	X
Maximum										
Workday	2.35	Х	2.30	2.55	2.44	3.74	1.94	Х	1.96	Х
Mean										

Table 5.2: Statistics analysis results of the Noordoostpolder, in numbers of agricultural vehicles over a road segment

	Crop2 Parcel2	013 2014	Crop Parce	2014 Crop: el2014 Parcel		2013 l2014	Crop: Parce	2014 2013
	Owner	User	Owner	User	Owner	User	Owner	User
Spring	16	28	24	52	14	Х	16	Х
Maximum								
Spring	2.58	2.89	2.66	4.45	2.18	Х	2.14	Х
Mean								
Summer	28	49	42	82	24	Х	28	Х
Maximum								
Summer	4.48	5.02	4.67	7.46	3.70	Х	3.80	Х
Mean								
Autumn	17	20	22	29	11	Х	13	Х
Maximum								
Autumn	2.01	2.20	2.22	2.98	1.71	Х	2.00	Х
Mean								
Winter	1	2	1	2	1	Х	1	Х
Maximum								
Winter	0.03	0.10	0.03	0.13	0.00	X	0.00	X
Mean								

Table 5.3: Seasonal statistics for the analysis of the Noordoostpolder, in number of vehicles over a road segment

5

Figure 5.3: Boxplots showing the analysis result distribution in Zeeland, in numbers of agricultural vehicles over a road segment in a year



Figure 5.4: Total number of kilometres in a year in the Zeeland


Table 5.4: Statistics analysis results of Zeeland, in numbers of agricultural vehicles over a road segment

	Crop2013		Crop2014	
	Parcel 2014		Parcel 2014	
	Owner	User	Owner	User
Annual	5719	12886	5825	12029
Maximum				
Annual	483	1059	477	1093
Mean				
Annual	248	506	245	517
Median				
Workday	22	50	22	46
Maximum				
Workday	1.82	4.06	1.80	4.19
Mean				

Table 5.5: Seasonal statistics for the analysis of Zeeland, in number of vehicles over a road segment

	Crop2013		Crop2014	
	Parcel2014		Parcel2014	
	Owner	User	Owner	User
Spring	27	37	25	36
Maximum				
Spring	1.63	3.17	1.98	3.30
Mean				
Summer	40	120	42	116
Maximum				
Summer	2.95	10.02	3.37	10.35
Mean				
Autumn	19	37	21	32
Maximum				
Autum	1.37	2.69	1.73	2.75
Mean				
Winter	2	6	0.02	0.27
Maximum				
Winter	2	6	0.09	0.29
Mean				

Figure 5.5: Flower bulbs in the Noordoostpolder



Figure 5.6: Land consolidation in the Noordoostpolder





Figure 5.9: Yearly traffic density in the NOP with user data of 2014 and crop data of 2013



Figure 5.7: Yearly traffic density in the NOPwith owner data of 2014 and crop data of 2013 Figure 5.8: Yearly traffic density in the NOP with owner data of 2014 and crop data of 2014



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Figure 5.10: Yearly traffic density in the NOP with user data of 2014 and crop data of 2014



Figure 5.11: Average working day traffic density in the Noordoostpolder with owner data of 2014 and crop data of 2013



Figure 5.13: Average working day traffic density in the Noordoostpolder with user data of 2014 and crop data of 2013



Figure 5.12: Average working day traffic density in the Noordoostpolder with owner data of 2014 and crop data of 2014



Figure 5.14: Average working day traffic density in the Noordoostpolder with user data of 2014 and crop data of 2014



Figure 5.15: Average working day traffic density in the summer in the Noordoostpolder with user data of 2014 and crop data of 2013

Figure 5.16: Average working day traffic density in the summer in the Noordoostpolder with user data of 2014 and crop data of 2014









Figure 5.19: Yearly traffic density in Zeeuws-Vlaanderen with user data of 2014 and crop data of 2013



Figure 5.20: Yearly traffic density in Zeeuws-Vlaanderen with user data of 2014 and crop data of 2014





Figure 5.23: Average working day traffic density in Zeeuws-Vlaanderen with user data of 2014 and crop data of 2013







-0-2 3.5 - 6 - 10 11.11 16.20

21.22

Owner

Crop

Time

2014

Work

Figure 5.25: Yearly traffic density in Schouwen-Duiveland / Beveland with owner data of 2014 and crop data of 2013



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Figure 5.27: Yearly traffic density in Schouwen-Duiveland / Beveland with user data of 2014 and crop data of 2013



Figure 5.26: Yearly traffic density in Schouwen-Duiveland / Beveland with owner data of 2014 and crop data of 2014



Figure 5.28: Yearly traffic density in Schouwen-Duiveland / Beveland with user data of 2014 and crop data of 2014



Figure 5.29: Average working day traffic density in Schouwen-Duiveland /Beveland with owner data of 2014 and crop data of 2013



Figure 5.31: Average working day traffic density in Schouwen-Duiveland / Beveland with user data of 2014 and crop data of 2013





Figure 5.32: Average working day traffic density in Schouwen-Duiveland / Beveland with user data of 2014 and crop data of 2014



Figure 5.33: Average working day traffic density in the summer in Schouwen-Duiveland / Beveland with user data of 2014 and crop data of 2013

Figure 5.34: Average working day traffic density in the summer in Schouwen-Duiveland / Beveland with user data of 2014 and crop data of 2014



Figure 5.37: Reference areas in Zeeland

Figure 5.38: Traffic situation near Zaamslag, Zeeuws-Vlaanderen (Google Maps, 2015)





Figure 5.39: Land consolidation in the east of Zeeuws-Vlaanderen (RVO, 2014)





Validation





Figure 6.1: Route m	ade by software (E	vert)
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Figure 6.2: Routes chosen, and bottlenecks (Evert)

Removed because of privacy reasons

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Figure 6.3: Route chosen, and bottlenecks (Hein)

Figure 6.4: Route made by software (Hein)

Removed because of privacy reasons

Figure 6.5: Route made by software (Gert)

Figure 6.6: Routes chosen, parcels not taken into account (Gert)

Removed because of privacy reasons

Figure 6.9: Perception of traffic density

Removed because of privacy reasons

Figure 6.10: Perception of traffic

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Figure 6.11: Weg van Ongenade (Author, 2015)

Figure 6.12: Karel Doormanweg (Author, 2015)



Figure 6.13: Sluitgatweg (Author, 2015)



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Figure 6.14: Voorsterweg (Google Maps, 2015)



Figure 6.15: Picture of counting location Domineesweg (Author, 2015)



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Figure 6.16 : Comparison of the 'Agricultural Network' as defined by the Province of Zeeland and the agricultural traffic density on an average workday in the summer by the model



6



Figure 6.17: Explanation road segments of the provincial study and the model

Figure 6.18: Difference between model results and provincial count results, annual, in number of vehicles



Figure 6.19: Difference between model results and provincial count results, summer, in number of vehicles



Figure 6.20 : Comparison difference in annual results provincial study and model Zeeland with density map model annual 2013, users



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Figure 6.21 : Comparison difference in summer results provincial study and model Zeeland with density map model summer 2013, users



Table 6.1: Test of Normality

Variable	Kolmogorov-Smirnov	Shapiro-Wilk
	Sig.	Sig.
Schouwen-Duiveland	0.143	0.217
ProvinceYear		
Schouwen-Duiveland	0.200	0.705
ProvinceAugust		
Schouwen-Duiveland	0.200	0.293
ModelYear		
Schouwen-Duiveland	0.200	0.210
ModelSummer		
Tholen	0.200	0.105
ProvinceYear		
Tholen	0.200	0.299
ProvinceAugust		
Tholen	0.200	0.150
ModelYear		
Tholen	0.200	0.128
ModelSummer		
Noord-Beveland	0.200	0.235
ProvinceYear		
Noord-Beveland	0.200	0.184
ProvinceAugust		
Noord-Beveland	0.200	0.432
ModelYear		
Noord-Beveland	0.200	0.433
ModelSummer		

To the annual provincial study results is referred as 'ProvinceYear', the results of August 'ProvinceAugust'. For the model is referred to the annual results with 'ModelYear' and the summer results with 'ModelSummer'

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Table 6.2: Pearson's product-moment coefficient and determination coefficient (or R-squared) Multiple Pairs

	Pearson	Sig.	Ν	R2
	Correlation	(2-tailed)		
Zeeland Year	0.197	0.000	1496	0.039
Zeeland Summer	0.220	0.000	1496	0.048
Noord-Beveland Year	0.433	0.000	110	0.187
Noord-Beveland	0.420	0.000	110	0.176
Summer				
Schouwen-Duiveland	-0.422	0.00	161	0.178
Year				
Schouwen-Duiveland	-0.469	0.000	161	0.220
Summer				
Tholen Year	0.752	0.000	191	0.566
Tholen Summer	0.716	0.000	191	0.513
Walcheren/Zuid-	0.137	0.001	584	0.019
Beveland Year				
Walcheren/Zuid-	0.137	0.001	584	0.019
Beveland Summer				
Zeeuws-Vlaanderen	0.164	0.000	450	0.027
Year				
Zeeuws-Vlaanderen	0.225	0.000	450	0.051
Summerr				

Table 6.3: Pearson's product-moment coefficient and determination coefficient (or R-squared) Average Pair

	Pearson Correlation	Sig. (2-tailed)	N	R2
Zeeland Year	0.263	0.003	124	0.069
Zeeland Summer	0.269	0.002	124	0.072
Noord-Beveland Year	0.190	0.555	11	
Noord-Beveland	0.158	0.624	11	
Summer				
Schouwen-Duiveland	-0.476	0.073	14	
Year				
Schouwen-Duiveland	-0.554	0.032	14	0.307
Summer				
Tholen Year	0.835	0.000	13	0.697
Tholen Summer	0.791	0.001	12	0.626
Walcheren/Zuid-	0.192	0.168	52	
Beveland Year				
Walcheren/Zuid-	0.81	0.195	52	
Beveland Summer				
Zeeuws-Vlaanderen	0.263	0.127	34	
Year				
Zeeuws-Vlaanderen	0.314	0.066	34	
Summerr				

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Appendix 1.1: Development Agricultural farms

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APPENDIX 1.2: DEVELOPMENT DAIRY FARMS

(LEI, 2014) Aantal bedrijven, aantal dieren en dieren per bedrijf melkkoeien 40.000 2.000.000 100 iddeld 1.500.000 30.000 75 bedrijven (aantal) aantal 20.000 1.000.000 ้อ dieren (aantal) 10.000 500.000 25 0 0 0 2000 2002 2004 2006 2012 2008 2010 2001 2003 2005 2007 2009 2011 2013 📒 bedrijven 🔶 dieren 🔶 gemiddeld aantal dieren

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APPENDIX 3.1: DATA NEEDED

Subject	Title	Source
Infrastructure map	Top10NL	Kadaster
Lots ownership	Kapri (2014)	Kadaster
Lots user		Rijksdienst voor
		ondernemend Nederland
		(2014)
Soil type	Fysisch geografische bodemkaart van	PDOK, 2014
	Nederland	
Crop type	BRP Gewaspercelen (2012, 2013 and	PDOK, 2014
	2014)	
Crop production per	KWIN-AGV and KWIN-Veehouderij	PPO, 2009 and WUR, 2013
hectare		
Activities per crop	KWIN-AGV and KWIN-Veehouderij	PAGV, 1995 and WUR, 2013
	and interviews	and interviews
Main building, selection	Grootschalige Basiskaart van Nederland	Kadaster, 2014
home parcel	(GBKN)	
Adress point, selection	Adressen en Coordinaten Nederland	Kadaster,2014
home parcel		

APPENDIX 3.2: FIFTEEN CROP TYPES WITH THE LARGEST SURFACE IN THE

NETHERLANDS IN 2013

Crop type	Crop type in Dutch	Ares
Grassland, permanent	Grasland, blijvend	71.024.501
Corn, cutting	Maïs, snij-	22.891.455
Grassland, temporary	Grasland, tijdelijk	20.786.090
Wheat, winter	Tarwe, winter-	12.366.842
Sugar beets	Suikerbieten	7.262.144
Grassland, natural	Grasland, natuurlijk	5.067.788
Potatoes, consumption on clay/loess soil	Aardappelen, consumptie op klei/lössgrond	4.823.909
Potatoes, starch	Aardappelen, zetmeel	4.381.038
Vegetables on open ground (inclusive	Groenten open grond (inclusief	4.292.529
vegetable seeds)	groentezaden)	
Potatoes, seed on clay/loess soil	Aardappelen, poot op klein/lössgrond	3.518.745
Wheat, summer-	Tarwe, zomer-	2.803.439
Barely, summer-	Gerst, zomer-	2.501.245
Potatoes, consumption on sand/peat soil	Aardappelen, consumptie op zand/	2.320.091
	veengrond	
Flower bulbs and turnips	Bloembollen en –knollen	2.280.685
Unions, sow	Uien, zaai-	2.193.911

APPENDIX 3.3: CROP CATEGORIES AND THE CROP TYPES ASSIGNED TO THESE

CATEGORIES

- 1. Consumption potatoes
- Control measure (bestrijdingsmaatregel) AM
- Consumption on clay / loess soil
- Consumption on sand / peat soil
- 2. Seed potatoes
- Seed on clay / loess soil
- Seed on sand / peat soil
- 3. Starch potatoes
- Starch (TBM)
- Starch potatoes
- 3. Onions
- Onions, seed
- Onions, seed and plant
- 4. Agricultural crops
- Opium poppy
- Beans, brown-
- Beans, garden- (dry harvesting)
- Beans, garden- (green harvesting)
- Beans, garden-
- Endive
- Peas, green / yellow
- Peas, including shock cherry
- Grass seed
- Sod of grass
- Vegetables open ground (including vegetable seeds)
- Hemp fibre
- Marrowfat pea

- Caraway seed
- Rapeseed, winter-
- Rapeseed, summer-
- Linseed not from flax
- Lupin
- Miscanthus
- Other agricultural crops
- Rape seed
- Soybeans
- Sweetcorn
- Flax
- Sunflowers
- 5. Cereals
- Barley, winter
- Barley, summer
- Rye (no cutting rye)
- Oats
- Triticale
- Cereals, other
- Corn corncob mix
- Corn grain
- Wheat, winter
- Wheat, summer
- 6. Sugar beets
- 7. Flower bulbs
- 8. Grassland
- Permanent

- Temporary
- 9. Green fodder plants
- Lucerne
- Cutting corn
- Fodder beets
- Corn, energy-
- 10. Fallow ground
- Natural grassland
- Uncultivated areas, temporarily
- Fallow ground, natural
- Green manure, legumes
- Green manure, non-legume
- Tagetes (sand, loess)
- Uncultivated area by a ban / exemption
- 11. Limited agricultural traffic
- Forrest
- Fallow ground with forrest
- Heath
- Fruit
- Floricultural crops
- Arboricultureral crops
- Other nature areas
- Walnut trees
- Fauna border
APPENDIX 3.4: PRODUCTION PER CROP TYPE FOR DIFFERENT SOIL TYPES AND

REGIONS IN KG (KWIN, 2014)

	Clay	Sand	Clay	Clay	Clay	River-	Sand	Sand	Sand	All types
			IJsselmeerpolders	North	Southwest	clay	South	/'Dalgrond'	/'Dalgrond'	
							ast	North East	North	
Consumption potatoes			55000	45000	50000		56000			
Seed potatoes			40000	35000	33000					
Seed TBM								31000		
Starch potatoes										43000
Sugar beets			83100	71800	75000			70100	69700	
Winter wheat		7300	9200		9200					
Summer wheat	6900									
Lucerne	14000									
Cutting corn	16500	16000								
Seed union			67000		56000					

APPENDIX 3.5: NUMBER OF FIXED ACTIVITIES PER CROP TYPE, AND IF POSSIBLE FOR

A SPECIFIC SOIL TYPE

'FIXED' ACTIVITIES, PER SEASON, AGRICULTURAL CROPS

	Spring	Summer	Autumn	Winter	Total
OLD based on	4	8	2	3	17
literature					
NEW	9	9	2	1	21
literature and					
interviews					

	W	Н	W	L	Z	L	W	L	Z	W	L	Н	Н	Z	Z	Z	Z	Z	Z	Н	W	Total
	Ploughing	Ploughing	Sowing	Sowing	Sowing	Chemical	Chemical	Spraying	Spraying	Spraying	Raking	Harvesting	Plouging	Combining	Harvesting	Straw	Straw	Slepen	Ploughing	Cultivator	Cultivator	
						fertiliser	fertiliser									cutting	pressing					
Beans,	1			2			3	2	2		1	1	1							1		13
garden (green																						
harvest)																						
Beans,	1			2		1		3	3		1			1					1	1		15
garden-																						
Peas, green/	1			2		2		2	4					1	1		1			1		17
yellow																						
Opium poppy	1			2		2		2	2				1	1					1	1		14
Rape seed		1	2			1	1	2		2				1	1	1		1	1	1		16
Peas,	1			2		3			6			1		1					1	1		17
including																						
shock cherry																						
Grass seed		1	2			2		2	2	1				1			1		1		1	14
Carraway						2	2	1	2						2	1			1	1		14
seed																						
Hemp fibre	1			2		3		2	3						2		1			1		15
Beans, brown-	1				2		3	2	3		1			1	1						1	15
								-														

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	W	W	А	SP	SP	SP	SP	SP	SU	SU	SP	SU	SU	SU	Total
	Ploughing	Chemical	Chemical	Chemical	Raking	Sowing	Planting	Spraying	Spraying	Spraying	Weeding	Leaves	Harvesting	Cultivator	
		fertiliser	fertiliser	fertiliser					Min	Max		removal			
Seed/plant	1	1	1	1	1	1			1	7	1	1	1	1	19
onions 1st															
Fons	1		1	2	1	1		2	10		1		1		22
Seed/plant	1	1	1	1	1		1	1	1	8	1	1	1	1	20
onions 2nd															

	W	А	SP	SP	SP	SP	SU	SP	SU	А	Total
	Ploughing	Chemical	Chemical	Raking	Sowing	Spraying	Spraying	Weeding	Harvesting	Cultivator	
		fertiliser	fertiliser								
Endive											
Isaac	1	1	2	1	1	2	4	2	1	1	16
Carrot											
Isaac	1	1	6	1	1	3	8		1	1	23

'FIXED' ACTIVITIES, PER SEASON, CEREALS

	Spring	Summer	Autumn	Winter	Total
OLD based on	5	7	5	2	19
literature					
NEW	3	7	5	0	15
literature and					
interviews					

Cereals,	А	А	А	SP	SP	SU	W	SP	SU	SU	SU	А	А	Total
winter														
	Ploughing	Raking	Sowing	Chemical	Organical	Chemical	Spraying	Spraying	Spraying	Combining	Straw	Green fodder	Cultivator	
				fertiliser	fertiliser	fertiliser					creation	sowing		
Clay	1	1	1	1	1	2	2	3	3	1	1	1	1	19
														OLD
	1	1	1	1		1		2	2	2	2	1	1	15
														NEW
Evert	1	1	1	1		1		1	2	1	1		1	11
Gert	1	1	1	1		2		1	2	1	1	1	1	14
Hein	1	1	1	1	1			1	2	1	1	1	1	12
Isaac	1	1	1	1	1	1		1	2	1	1	1	1	13
Zand	1	1	1	1	1	2		2	2	1	1	1	1	17

'FIXED' ACTIVITIES, PER SEASON, FLOWER BULBS

	Spring	Summer	Autumn	Winter	Total
OLD based on	15	18	2	0	35
literature					
NEW	20	21	2	0	43
literature and					
interviews					

Flower bulbs	А	А	SP	SP	SP	SP	SU	SU	SP	SP	SU	SU	Total
	Spraying	Ploughing	Harrowing	Planting	Chemical	Spraying	Spraying	Selection	Bulb head	Irrigation	Leaves	Harvesting	
					fertiliser				removal		removal		
Clay	1	1	1	1	3	8	12	4	1	1	1	1	35
	1	1		1	3	7		4	2	7		4	43
							13						
Cor	1	1		1	3	7	13	4	2	7		4	43

'FIXED' ACTIVITIES, PER SEASON, GRASSLAND, 5 MOWING MOMENTS

	Spring	Summer	Autumn	Winter	Total
OLD based on	2	23	1	1	27
literature					
NEW	8	17	6	2	33
literature and					
interviews					

Grassland	А	А	W	W	SP	SP	SP	SU	SU	SU	А	Total
	Cultivateren	Sowing	Organical	Rolling with	Chemical	Mowing	Organical	Mowing	Chemical	Organical	Mowing	
			fertilser	Cambridge	fertiliser		fertilser		fertiliser	fertiliser		
				cylinder								
		1	1		1		1	20	2	1		27
												OLD
Dirk	1	1	1	1	1	5	2	12	3	2	4	33
												NEW

'FIXED' ACTIVITIES, PER SEASON, GREEN FODDER PLANTS (BASED ON CUTTING CORN)

		Spring	Summer	Autumn	Winter	Total
OLD based on	Clay	4	2	2	1,5	9,5
literature						
NEW	Clay	6	1	3	1	11
OLD based on	Sand	4,5	3,5	1,5	0	9,5
literature						
NEW	Sand	7	1	2	1	11
OLD based on	Peat	6	0	2	0	8
literature						
NEW	Peat	6	1	3	1	11

		А	SP	SP	SP	W	SP	SP	SU	SU	А	А	Total
		Ploughing	Ploughing	Harrowing	Sowing	Organical	Chemical	Spraying	Spraying	Weeding	Harvesting	Cultivator	
						fertiliser	fertiliser						
Cutting corn	Clay	1		1	1	1	3	1		1	1	1	11
	Sand		1	1	1	1	3	1		1	1	1	11
	Peat	1		1	1	1	3	1		1	1	1	11
Fodder beets	Clay	1		1	1		2	1	1	2	1	1	11
	Sand		1	1	1		2	1	1	2	1	1	11
	Peat	1		1	1		2	1	1	2	1	1	11
Lucerne	Clay	1		1	1			1			1	1	6
	Sand	1		1	1			1			1	1	6
	Peat	1		1	1			1			1	1	6

'FIXED' ACTIVITIES, PER SEASON, CONSUMPTION POTATO.

	Spring	Summer	Autumn	Winter	Total
OLD based on	9	14	3	0	26
literature					
NEW	10	15	4	0	29
literature and					
interviews					

Consumption	А	SP	SP	SP	SP	SP		SU		SU	А	А	Total
potato													
	Ploughing	Harrowing	Planting	Chemical	Rijenfrezen	Spraying	Spraying	Spraying	Spraying	Leaves	Harvest	Cultivateren	
				fertiliser		Min	Max	Min	Max	removal +			
										spraying			
Clay	1	1	1	3	1	2	4	12	14	1	1	1	26
													OLD
	1	1	2	3	1	3		14		1	2	1	29
													NEW
Aart / Bas	1	1	2	3	1	1		14		1	1	1	26
Gert	1	1	1	3	1	3		13		1	1	1	26
Isaac	1	1	1	4	2	3		14		1	1	1	31
Hein	1	1	1	2	1	1		15		1	1	1	25
Sand	1	1	2	3	1	1	3	13	15	1	1	1	32

'FIXED' ACTIVITIES, PER SEASON, SEED POTATO.

	Spring	Summer	Autumn	Winter	Total
OLD based on	8	14	3	0	25
literature					
NEW	12	17	5	0	34
literature and					
interviews					

Seed	А	SP	SP	SP	SP	SP	SP		SU		SU	SU	А	А	Total
potatoes															
	Ploughing	Harrowing	Planting	Chemical	Organical	Rijen	Spraying	Spraying	Spraying	Spraying	Selection	Leaves	Harvest	Cultivateren	
				fertiliser	fertiliser	frezen	Min	Max	Min	Max		removal +			
												spraying			
Clay	1	1	1	3		1	1	3	9	11	3	1	1	1	25
															OLD
	1	1	3	3		1	4		9		4	2	3	1	34
															NEW
Aart /	1	1	1	3		1	3		12		4	2	2	1	31
Bas											4				
Evert	1	1	4	2		1	3		11		4	-	1	1	29
Fons	1		1	1	1	1	4		12		4	1	1	1	28
Gert	1	1	1	2		1	2		9		4	1	1	1	24
Isaac	1	1	1	3		1	4		9		5	2	2	1	30
Hein	1	1	1	3		1	4		11		4	1	1	1	29

'FIXED' ACTIVITIES, PER SEASON, ONIONS.

	Spring	Summer	Autumn	Winter	Total
OLD based on	5	11	2	0	18
literature					
NEW	9	16	2	1	28
literature and					
interviews					

	W	W	А	SP	SP	SP	SP	SP	SU	SU	W	SU	SU	SU	А
	Ploughing	Chemical	Chemical	Chemical	Harrowing	Sowing	Planting	Spraying	Spraying	Spraying	Spraying	Weeding	Leaves	Harvesting	Cultivator
		fertiliser	fertiliser	fertiliser					Min	Max			removal		
Seed	1	1	1	1	1	1		2	11	12	1	1	1	2	1
onions															
Plant	1	1	1	1	1	1		1	7			1	1	2	1
onions 1ste															
Plant	1	1	1	1	1		1	1	8			1	1	1	1
onions 2de															

	W	W	А	SP	SP	SP	SP	SU		SP	SU	SU	А	Total
	Ploughing	Chemical	Chemical	Chemical	Harrowing	Sowing	Spraying	Spraying	Spraying	Weeding	Leaves	Harvesting	Cultivator	
		fertiliser	fertiliser	fertiliser				Min	Max		removal			
Seed onions	1	1	1	1	1	1	2	10	12	1		2	1	23
														OLD
	1		1	2	1	1	4	14		1		2	1	28
														NEW
Evert	1		1	2	1	1	4	16		1		2	1	30
Hein	1		1	2	1	1	3	16				2	1	25
Isaac	1		1	2	1	1	4	14				2	1	27

'FIXED' ACTIVITIES, PER SEASON, STARCH POTATOES

	Spring	Summer	Autumn	Winter	Total
OLD based on	9	11	2	1	23
literature					
NEW	8	10	2	1	21
literature and					
interviews					

Starch potatoes	А	SP	SP	SP	SP	SP	SP		SU		А	W	Total
	Soil disinfection	Ploughing	Harrowing	Sowing	Chemical	Making	Spraying	Spraying	Spraying	Spraying	Harvesting	Cultivator	
					fertiliser	rows	Min	Max	Min	Max			
Clay	1	1	1	1	3	1	1	3	10	12	1	1	23
													OLD
Cor			1	1	2	1	3		10		2	1	21
													NEW
			1	1	2	1	3		10		2	1	21

'FIXED' ACTIVITIES, PER SEASON, SUGAR BEETS, FOR THREE SOIL TYPES

		Spring	Summer	Autumn	Winter	Total
OLD based on literature	Clay	6.5	5.5	3	0	15
NEW	Clay	7	9	4	0	20
OLD based on literature	Sand	5.5	6.5	3	0	15
NEW	Sand	7	9	3	0	19
OLD based on literature	Peat	6	6	3	0	13
NEW	Peat	7	9	4	0	20

Sugar beets	А	А	SP	SP	SP	SP		SU		SU	А	Total
	Ploughing	Cultivator	Harrowing	Sowing	Chemical	Spraying	Spraying	Spraying	Spraying	Raking	Harvesting	
					fertiliser	Min	Max	Min	Max			
Clay	1	1	1	1	3	1	2	4	5	1	1	14
												OLD
	1	1	1	1	3	2		8		1	2	20
												NEW
Aart / Bas	1	1	1	1	3	1		14		1	2	25
Evert	1		1	1	4	1		5			2	15
Gert	1	1		1	4	2		11		1	1	22
Isaac	1	1	1	1	2	2		8		1	2	19
Hein	1	1	1	1	2	1		8		1	2	18
Sand	1	1	1	1	3	0	1	5	6	1	1	15
												OLD
		1	1	1	3	2		8		1	2	19
												NEW
Peat	1	1	1	1	3	1	1	3	3	3	1	15
												OLD
	1	1	1	1	3	2		6		3	2	20
												NEW

'FIXED' ACTIVITIES, PER SEASON, FALLOW GROUND

	Spring	Summer	Autumn	Winter	Total
OLD based on	1.5	0.5	1	0	3
literature					
NEW	2	2	1	0	5
literature and					
interviews					

APPENDIX 3.6: MODEL BUILDER MODEL FOR THE CREATION OF THE USER DATA SET

IN ARCGIS.





Appendix 3.7: Data set users and ACN points . . ٠ . 1 1

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APPENDIX 3.8: USER LOTS WITH BUFFER

Appendix 3.9: User lots clustered geographically



APPENDIX 3.10: ACN DOTS WITH 50 METER BUFFER



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APPENDIX 3.12: TRANSFORMATION TO POLYGONS

Appendix 3.13: Selection ACN buffers with ACN point





APPENDIX 3.14: MERGE ACN BUFFER ZONES WITH PARCELS

Appendix 3.15: Classification soil data set

OudeBodemCode	OudeBodemCategorie	NieuweBodemCategorie
az	Afgesloten Zeearmen	Klei
du	Duinen	Zand
gg	Getijdengebied	Klei
hl	Heuvelland	Overig
hz	Hogere Zandgronden	Zand
lv	Laagveengebied	Veen
ni	Niet indeelbaar	Overig
nz	Noordzee	Overig
ri	Rivierengebied	Klei
zk	Zeekleigebied	Klei

APPENDIX 3.16: CLASSIFICATION CROPS

OorspronkelijkeCode	NieuweCategorie	OorspronkelijkeKlasse
814	Akkerbouw Gewas	MaÃ ⁻ s, suiker-
247	Akkerbouw Gewas	Blauwmaanzaad
2650	Akkerbouw Gewas	Erwten inclusief schokkers (droog te oogsten)
854	Akkerbouw Gewas	Bonen, tuin- (groen te oogsten)
244	Akkerbouw Gewas	Erwten, groene/gele, groen te oogsten
515	Akkerbouw Gewas	Zonnebloemen
516	Akkerbouw Gewas	Miscanthus (olifantsgras)
2653	Akkerbouw Gewas	Graszaad (inclusief klaverzaad)
672	Akkerbouw Gewas	Groenten open grond (inclusief
		groentezaden)
	Akkerbouw Gewas	Bonen, tuin- (droog te oogsten) (geen
		consumptie)
1923	Akkerbouw Gewas	Koolzaad, zomer (ook boterzaad)
663	Akkerbouw Gewas	Lupinen, niet bittere-
3736	Akkerbouw Gewas	Vezelvlas
243	Akkerbouw Gewas	Bonen, veld-(oa duive-, paarde-, wierbonen)
		(droog te oogsten
1925	Akkerbouw Gewas	Overige akkerbouwgewassen
511	Akkerbouw Gewas	Cichorei
944	Akkerbouw Gewas	Hennep, vezel-
1921	Akkerbouw Gewas	Graszoden
1922	Akkerbouw Gewas	Koolzaad, winter (ook boterzaad)
1950	Beperkt Agrarisch Verkeer	Onbekend/gewas niet opgegeven
3721	Beperkt Agrarisch Verkeer	Faunaranden, bouwland
294	Beperkt Agrarisch Verkeer	Boomkwekerijgewassen en vaste planten,
		pot- en containerveld
864	Beperkt Agrarisch Verkeer	Bos (set aside regeling)
2027	Beperkt Agrarisch Verkeer	Bos (SBL-regeling)

1936	Beperkt Agrarisch Verkeer	Bos, blijvend, met herplantplicht		
3806	Beperkt Agrarisch Verkeer	Boomkwekerijgewassen en vaste planten,		
		open grond		
212	Beperkt Agrarisch Verkeer	Fruit		
2645	Beperkt Agrarisch Verkeer	Notenbomen		
863	Beperkt Agrarisch Verkeer	Bos, zonder herplantplicht		
175	Beperkt Agrarisch Verkeer	Bloemkwekerijgewassen (inclusief		
		bloemzaden)		
3720	Beperkt Agrarisch Verkeer	Faunaranden, grasland		
3719	Beperkt Agrarisch Verkeer	Heide		
3722	Beperkt Agrarisch Verkeer	Overige natuurterreinen		
176	Bloembollen	Bloembollen en - knollen		
2026	Braak	Braak met bos (SBL-regeling na 28 juni 1995)		
1930	Braak	Tagetes (zand, loss) (geen groene braak)		
2299	Braak	Groenbemesters, niet-vlinderbloemige		
2298	Braak	Groenbemesters, vlinderbloemige		
3718	Braak	Grasland, natuurlijk		
2029	Braak	Braak, natuur-		
2033	Braak	Onbeteelde grond, tijdelijk		
2025	Consumptie Aardappelen	Aardappelen, bestrijdingsmaatregel AM		
3792	Consumptie Aardappelen	Aardappelen, consumptie op zand/veengrond		
2951	Consumptie Aardappelen	Aardappelen, consumptie op klei/lössgrond		
236	Granen	Gerst, zomer-		
238	Granen	Haver		
2652	Granen	Granen, overig		
314	Granen	Triticale		
234	Granen	Tarwe, zomer-		
237	Granen	Rogge (geen snijrogge)		
317	Granen	MaÃ ⁻ s, corncob mix		
233	Granen	Tarwe, winter-		
316	Granen	MaÃ ⁻ s, korrel-		

235	Granen	Gerst, winter-
266	Grasland	Grasland, tijdelijk
265	Grasland	Grasland, blijvend
259	Groenvoeder Planten	MaÃ ⁻ s, snij-
2032	Groenvoeder Planten	Mais, energie-
258	Groenvoeder Planten	Luzerne
2651	Groenvoeder Planten	Bieten, voeder- (inclusief aardperen)
3731	Poot Aardappelen	Aardappelen, poot op zand/veengrond (NAK)
3730	Poot Aardappelen	Aardappelen, poot op klei/lössgrond (NAK)
256	Suikerbieten	Bieten, suiker-
1931	Uien	Uien, poot en plant (incl. sjalotten)
262	Uien	Uien, zaai-
3732	Zetmeel Aardappelen	Aardappelen, zetmeel (incl. TBM-pootgoed)

APPENDIX 4.1: TOPIC LISTS

INFORMATION RECEIVED BY FARMERS AND FARMER ADVISORS.



The texts are translated in English, but were received in Dutch by the interviewees.

Dear,

Within this study is examined how often a farmer goes back and forth from his home parcel to his field parcel. This is done with a geographical information system, a software program that can calculate the shortest route and can visualize the traffic intensity

This model is made because little is known about agricultural traffic on the road. This model can be used for example to improve coordination of road maintenance, testing of adjustments of the network, promotion of voluntary land consolidation or to improve the safety of the roads.

The interview is used to verify the number of activities that are now used in the model. To the received information shall be referred anonymous.

The following document explains what factors are included in theAppendix 4 Expert judgementPage 101

current model and how these are included. There is explained which crops and soil types are covered in the model. Those categories where you do not have knowledge of, you can skip of course. Next to this I have a few questions which are stated below.

- 1. What do you think of the factor choice and the interpretation of these factors?
- 2. Are there any factors that are not included, but have a (large) influence on the number of journeys?
- 3. Are the chosen production quantities approaching the truth or do these need change?
- 4. Are the chosen activity numbers for a particular crop approaching the truth or do these need change?
- 5. Furthermore I am wondering if you have smart methonds to decrease the number of journeys to a field parcel. Or if you see these methods used by other farmers? An example is a place on the field parcel for sugar beets, or a water source for praying on the field parcel.

Thanks in advance.

Kind regards, Annet Hospers

FACTORS INFLUENCING THE NUMBER OF

TRIPS TAKEN INTO ACCOUNT IN THE MODEL

Within this study the number of journeys from a home to a field parcel is examined and thereafter multiplied, which results in back and forth journeys.

Therefore is investigated which factors determine the number of journeys to a field parcel. In this study four factors are considered: crop type, soil type, total production and kipper size.

Crop type and soil type have influence on the number of 'fixed' activities. This number does not depend on the size of the parcel, but is determined by the crop and soil type. This number of activities is for example equal for all clay field parcels with sugar beets.

The 'bulk' activities depend on the size of the plot and the production per hectare, as this determines the total production of a crop from a parcel. Furthermore the kipper size determines the number of journeys that are necessary to bring the harvest to the home parcel.

The fixed and bulk activities combined are the number of activities. As stated this number is multiplied.

CROP CLASSIFICATION

Because it is not possible to distinguish all crop types that are divined within the basic registration of parcels, crops are joined in categories.

- Control measure (bestrijdingsmaatregel) AM
- Consumption on clay / loess soil
- Consumption on sand / peat soil
- 2. Seed potatoes
- Seed on clay / loess soil
- Seed on sand / peat soil
- 3. Starch potatoes
- Starch (TBM)
- Starch potatoes
- 3. Onions
- Onions, seed
- Onions, seed and plant
- 4. Agricultural crops
- Opium poppy
- Beans, brown-
- Beans, garden- (dry harvesting)
- Beans, garden- (green harvesting)
- Beans, garden-
- Endive
- Peas, green / yellow
- Peas, including shock cherry
- Grass seed
- Sod of grass
- Vegetables open ground (including vegetable seeds)
- Hemp fibre
- Marrowfat pea
- Caraway seed
- Rapeseed, winter-
- Rapeseed, summer-

- Linseed not from flax
- Lupine
- Miscanthus
- Other agricultural crops
- Rape seed
- Soybeans
- Sweetcorn
- Flax
- Sunflowers
- 5. Cereals
- Barley, winter
- Barley, summer
- Rye (no cutting rye)
- Oats
- Triticale
- Cereals, other
- Corn corncob mix
- Corn grain
- Wheat, winter
- Wheat, summer
- 6. Sugar beets
- 7. Flower bulbs
- 8. Grassland
- Permanent
- Temporary
- 9. Green fodder plants
- Lucerne
- Cutting corn
- Fodder beets
- Corn, energy-

- 10. Fallow ground
- Natural grassland
- Uncultivated areas, temporarily
- Fallow ground, natural
- Green manure, legumes
- Green manure, non-legume
- Tagetes (sand, loess)
- Uncultivated area by a ban / exemption
- 11. Limited agricultural traffic
- Forrest
- Fallow ground with forrest
- Heath
- Fruit
- Floricultural crops
- Arboricultureral crops
- Other nature areas
- Walnut trees
- Fauna border

SOIL TYPE

Within this study four soil types are distinguished: IJsselmeer clay, other clay, sand and peat. There is a distinction between IJsselmeer clay and other clay in the Netherlands because in the province of Flevoland the production is of crops is higher in comparison with other clay areas. On peat are in general not much agricultural crops cultivated, but the production of grass on this soil type differs from the production of grass on other soil types. Therefore this soil types is distinguished from the others.

FIXED ACTIVITIES (PER CROP)

In the model the averages in the tables are used. The cereal cateogry is based on winter wheat, because this is the most common crop type in this category. The category of agricultural crops is based on the crops of which information was available, after which a weighted average is created. This implies that the more common crops in the Netherlands are more heavily weighted.

The seasons are:

- Spring: March, April, May
- Summer: June, July and August
- Autumn: September, October, November
- Winter: December, January, February

Fixed activities, per season, consumption potato.

	Spring	Summer	Autumn	Winter	Total
Minimum	7	20	3	0	29
Maximum	11	22	3	0	35
Average	9	21	3	0	33

Fixed activities, per season, seed potato.

	Spring	Summer	Autumn	Winter	Total
Minimum	8	14	4	0	26
Maximum	11	19	4	0	34
Average	9	16	4	0	30

Fixed activities, per season, starch potato.

	Spring	Summer	Autumn	Winter	Total
Minimum	9	11	2	1	23
Maximum	11	14	2	1	28
Average	10	12.5	2	1	25.5

Fixed activities, per season, onions.

	Spring	Summer	Autumn	Winter	Total
Minimum	6	18	2	0	26
Maximum	7	21	2	0	30
Average	6.5	19.5	2	0	28

Fixed activities, per season, agricultural crops.

	Spring	Summer	Autumn	Winter	Total
Average	5	10	2	3	20

Fixed activities, per season and soil type, sugar beets.

Clay	Spring	Summer	Autumn	Winter	Total
Minimum	5	5	4	0	14
Maximum	7	7	4	0	18
Average	6	6	4	0	16

Peat	Spring	Summer	Autumn	Winter	Total
Minimum	5	6	4	0	15
Maximum	6	7	4	0	17
Average	5.5	6.5	4	0	16

Sand	Spring	Summer	Autumn	Winter	Total
Minimum	5	6	3	0	14
Maximum	7	8	3	0	18
Average	6	7	3	0	16

Fixed activities, per season, cereals (based on winter wheat). for clay and sand, peat is the average of both.

Clay	Spring	Summer	Autumn	Winter	Total
Minimum	5	8	6	0	19
Maximum	5	8	6	2	21
Average	5	8	6	1	20

Sand	Spring	Summer	Autumn	Winter	Total
Minimum	3	7	6	0	16
Maximum	5	8	6	0	19
Average	4	6	6	0	17.5

Fixed actvities, per season, green fodder plants.

	Spring	Summer	Autumn	Winter	Total
Clay	4	2	2	1,5	9,5
Sand	4,5	3,5	1,5	0	9,5
Peat	6	0	2	0	8

Fixed activities, per season, grassland, with 5 mowing moments

Spring	Summer	Autumn	Winter	Total
8	17	6	2	27

Fixed activities, per season, flower bulbs.

	Spring	Summer	Autumn	Winter	Total
Average	8	17	2	6	33

Fixed activities, per season, fallow ground.

	Spring	Summer	Autumn	Winter	Total
Minimum	1	0	1	0	2
Maximum	2	1	1	0	4
Average	1.5	0.5	1	0	3

References

Aarts, H.F.M., C.H.G. Daatselaar & G. Holshof (2005), Bemesting en opbrengst van productiegrasland in Nederland. Wageningen: Plant Research International B.V.

PAGV [Proefstation voor de Akkerbouw en de Groenteteelt in de Vollegrond] (1995), Kwantitatieve informatie voor de akkerbouw en de groente in de vollegrond. 22ste editie. Lelystad: drukkerij Belser.

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Informatie: akkerbouw en vollegrondsgroenteteelt. 27ste druk, Wageningen: Praktijkonderzoek Plant & Omgeving

BULK ACTIVITIES (PRODUCTION)

The production per soil type is weighted for the different crop types within one crop category, as long there was information available about the production of a crop type. Furthermore the share of a crop within the Netherlands is taken into account to calculate the total production for a crop category. For example cutting corn has a larger share in comparison with lucerne and therefore is the production of cutting corn heavier weighted. For some crop types there was no information available, for example miscanthus. For these crops is therefore assumed that the production calculated for the crop category can be used for this crop type.

The kipper size implies the number of times a farmer needs to drive back and forth with the crop production. In the model two different sizes are used, 11 and 18 ton.

Kipper size	Crop category
11 ton	Green fodder plants
	Grassland
18 ton	Seed potatoes
	Consumption potatoes
	Starch potatoes
	Sugar beets
	Agricultural crops
	Cereals
	Onions

	Clay IJs-	Clay	Sand***	Peat	Average*
	selmeer				
Consumption	55000	47500	56000		53000
potatoes					
Plant potatoes	40000	34000	33000		36000
Starch potatoes	43000	43000	43000		43000
Sugar beets	83000	73000	70000		75500
Agricultural	15000	15000	15000		15000
crops					
Wheat	9300	8600	7600		8500
Onions	63000	50000	57000		57000
Flower bulbs					65000
Green fodder	45000	45000	44000		45000
plants					
Grassland**	60000	60000	65000	55000	60000

* The average of the soil types, used for peat if there was no information available.

** Based of five mowing moments in a year

*** Average of wet and dry sand, unweighted. Based on five mowing moments.

REFERENCES

Aarts, H.F.M., C.H.G. Daatselaar & G. Holshof (2005), Bemesting en opbrengst van productiegrasland in Nederland. Wageningen: Plant Research International B.V.

PPO [Wageningen, Praktijkonderzoek Plant & Omgeving] (2012), Kwantitatieve

Informatie: akkerbouw en vollegrondsgroenteteelt. 27ste druk, Wageningen: Praktijkonderzoek Plant & Omgeving

QUESTIONS FOR THE MUNICIPALITY OF THE NOORDOOSTPOLDER

Where are the current bottlenecks with regard to agrarian traffic?
Can you draw these bottlenecks on a map, and how is the agrarian traffic density spread over the Noordoospolder?
What is the cause of these bottlenecks?
What is done about these bottlenecks?
Which factors result in unsafe situations?
What is the development of the amount of agrarian traffic on the road in the past year?

QUESTIONS FOR NON-PROFIT ORGANISATION VRIJWILLIGE KAVELRUIL FLEVOLAND

1. Who are you and what are your responsibilities within the nonprofit organisation Vrijwillige Kavelruil Flevoland?

2. How and why is the non-profit organisation originated?

3. How many times is made use of the expertise of the non-profit organisation?

4. For which area or company types in Flevoland is land consolidation a change?

5. How is the numeric example about the costs of a field parcel created?

6. I am interested in the number of trips from and to a field parcel, how can I calculate these?

7. Which factors imply the number of trips to a field parcel?

8. What is the share of rented parcels in the Noordoostpolder?

9. Does this have a large impact on the amount of traffic?

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10. Do you know people who have knowledge of the factors that influence the number of trips between a home and field parcel?

APPENDIX 4.2: DESCRIPTION OF THE INTERVIEWEES

- Land consolidation coordinator of Stichting Vrijwillige Kavelruil Flevoland.
- Farmer advisor Aart: gives advice about the amount of spraying, the minerals, mainly to farmers in the Noordoostpolder
- Famer (advisor) Bas: Both advisor and farmer of agricultural products (no grass) based in the Noordoostpolder.
- Farmer (advisor) Cor: Both advisor and farmer, mainly knowledge of flower bulbs based in the Noordoostpolder.
- Farmer Dirk: small farmer in the Noordoostpolder, cow holder, grass knowledge, and knowledge of parcels on distance
- Farmer Evert: large farmer in the Noordoostpolder with several parcels on distance, active in an agricultural organisation, agricultural products (no grass) (Plant potatoes, consumption potatoes, sugar beets, wheat, onions).
- Farmer Fons: small farmer in the Noordoostpolder with several agricultural crops on sand ground (seed onions, endive, barley, plant potatoes), works at another agricultural organisation therefore insight in the average and insight in flower bulbs.
- Farmer Gert: large farmer in the Noordoostpolder with many parcels on distance with agricultural crops (consumption and plant potatoes, carrots, onions, wheat, sugar beets).
- Farmer Hein: middle sized farmer in the Noordoostpolder with agricultural crops, some insight in flower bulbs and parcels on distance (consumption and plant potatoes, carrots, onions, wheat, sugar beets).
- Farmer Isaac: middle sized farmer in the Noordoostpolder with agricultural crops (consumption and plant potatoes, carrots, onions, wheat, sugar beets, endive).
- Farmer Jan: small farmer in Groningen with knowledge of cows and grass (by phone).
- Farmer Klaas: middle-sized farmer in Groningen with knowledge of cows and grass and parcels on distance (by phone).
- Farmer Lars: middle-sized farmer in Drenthe with knowledge of farming on sand ground and several agricultural crops (consumption potatoes, sugar beets, wheat) of which starch potatoes (by phone)
- (Traffic) policy employees of the municipality of the Noordoostpolder
- (Traffic) policy employees of the province of Zeeland
APPENDIX 4.3: ACCESS TOOL PRINTSCREEN (1), HOMEPAGE



APPENDIX 4.4: ACCESS TOOL PRINTSCREEN (2), ACTIVITIES



APPENDIX 4.5: ACCESS TOOL PRINTSCREEN (3), PRODUCTION



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APPENDIX 5.1: MEASURES OF DISPERSION AND DISTRIBUTION, ANNUAL

NUMBER OF VEHICLES OVER A ROAD SEGMENT

	N	Range	Std.	Variance	Skewness	Skewness	Kurtosis	Kurtosis
			Deviation		Statistic	Std. Error	Statistic	Std. Error
Noordoostpolder Owner 2013	1428	3100	491	241185	1,792	,065	4,176	,129
Crop 2013								
Noordoostpolder Owner 2013	1428	3682	530	280634	2,398	,065	8,337	,129
Crop 2014								
Noordoostpolder Owner 2014	1652	3729	597	356779	1,737	,060	3,558	,120
Crop 2012								
Noordoostpolder Owner 2014	1652	4013	610	372560	1,974	,060	4,729	,120
Crop 2013								
Noordoostpolder Owner 2014	1658	5782	758	575281	2,964	,060	11,096	,120
Crop 2014								
Noordoostpolder User 2014 Crop	6283	6298	898	806426	2,050	,031	4,916	,062
2013								
Noordoostpolder User 2014 Crop	6283	9959	1319	1738650	2,194	,031	6,444	,062
2014								
Zeeland Owner 2014	25927	5719	617	381515	2,622	,015	9,650	,030
Crop 2013								
Zeeland Owner 2014	25927	5825	605	366549	2,551	,015	8,899	,030
Crop 2014								
Zeeland User 2014	33558	12886	1345	1809120	2,163	,013	5,935	,027
Crop 2013								
Zeeland User 2014	33558	12029	1392	1936897	2,155	,013	5,698	,027
Crop 2014								

Appendix 5.2: Yearly traffic density in the Noordoostpolder with owner

DATA OF 2014 AND CROP DATA OF 2012

	Number of crop parcels with an owners ID	Number of routes
NOP	5007	383
Owner2013		
Crop2013		
NOP	5312	383
Owner2013		
Crop2014		
NOP	5313	396
Owner2014		
Crop2013		
NOP	5552	396
Owner2014		
Crop2014		
NOP	12084	2305
User2014		
Crop2013		
NOP	12468	2305
User2014		
Crop2014		

Appendix 5.3: Yearly traffic density in the Noordoostpolder with owner



DATA OF 2014 AND CROP DATA OF 2012

Appendix 5.4: Yearly traffic density in the Noordoostpolder with owner



DATA OF 2014 AND CROP DATA OF 2013

Appendix 5.5: Yearly traffic density in the Noordoostpolder with owner



DATA OF 2014 AND CROP DATA OF 2014

APPENDIX 5.6: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE

Noordoostpolder with owner data of 2014 and crop data of 2012



APPENDIX 5.7: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE



APPENDIX 5.8: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE



Appendix 5.9: Yearly traffic density in the Noordoostpolder with owner



DATA OF 2013 AND CROP DATA OF 2013

Appendix 5.10: Yearly traffic density in the Noordoostpolder with owner



DATA OF 2014 AND CROP DATA OF 2014

APPENDIX 5.11: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE



APPENDIX 5.12: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE



Appendix 5.13: Yearly traffic density in the Noordoostpolder with user



DATA OF 2014 AND CROP DATA OF 2013

Appendix 5.14: Yearly traffic density in the Noordoostpolder with user



DATA OF 2014 AND CROP DATA OF 2014

APPENDIX 5.15: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE



APPENDIX 5.16: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE



APPENDIX 5.17: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE SUMMER IN THE

Legend NOP Parcel Users 2014 Crops 2013 Traffic per road segment in the summer - 0 - 2 3-5 6 - 10 11 - 15 - 16 - 20 Bant E User - 21 - 30 2014 Crop 31 - 49 Time Year Creil uttelgeest Marknesse Emmeloord Ň Nagele Source: Kadaster, 2014 Author: Annet Hospers, 2015 1:100.000 Kilometers 1.25 2.5 0 7.5 10 5 Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user commun

APPENDIX 5.18: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE SUMMER IN THE



APPENDIX 5.19: YEARLY TRAFFIC DENSITY IN SCHOUWEN-DUIVELAND / BEVELAND



WITH OWNER DATA OF 2014 AND CROP DATA OF 2013

APPENDIX 5.20: YEARLY TRAFFIC DENSITY IN SCHOUWEN-DUIVELAND / BEVELAND



WITH OWNER DATA OF 2014 AND CROP DATA OF 2014

APPENDIX 5.21: AVERAGE WORKDAY TRAFFIC DENSITY IN SCHOUWEN-DUIVELAND /



BEVELAND WITH OWNER DATA OF 2014 AND CROP DATA OF 2013

APPENDIX 5.22: AVERAGE WORKING DAY TRAFFIC DENSITY IN SCHOUWEN-

DUIVELAND / BEVELAND WITH OWNER DATA OF 2014 AND CROP DATA OF 2014



Appendix 5.23: Yearly traffic density in Zeeuws-Vlaanderen with owner



DATA OF 2014 AND CROP DATA OF 2013

APPENDIX 5.24: YEARLY TRAFFIC DENSITY IN ZEEUWS-VLAANDEREN WITH OWNER



DATA OF 2014 AND CROP DATA OF 2014

Appendix 5.25: Average working day traffic density in Zeeuws-Vlaanderen



WITH OWNER DATA OF 2014 AND CROP DATA OF 2013

APPENDIX 5.26: AVERAGE WORKING DAY TRAFFIC DENSITY IN ZEEUWS-VLAANDEREN



WITH OWNER DATA OF 2014 AND CROP DATA OF 2014

Appendix 5.27: Yearly traffic density in Schouwen-Duiveland / Beveland



WITH USER DATA OF 2014 AND CROP DATA OF 2013

APPENDIX 5.28: YEARLY TRAFFIC DENSITY IN SCHOUWEN-DUIVELAND / BEVELAND



WITH USER DATA OF 2014 AND CROP DATA OF 2014

APPENDIX 5.29: AVERAGE WORKING DAY TRAFFIC DENSITY IN SCHOUWEN-

DUIVELAND / BEVELAND WITH USER DATA OF 2014 AND CROP DATA OF 2013



APPENDIX 5.30 AVERAGE WORKING DAY TRAFFIC DENSITY IN SCHOUWEN-

DUIVELAND / BEVELAND WITH USER DATA OF 2014 AND CROP DATA OF 2014



APPENDIX 5.31: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE SUMMER IN

SCHOUWEN-DUIVELAND / BEVELAND WITH USER DATA OF 2014 AND CROP DATA OF

2013



APPENDIX 5.32: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE SUMMER IN

SCHOUWEN-DUIVELAND / BEVELAND WITH USER DATA OF 2014 AND CROP DATA OF

2014



Appendix 5.33: Yearly traffic density in Zeeuws-Vlaanderen with user



DATA OF 2014 AND CROP DATA OF 2013

APPENDIX 5.34: YEARLY TRAFFIC DENSITY IN ZEEUWS-VLAANDEREN WITH USER

DATA OF 2014 AND CROP DATA OF 2014


Appendix 5.35: Average working day traffic density in Zeeuws-Vlaanderen

WITH USER DATA OF 2014 AND CROP DATA OF 2013



APPENDIX 5.36: AVERAGE WORKING DAY TRAFFIC DENSITY IN ZEEUWS-VLAANDEREN

WITH USER DATA OF 2014 AND CROP DATA OF 2014



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APPENDIX 5.37: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE SUMMER IN

ZEEUWS-VLAANDEREN WITH USER DATA OF 2014 AND CROP DATA OF 2013



APPENDIX 5.38: AVERAGE WORKING DAY TRAFFIC DENSITY IN THE SUMMER IN

ZEEUWS-VLAANDEREN WITH USER DATA OF 2014 AND CROP DATA OF 2014



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APPENDIX 6.1: LOCATION OF THE COUNTING DEVICES (PROVINCIE

ZEELAND, 2014)



APPENDIX 6.2: EXAMPLE COUNTING RESULTS AT THE NIEUWE RIJKSWEG

EINDEWEGE - ARENDSTRAAT

(Oosthoek & Pouwer, 2014).

LANDBOUWVERKEER - Periodieke meetpunten APRIL 2013

N664 km 13.300 Nieuwe Rijksweg Eindewege - Arendstraat Limiet: 80 km/uur Kritieke snelheid: 45 km/uur

Intensiteiten per dag

1000	datum	alle mvt	landbouwvo	(brom-)fiets
vr	29-03-2013	8005	24	
za	30-03-2013	6890	7	
20	31-03-2013	4063	0	
ma	01-04-2013	5055	5	
di	02-04-2013	8613	27	
wo	03-04-2013	8545	32	
do	04-04-2013	8709	20	
vr	05-04-2013	8672	18	
28	06-04-2013	6694	18	
20	07-04-2013	4249	2	
ma	08-04-2013	7741	27	
di	09-04-2013	8396	31	
wo	10-04-2013	8672	25	
do	11-04-2013	8720	20	
vr	12-04-2013	8874	20	
za	13-04-2013	6811	4	
zo	14-04-2013	4642	3	
ma	15-04-2013	7937	9	
di	16-04-2013	8750	22	
wo	17-04-2013	8591	18	
do	18-04-2013	8859	18	
w	19-04-2013	8728	20	
za	20-04-2013	6801	9	
zo	21-04-2013	4618	3	
ma	22-04-2013	8058	11	
di	23-04-2013			
wo	24-04-2013			
do	25-04-2013			
vr	26-04-2013			
za 🛛	27-04-2013			
zo	28-04-2013			
ma	29-04-2013			
di	30-04-2013			
wo	01-05-2013			
gem	werkdag	8492	21	
gem	. zaterdag	6799	10	
rem	zondar	4525	1	









Visuele kontrole-tellin	g:								Verplicht fie	tspad
bron		alle ve	erkeer	Sellin-	ALC: NO.	waarvan	Carlo Carlos Carlos	grijze	bromfiets	fiets
	licht	middel	zwaar	totaal	trekker	invalide	volger	gebied		
visueel			1							
MetroCount (45 km)		-								

16

7428

gem, weekdag

APPENDIX 6.3: MEAN OF AGRICULTURAL VEHICLES ON WORKDAYS FOR 2012-2013,

IN AUGUST

(Oosthoek & Pouwer, 2014)



APPENDIX 6.4: MEAN OF AGRICULTURAL VEHICLES ON WORKDAYS IN 2012-2013,

ANNUALLY

(Oosthoek & Pouwer, 2014)



APPENDIX 6.5: MONTHLY MEAN OF THE AGRICULTURAL VEHICLES ON A WORKDAY,

FOR 2012 AND 2013

(Oosthoek & Pouwer, 2014)

6

Werkdaggemiddelden per	moond (al	hsolute a	antalle	e)									
locatie	jan	feb	mrt	apr	mei	jun	jul	aug	sep	okt	nov	dec	jaa
Abr. Groenewegenweg	19	21	23	42	25	46	45	59	42	50	29	22	35
Ketelaarstraat	11	20	32	33	24	34	23	53	36	39	13	14	28
Kloosterweg	14	15	13	23	21	25	22	34	27	35	28	22	23
Kruiningenpolderweg	26	30	34	46	42	38	34	59	52	50	35	34	40
Huisterweg Kuitaart	18	26	41	41	30	34	32	52	28	42	27	28	33
Loodholseweg	38	42	44	34	51	61	68	76	55	54	37	40	50
Philipsweg	11	11	10	22	17	20	14	34	22	19	11	10	17
Oost, Kanaalweg Vlake	15	16	31	39	31	35	31	60	31	39	21	18	31

locatie	jan	feb	mrt	apr	mei	jun	jul	ave	sep	okt	nov	dec	jaar
Abr. Groenewegenweg	54	60	65	119	71	130	128	167	119	142	82	62	100
Ketelaarstraat	40	72	116	119	87	123	83	192	130	141	47	51	100
Kloostenweg	60	65	56	99	90	108	95	146	116	151	120	95	100
Kruiningenpolderweg	65	75	85	115	105	95	85	148	130	125	88	85	100
Hulsterweg Kuitaart	54	78	123	123	90	102	96	156	84	126	81	84	100
Loodholseweg	76	84	88	68	102	122	136	152	110	108	74	80	100
Philipsweg	66	66	60	131	101	119	84	203	131	113	66	60	100
Oost. Kanaalweg Vlake	49	52	101	128	101	114	101	196	101	128	69	59	100
gemiddelde index 2013	58	69	87	113	94	114	101	170	115	129	78	72	100
eemiddelde index 2012	54	62	97	93	104	94	111	156	134	117	92	67	

Werkdoggemiddelden per moond in 2013 (index)



Vergelijking indexcijfers 2012 en 2013



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Appendix 6.6: Scatterplot Zeeland,

APPENDIX 6.7: SCATTERPLOT ZEELAND,



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MULTIPLE PAIR, SUMMER

MULTIPLE PAIR, ANNUAL



APPENDIX 6.9: SCATTERPLOT NOORD-

BEVELAND, MULTIPLE PAIR, SUMMER



BEVELAND, MULTIPLE PAIR, ANNUAL



APPENDIX 6.10: SCATTERPLOT SCHOUWEN- APPENDIX 6.11: SCATTERPLOT SCHOUWEN-

DUIVELAND, MULTIPLE PAIR, SUMMER



APPENDIX 6.12: SCATTERPLOT THOLEN,



MULTIPLE PAIR, SUMMER





APPENDIX 6.13: SCATTERPLOT THOLEN,

MULTIPLE PAIR, ANNUAL

APPENDIX 6.14: SCATTERPLOT WALCHEREN/ APPENDIX 6.15: SCATTERPLOT WALCHEREN/

ZUID-BEVELAND, MULTIPLE PAIR, SUMMER

ZUID-BEVELAND, MULTIPLE PAIR, ANNUAL

0 0

0 6

15



APPENDIX 6.16: SCATTERPLOT ZEEUWS-

VLAANDEREN, MULTIPLE PAIR, SUMMER

APPENDIX 6.17: SCATTERPLOT ZEEUWS-

20

25

30

35

VLAANDEREN, MULTIPLE PAIR, ANNUAL



0

5

10

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APPENDIX 6.18: SCATTERPLOT ZEELAND, APPENDIX 6.19: SCATTERPLOT ZEELAND,



AVERAGE PAIR, SUMMER

AVERAGE PAIR, ANNUAL



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APPENDIX 6.21: SCATTERPLOT NOORD-

BEVELAND, AVERAGE PAIR, SUMMER

APPENDIX 6.20: SCATTERPLOT NOORD-



BEVELAND, AVERAGE PAIR, ANNUAL



APPENDIX 6.22: SCATTERPLOT SCHOUWEN- APPENDIX 6.23: SCATTERPLOT SCHOUWEN-

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DUIVELAND, AVERAGE PAIR, SUMMER



6

APPENDIX 6.24: SCATTERPLOT THOLEN,



DUIVELAND, AVERAGE PAIR, ANNUAL

APPENDIX 6.25: SCATTERPLOT THOLEN,

AVERAGE PAIR, SUMMER



AVERAGE PAIR, ANNUAL



Appendix 6.26: Scatterplot Walcheren/

APPENDIX 6.27: SCATTERPLOT WALCHEREN/

ZUID-BEVELAND, MULTIPLE PAIR, SUMMER





APPENDIX 6.28: SCATTERPLOT ZEEUWS-

VLAANDEREN, MULTIPLE PAIR, SUMMER





APPENDIX 6.29: SCATTERPLOT ZEEUWS-

VLAANDEREN, MULTIPLE PAIR, ANNUAL



Appendix 6.30: Table to interpret the correlationcoeffcient and determinationcoeffcient of the Pearson's product-moment test

(De Vocht, 2011, p. 184)

Correlation coefficient 'r'	Coherence	Determination coefficient r ²
0.1 - 0.3	Weak positive	<10% explained variance
0.3 - 0.5	Moderate strong positive	10 - 25 %
0.5 - 0.7	Strong positive	25 - 50 %
>0.7	Very strong positive	>50% explained variance

Appendix 7.1: Sheet to calculate costs related with having a field

PARCEL ON DISTANCE

Specificaties brandstof/uurloon	n			Specificaties trekker			Specificaties kavel			Specificaties kipper			
Brandstofkosten	1,1	€/I		Snelheid trekker	28	km/u	Gewas	Snijmaïs		Afschrijving kipper	2,5 €	per uur	
Brandstofkosten incl. olie	1,21	€/I		Verbruik	13	l/u	Afstand tot kavel	5	km	Tonnage	18000 kg		
Uurloon arbeid	24,13	€		Afschrijving trekker	10	€/u	Aantal vaste ritten	22	enkel	Snelheid met kipper	20 km/u		
-							Oppervlak	25	hectare	Verbruik	15 l/u		- - -
							Productie	1125000	kg				
							Vorm						
Auto													
Aantal keren	20	enkel								Mestsillage			
Snelheid	60	km/u											
Verbruik	11	l/u											
Afschrijving	2,5	€/u			_								
													-
													_
	Arbeid	Brandstof	Afschrijving		Totaal								_
Kosten per kavel A per jaar	1024,09	735,15	165,03		1924,27	euro							

Pioneering beyond the horizon