



Supplement of

AGRIDE-c, a conceptual model for the estimation of flood damage to crops: development and implementation

Daniela Molinari et al.

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1. Structure of the Supplement

The Supplement includes, for each principal crops in the Po Plain:

- average yield and price in the Province of Lodi over the last five years;
- distribution of production costs over the year in the case that no flood occurs (i.e. Scenario 0);
- implemented physical model;
- yield reduction and change in production costs on the basis of damage alleviation strategies;
- relative damage for the different combinations of times of flood occurrence (i.e. month), flood intensities (i.e. water depth and flood duration) and damage alleviation strategies

in case of conventional and minimum tillage, when both techniques are possible. Concerning maize crops, only data related to conventional tillage are reported, being those related to minimum tillage included in the main manuscript.

2. Maize crops

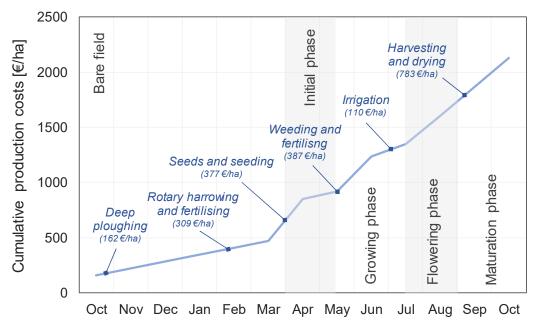


Figure S.1. Distribution of production costs over the year in the Scenario 0 for maize crops, in the case of conventional tillage

Table S.1 . Yield reduction and change in production costs on the basis of damage alleviation strategies for
maize crops, in case of conventional tillage

Time of the flood	Vegetative stage	Alleviation strategy	Yield reduction [%]	Additional costs	€/ha	Avoided costs	€/ha
November - March	Bare field	Continuation	0	Soil restoring (sediment removal and terrain levelling)	500		
Widren				Deep ploughing	162		
		Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Weeding and fertilising Irrigation	387
April - May	Initial phase			Soil restoring (sediment removal and terrain levelling)	500	Harvesting and drying	783
		Reseeding	0	Rotary harrowing and fertilising	309		
				Seeds and reseeding	377		
		Continuation	see Fig. 4 of the paper	Soil restoring (sediment removal and terrain levelling)	500		
		Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Irrigation Harvesting and drying	110 783
June	Growing phase			Soil restoring (sediment removal and terrain levelling)	500		
		Reseeding	0	Rotary harrowing and fertilising	309		
				Seeds and reseeding	377		
T. 1. A	Flowering	Continuation	see Fig. 4 of the paper	Soil restoring (sediment removal and terrain levelling)	500		
July - August	phase	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Irrigation Harvesting and drying	55 783
September -	Maturation	Continuation	see Fig. 4 of the paper	Soil restoring (sediment removal and terrain levelling)	500		
October	phase	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Harvesting and drying	783

	er depth	Stratom				Flood	duration	[days]					Wate	er deptl
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		а					-							
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		С					60%							
	Mar	r					-							Mar
		а					-							
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Growing		С	60%	104%	149%	193%	237%	282%	326%	371%	-		Growing	
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Maturation		С					60%						atu	
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		а					-							
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Figure S.2. Po Plain case: relative damage (Eq. 2 in the paper) to maize crops (in case of conventional tillage) for different combinations of times of flood occurrence (i.e. month), flood intensities (i.e. water depth and flood duration) and damage alleviation strategies ("c"=continuation; "r"=reseeding; "a"=abandoning). Results for the "r" option are obtained by assuming a null yield penalty for late (re-)planting.

3. Wheat crops

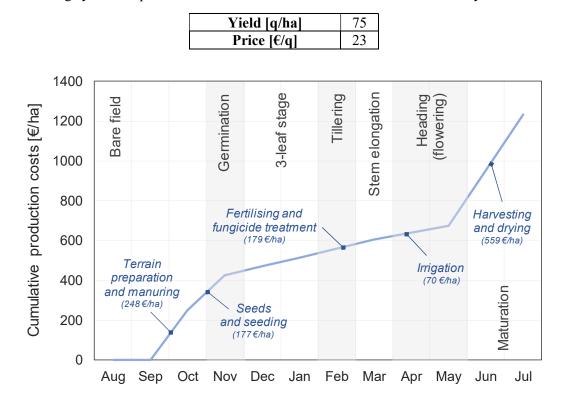


Table S.2. Average yield and price for wheat in the Province of Lodi over the last five years

Figure S.3. Distribution of production costs over the year in the Scenario 0 for wheat crops, in case of minimum tillage

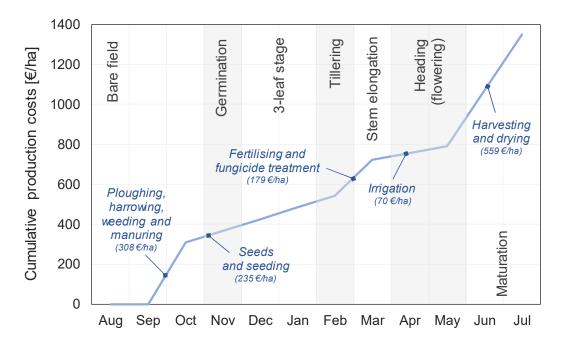


Figure S.4. Distribution of production costs over the year in the Scenario 0 for wheat crops, in case of conventional tillage

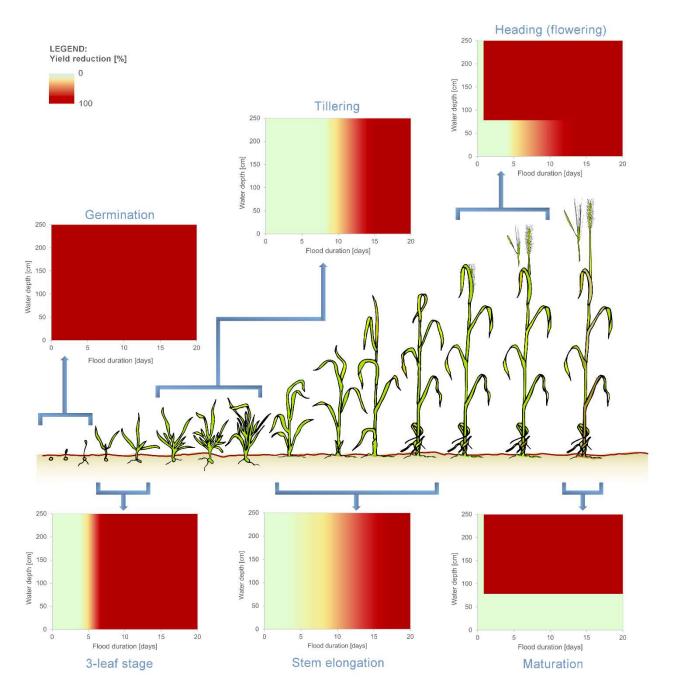


Figure S.5. Physical damage to wheat and barley as a function of vegetative stage, flood depth and duration (adapted from Agenais et al., 2013)

Time of the flood	Vegetative stage	Alleviation strategy	Yield reduction [%]	Additional costs	€/ha	Avoided costs	€/ha
August - October	Bare field	Continuation	0	Soil restoring (sediment removal and terrain levelling)	500		
November	Germination	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500 177		
		Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
December - January	3-leaf stage	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500		
		Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
February	Tillering	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500 177		
March	Stem	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
March	elongation	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Irrigation Harvesting and drying	70 559
April - May	Heading	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		_
. ,	(flowering)	Abandoning	100	Soil restoring (sediment removal and terrain levelling) Soil restoring (sediment	500	Harvesting and drying	559
June - July	Maturation phase	Continuation	see Fig. A.5	removal and terrain levelling) Soil restoring (sediment	500		
	phase	Abandoning	100	removal and terrain levelling)	500	Harvesting and drying	559

Table S.3. Yield reduction and change in production costs on the basis of damage alleviation strategies for wheat crops, in the case of minimum tillage

Time of the flood	Vegetative stage	Alleviation strategy	Yield reduction [%]	Additional costs	€/ha	Avoided costs	€/ha
August - October	Bare field	Continuation	0	Soil restoring (sediment removal and terrain levelling)	500		
November	Germination	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500 235		
		Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
December - January	3-leaf stage	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500 235		
		Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
February	Tillering	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500 235		
Marah	Stem	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
March	elongation	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Irrigation Harvesting and drying	70 559
April - May	Heading	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
	(flowering)	Abandoning	100	Soil restoring (sediment removal and terrain levelling) Soil restoring (sediment	500	Harvesting and drying	559
June - July	Maturation phase	Continuation	see Fig. A.5	removal and terrain levelling) Soil restoring (sediment	500		
	phase	Abandoning	100	removal and terrain levelling)	500	Harvesting and drying	559

Table S.4. Yield reduction and change in production costs on the basis of damage alleviation strategies for wheat crops, in the case of conventional tillage

Wate	r depth	Chueter						F	lood d	luratio	n [days]								Wat	er depth	Chuncham							F	lood	durati	on [da	ys]						
< 1	60 cm	Strategy	<5	5	6	7	8	9	10	0 :	1 12	1	3 1	14	15	16	>16		≥	60 cm	Strategy	< 5	5	5 6		7	8	9		10	11	12	13	14	15	16	>1	16
f.		с	59%	109%	240%						-								f		с	59%		109% 240	1%							-						
3-leaf	Jan	r				•				79%									3-leaf	Jan	r		÷	•	•					79%	,							
		а	-							16	6%										а	-									166%							
Tillering		С			5	9%			109	9% 14	6% 4% 1809	6 21	.5% 25	50%		-			Tillering		С				59%				10	09%	144%	180%	2159	5 250%		-		
lleri	Feb	r								79%									lleri	Feb	r									79%	5							
		а			-	-							166%				_				а				-								1	.66%				
Stem el.		с	59%	84%	99%	114%	129%	144%	159	9% 17	5% 190%	6 20	5% 22	20%	235%	250%	-		e.		с	59%	%	84% 99	% 1	14%	129%	144%	6 1	59%	175%	190%	205%	5 220%	235%	2509	% -	
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Flowering		с	59%	84%	106%	128%	151%	173%	195	5% 21	.8% 240%	6			-				Flowering		с									-								
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3-leaf	Dec	c	59%	109%	240%	1				79%	-								3-leaf	Dec	C r	59%	/0 ·	109% 240	/0					79%								
3-	Dec	r	-								6%								3-1-	Dec	r										166%							
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Figure S.6. Po Plain case: relative damage (Eq. 2 in the paper) to wheat crops (in case of minimum tillage) for different combinations of times of flood occurrence (i.e. month), flood intensities (i.e. water depth and flood duration) and damage alleviation strategies ("c"=continuation; "r"=reseeding; "a"=abandoning). Results for the "r" option are obtained by assuming a null yield penalty for late (re-)planting.

Wate	er depth	Chucker						F	Flood	duratio	n [days]							Wat	er depth	Strategy							F	lood	duratio	n [day	s]					
< 6	60 cm	Strategy	<5	5	6	7	8	9		10	n [days] 11 1	2	13	14	15	16	>16	≥	50 cm	Strategy	< 5			5	7	8	9	1	10	11	12	13	14	15	16	>16
3-leaf	Jan	c r a	-	213%	470%					168%								3-leaf	Jan	c r a	-	1% 2	13% 47	0%					168%		-					
Tillering	Feb	c r a			- 114					168%			3249	%		-		Tillering	Feb	c r a				-					168%	i		421%	%		-	
Stem el.	Mar	c r a		164%						-			401%	430%	460%	490%	6 -	Stem el.	Mar	c r a	-	÷	.64% 19	3%	223%	253%	282%	6 31	-	42% 65%	371%	401%	430%	460%	490%	-
Flowering	Apr	c r a		164%						-					-			Flowering	Apr	c r a									- - 381%							
Flow	May	c r a	-	164% 2	208%	251%	295%	338%	6 38	- 3	81%	0%			-			Flow	May	c r a									- - 381%							
Maturation	Jun	c r a								114% - -								Maturation	Jun	c r a									- - 381%							
Matu	Jul	c r a								-								Matu	Jul	c r a									- - 381%							
	Aug	c r a								-									Aug	c r a									114% - -							
Bare field	Sep	c r a								114% - -								Bare field	Sep	c r a									114% - -	,						
	Oct	c r a								114% - -									Oct	c r a									114% - -							
Germin.	Nov	c r a								- 168% 324%								Germin.	Nov	c r a									- 168% 324%							
3-leaf	Dec	c r a	-	213%	470%					168%	24%							3-leaf	Dec	c r a	-		13% 47	0%					168% 3	24%	-					

Figure S.7. Po Plain case: relative damage (Eq. 2 in the paper) to wheat crops (in case of conventional tillage) for different combinations of times of flood occurrence (i.e. month), flood intensities (i.e. water depth and flood duration) and damage alleviation strategies ("c"=continuation; "r"=reseeding; "a"=abandoning). Results for the "r" option are obtained by assuming a null yield penalty for late (re-)planting.

4. Barley crops

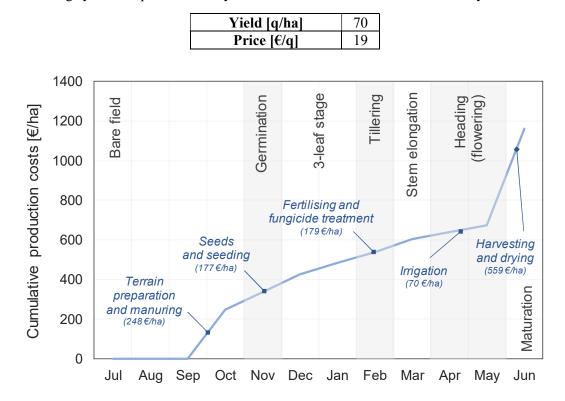


Table S.5. Average yield and price for barley in the Province of Lodi over the last five years

Figure S.8. Distribution of production costs over the year in the Scenario 0 for barley crops, in case of minimum tillage

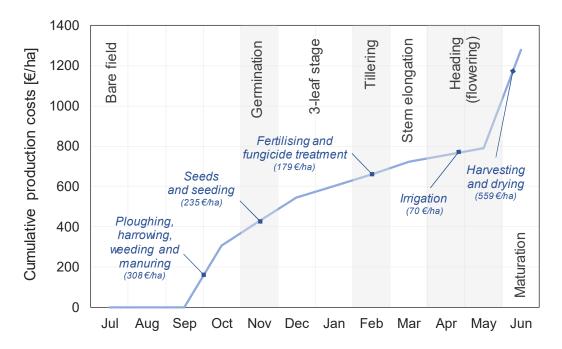


Figure S.9. Distribution of production costs over the year in the Scenario 0 for barley crops, in case of conventional tillage

Time of the flood	Vegetative stage	Alleviation strategy	Yield reduction [%]	Additional costs	€/ha	Avoided costs	€/ha
July - October	Bare field	Continuation	0	Soil restoring (sediment removal and terrain levelling)	500		
November	Germination	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500 177		
		Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
December - January	3-leaf stage	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500		
		Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
February	Tillering	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500 177		
Marah	Stem	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
March	elongation	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Irrigation Harvesting and drying	70 559
April - May	Heading	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
	(flowering)	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Harvesting and drying	559
June	Maturation	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
	phase	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Harvesting and drying	559

Table S.6. Yield reduction and change in production costs on the basis of damage alleviation strategies for barley crops, in the case of minimum tillage

Time of the flood	Vegetative stage	Alleviation strategy	Yield reduction [%]	Additional costs	€/ha	Avoided costs	€/ha
July - October	Bare field	Continuation	0	Soil restoring (sediment removal and terrain levelling)	500		
November	Germination	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling)	500		
				Seeds and reseeding Soil restoring (sediment	235		-
		Continuation	see Fig. A.5	removal and terrain levelling)	500		
December -		Abandoning	100	Soil restoring (sediment	500	Fertilising and fungicide treatment	179
January	3-leaf stage	Abandoning	100	removal and terrain levelling)	500	Irrigation	70
5				Soil restoring (sediment		Harvesting and drying	559
		Reseeding	0	removal and terrain levelling)	500		
		8		Seeds and reseeding	235		
		Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
February	Tillering	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Fertilising and fungicide treatment Irrigation Harvesting and drying	179 70 559
		Reseeding	0	Soil restoring (sediment removal and terrain levelling)	500		
		_		Seeds and reseeding	235		
March	Stem	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
IVIATCII	elongation	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Irrigation Harvesting and drying	70 559
A	Heading	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
April - May	(flowering)	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Harvesting and drying	559
Inno	Maturation	Continuation	see Fig. A.5	Soil restoring (sediment removal and terrain levelling)	500		
June	phase	Abandoning	100	Soil restoring (sediment removal and terrain levelling)	500	Harvesting and drying	559

Table S.7. Yield reduction and change in production costs on the basis of damage alleviation strategies for barley crops, in the case of conventional tillage

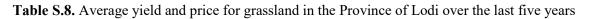
Wate	er depth	Strategy								Floo	d durat	ion [da	ys]						w	ater dep	h Church								Floo	od dura	tion [da	ays]						
< 6	60 cm	Strategy	<5			6	7	8	9	•	10	11	12	13	14	15	16	>16		≥ 60 cm	ⁿ Strat	egy	< 5		56	7	8	9	Э	10	11	12	13	14	15	1	6 :	>16
3-leaf	Jan	c r a	91%	15	1% 30)7%					91	% 219%							jool C		c r a		91%	15	1% 307%					91	219%	-						
Tillering	Feb	c r a				919					123	%		21	319%		-				c r a					-				123	3%	235%	. 2	19%				
Stem el.	Mar	c r a						-	-		-				283%	301%	319%	-	Ctower of	Ma	r r a		91%	12	1% 139%	157%	6 175	% 193	3%	-	229% - 231%		265%	283%	301	% 31	9%	-
Flowering	Apr	c r a			1% 14						-					-				ω Ap	r a									243	- - 3%							
Flow	May	c r a	91%	12	1% 14	17%	174%	201%	22	7% 2	-	243%	307%			-				Ma	c / r a									243								
Matur.	Jun	c r a									919 - -								A state	Jui	c r a									243	3%							
	Jul	c r a									919 - -									Ju	c r a									91 - -								
Bare field	Aug	c r a									919									Au	c r a									91 - -								
Bare	Sep	c r a									919 - -									Sej	c r a									91 - -								
	Oct	c r a									919									Oc	r a									91 - -								
Germin.	Nov	c r a									- 123 198	%								No	r a									123 198	3%							
3-leaf	Dec	c r a	91%	15	1% 30)7%					919	% 219%	-						good c	De	c r a		91%	15	1% 307%					91	219%	-						

Figure S.10. Po Plain case: relative damage (Eq. 2 in the paper) to barley crops (in case of minimum tillage) for different combinations of times of flood occurrence (i.e. month), flood intensities (i.e. water depth and flood duration) and damage alleviation strategies ("c"=continuation; "r"=reseeding; "a"=abandoning). Results for the "r" option are obtained by assuming a null yield penalty for late (re-)planting.

Wate	r depth	Christian						F	lood d	uratio	n [days]							Wate	r depth	Chunchamu							Fle	ood d		on [days	5]					
< (50 cm	Strategy	<5	5	6	7	8	9	10	2	11 12	2 1	L3 1	4 15	16	>16		≥ €	60 cm	Strategy	< 5	5	6	7		8	9	1	0	11	12	13	14	15	16	>16
af		с	371%	619%	1261%			-			-							af		с	371%	619%	1261%	5							-					
3-leaf	Jan	r								546%								3-leaf	Jan	r									546%							
		а	-			-	-	-		8	98%									а	-		-	-					8	98%						
Tillering		с	371%	371%	371%	371%	371%	371%			91% 964	% 113	37% 13	10%	-			Tillering		с	371%	371%	371%	3719	% 37	71%	371%	618			964%	1137%	1310%		-	
ller	Feb	r								546%								ller	Feb	r									546%							
		а		1	1	-	1				-		898%	-	1	-				а		495%		-	_	_						89	3%			_
Stem el.		с	371%	495%	569%	643%	717%	791%	866	5% 94	10% 101	4% 108	88% 116	52% 1236	% 1310	- %		el.		с	371%	495%	569%	6439	% 71	17%	791%	866	6% 9	40% 1	014%	1088%	1162%	1236%	1310%	-
em	Mar	r								-								Stem	Mar	r									-							
St		а	-			r	r			94	16% 51% 126							St		а	-								9	46%						
		с	371%	495%	605%	713%	823%	932%	104	1% 11	51% 126	1%		-						с																
n B	Apr	r								-								ing	Apr	r									-							
ver		а	-							99	98%						_	ver		а									998%							
Flowering		с	3/1%	495%	605%	/13%	823%	932%	104	1% 11	51% 126	1%		-				Flowering		с									-							
-	May	r								-	2001							-	May	r									-							
		а	-							371%	98%						-			а									998%)						
Matur.	Jun	c								371%								Matur.	Jun	c									-							
Ma	Juli	r								-								Ma	Juli	r a									- 998%							
		c a								- 371%										a C									371%							
	Jul	r								-									Jul	r									-	,						
	50.	a								-									541	a									-							
		c								371%										c	-								371%	, ,						
-	Aug	r								-								-	Aug	r									-							
fiel	0	а								-								field	0	а									-							
Bare field		с								371%								Bare field		с									371%							
Ba	Sep	r								-								Bâ	Sep	r									-							
		а								-										а									-							
		с								371%										с									371%							
	Oct	r								-									Oct	r									-							
		а								-										а									-							
Germin.		с								-								Germin.		с									-							
EL	Nov	r								546%								erm	Nov	r									546%							
Ğ		а								813%								Ğ		а									813%							
af		с	371%	619%	1261%						-							af		с	371%	619%	1261%	5												
3-leaf	Dec	r								546%								3-leaf	Dec	r									546%							
		а	-							8	98%							,		а	-								8	98%						

Figure S.11. Po Plain case: relative damage (Eq. 2 in the paper) to barley crops (in case of conventional tillage) for different combinations of times of occurrence of the flood (i.e. month), flood intensities (i.e. water depth and flood duration) and damage alleviation strategies ("c"=continuation; "r"=reseeding; "a"=abandoning). Results for the "r" option are obtained by assuming a null yield penalty for late (re-)planting.

5. Grassland



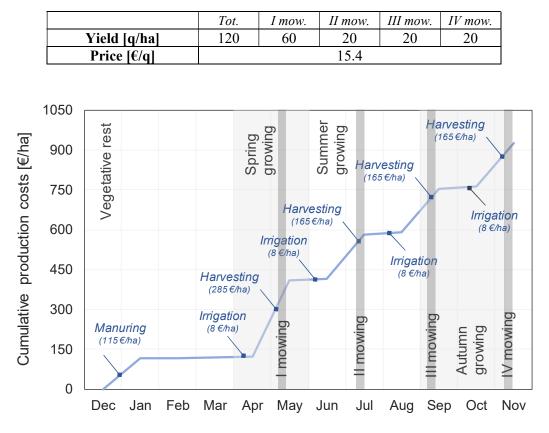


Figure S.12. Distribution of production costs over the year in the Scenario 0 for grassland

Assumptions for calculation of flood damage to grassland:

- Abandoning is not considered among the different alleviation strategies, as grassland is a perennial crop (i.e., if production is abandoned, the flood will impact on farmer's revenues also in the following years);
- The impact of the flood has influence only on the forthcoming harvest and not on successive ones;
- In case of flood, a reduction in the selling price is expected due to a lower quality harvest, as a function of flood duration and days remaining to the forthcoming harvest (see Figure A.14).

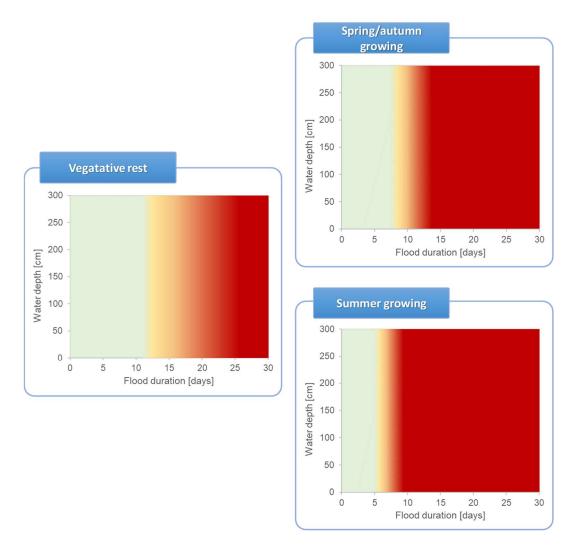


Figure S.13. Physical damage to grassland as a function of vegetative stage, flood depth and duration (adapted from Agenais et al., 2013)

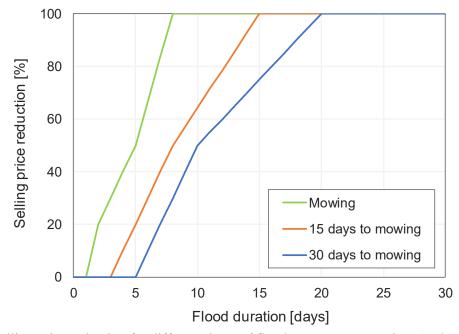


Figure S.14. Selling price reduction for different times of flood occurrence: mowing, 15 days to mowing and 30 days to mowing (adapted from Agenais et al., 2013)

Time of the flood	Vegetative stage	Alleviation strategy	Yield reduction [%]	Additional costs	€/ha	Avoided costs	€/ha
November - March	Vegetative rest	Continuation	see Fig. A.13	Soil restoring (sediment removal and terrain levelling)	500		
		Reseeding	0	Soil restoring (sediment removal and terrain levelling)	500		
				Seeds and reseeding	89		
April - May	Spring growing	Continuation	see Fig. A.13				
		Reseeding	Only 1 st harvest lost	Soil restoring (sediment removal and terrain levelling)	500 89	I mowing (if the flood occurs before it)	285
June - August	Summer growing	Continuation	see Fig. A.13	Seeds and reseeding	89		
		Reseeding	2 nd or 3 rd harvest lost	Soil restoring (sediment removal and terrain levelling)	500	II mowing (if the flood occurs before it)	165
				Seeds and reseeding	89	or III mowing (if the flood occurs before it)	165
September - October	Autumn growing	Continuation	see Fig. A.13				
		Reseeding	Only 4 th harvest lost	Soil restoring (sediment removal and terrain levelling) Seeds and reseeding	500 89	IV mowing (if the flood occurs before it)	165

Table S.11. Yield reduction and change in production costs on the basis of damage alleviation strategies for grassland

		Strategy	Flood duration [days]										
			<5	7	9	11	13	15	17	19	21	23	>25
Vegetative rest	Jan	с		60%		67%	82%	96%	110%	124%	139%	153%	-
		r	-		_*						71%		
	Feb	С	60%		67%	82%	96%	110%	124%	139%	153%	-	
		r	-		_*						71%		
	Mar	С	60%		67%	82%	96%	110%	124%	139%	153%	-	
		r	-		_*						71%		
Spring grow.	Apr	С	45	5%	71%	93%	107%	-					
		r		-		_*		148%					
	May	С	45	5%	71%	93%	107%	-					
		r		-		-* 148%							
Summer growing	Jun	С	4%	24%	34%	-							
		r	-	-	*	88%							
	Jul	С	4%	24%	34%	-							
		r	-	-	*	88%							
	Aug	с	4%	24%	34%	-							
	Aug	r	-	-	*	88%							
Aut. grow.	Sep	с	4%	15%	23%	31%	36%				-		
		r	-		-	* 88%							
	Oct	С	4%	15%	23%	31%	36%				-		
		r	-	-*		*	* 88%						
Veget. rest	Nov	С		60%		67%	82%	96%	110%	124%	139%	153%	-
		r		-					_*		1		71%
	Dec	с		60%		67%	82%	96%	110%	124%	139%	153%	-
		r		-					-*				71%

- Strategy not possible

-* Reseeding is considered only in case of a 100% physical damage

Figure S.15. Po Plain case: relative damage (Eq. 2 in the paper) to grassland for different combinations of times of flood occurrence (i.e. month), flood intensities (flood duration) and damage alleviation strategies ("c"=continuation; "r"=reseeding). Results refer to a flood occurring before harvest has been made (under the hypothesis of 15 days remaining to mowing).