

The History and Workings of EuroBlight — How Can I Utilize this Data?

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Agenda

- Who/What is the EuroBlight group
- The history of EuroBlight
- Genotype Mapping
- Genotype Frequency Map
- Genotype Frequency Chart
- Alternaria
- Protocols
- The tables rating fungicides for Late Blight and Early Blight

What is EuroBlight ?

- EuroBlight is a group of leading EU independent researchers and official advisors plus manufacturers set up in 1996.
 - A potato late blight network for Europe.
 - Early Blight sub-group formed in 2011.
 - Research projects, information, ratings protocols, exchange of ideas and knowledge.
 - Originally a group of 30 people meeting.
 - The last 5 meetings have had to restrict attendees to 100 people.

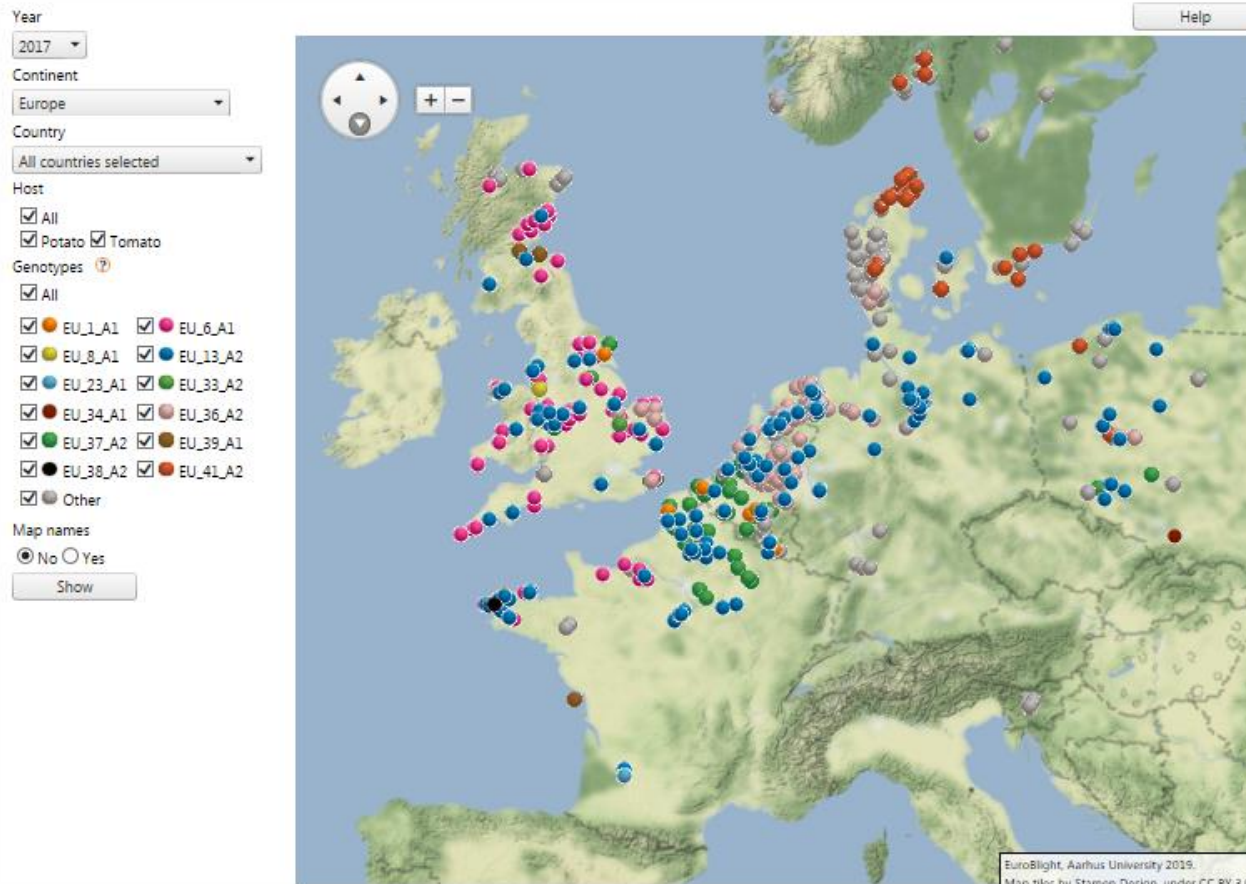
www.euroblight.net

EU Late Blight Pathogen Monitoring

- A section of the website devoted to showing changes and characteristics of the different late blight genotypes sampled in Europe.
- Data has been collected since 2004 to build up a mapping and monitoring database of changes in Late Blight populations.
- The database is updated annually.
- EuroBlight is continuously examining the ongoing evolution of the potato late blight pathogen and in 2017, almost 1,500 samples were genotyped from 16 countries.

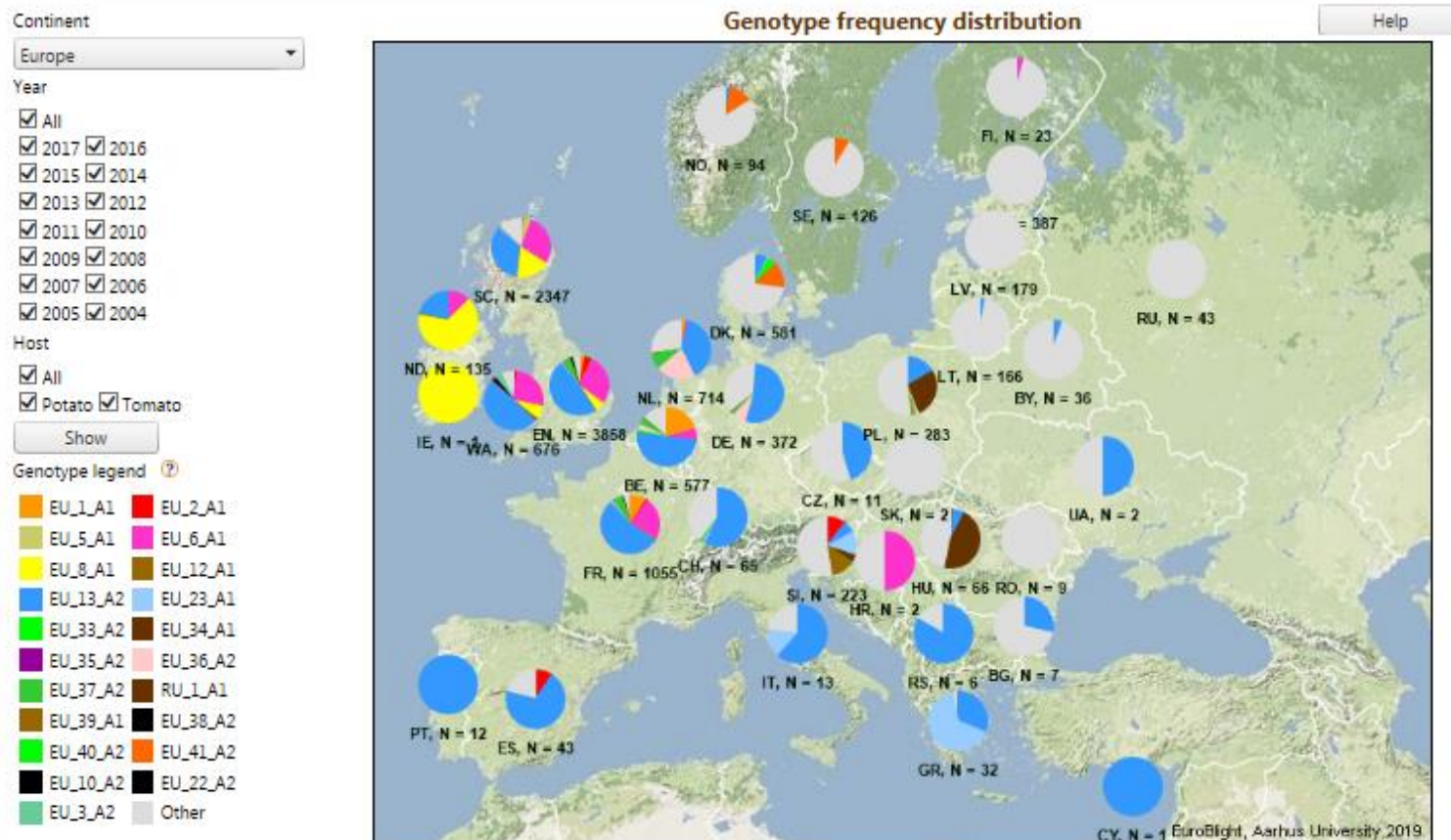
EuroBlight Website – Late Blight Genotype mapping

Genotype Map



EuroBlight Website – Late Blight Genotype mapping

Genotype Frequency Map



EuroBlight Website – Late Blight Genotype mapping

Genotype Frequency Chart

Continent
Europe

Country
All countries selected

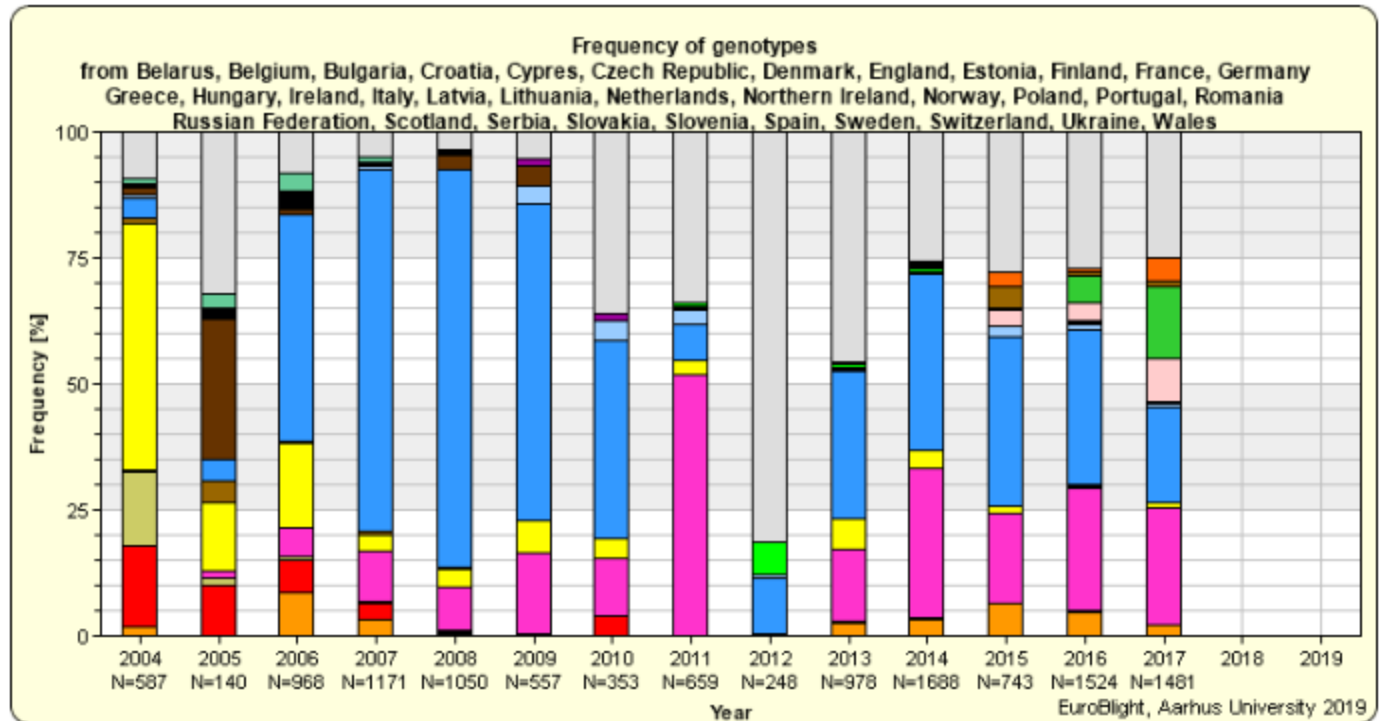
Host
 All
 Potato Tomato
Show

Genotype legend ?

EU_1_A1	EU_2_A1
EU_5_A1	EU_6_A1
EU_8_A1	EU_12_A1
EU_13_A2	EU_23_A1
EU_33_A2	EU_34_A1
EU_35_A2	EU_36_A2
EU_37_A2	RU_1_A1
EU_39_A1	EU_38_A2
EU_40_A2	EU_41_A2
EU_10_A2	EU_22_A2
EU_3_A2	Other

Genotype frequency distribution

Help



EuroBlight – Early Blight / Alternaria

- Early Blight sub-group formed in 2011
 - Update on research projects
 - Information
 - Ratings protocol and table
 - Exchange of ideas and knowledge
 - Small group but gaining a lot of knowledge and experience

EuroBlight Protocols

- **EuroBlight Fungicide Tables**

- In the early days it was a discussion around the table and agreed ** ratings (maximum of ***), moved to ***** as more new products and active ingredients were registered.

- **2007 to 2018**

- Ratings are now based on unbiased trials as set up according to an agreed and consistent harmonized protocol
- Protocols exist for foliage Late Blight / Tuber Blight / Alternaria
- A minimum of 2 years and 3 trials per year to allow a rating to be calculated and published
- Season long applications and 7 day intervals
- Highest registered rate in Europe used in the protocols

EuroBlight Fungicides - The Protocols

- **Potato Leaf Blight / Tuber Blight / Alternaria Protocols**
 - In 2007 a move away from ratings based on round table discussions at meetings lead to the decision to run unbiased replicated field trials in different countries managed by the leading researcher members of EuroBlight.
 - **Before a rating is calculated, the product has to have been tested for a minimum of 2 seasons and a minimum number of 6 trial results.**
 - Rating is based on a 1-5 scale using a statistical package to determine an unbiased rating based on season long disease control.

EuroBlight Fungicide Tables

Late Blight Fungicide Table

Use **Mouse Over** on header titles to find **explanation** on variables e.g. mobility mode of actions C, T and S. You can click on the header texts to **multiple sort the table** (1. click= Descending, 2nd click=ascending, 3rd click=unsort). Use this [PNG version](#) for mobile phones

Product (Dose rate [litre or kg/ha])	Leaf blight	Tuber blight	New growth	Stem blight	Protectant	Curative	Anti sporulant	Rain-fastness	Mobility	Year
(pyraclostrobin + dimethomorph) + adjuvant (2.5+1.0)	4.0 ⁷								C/T + T	2012
(zoxamide + cymoxanil) + fluazinam (0.45+0.4)	4.0								C/T + C	2013
(zoxamide + dimethomorph) + fluazinam (1.0+0.4)	4.2								C/T + C	2015
(zoxamide + mancozeb) + cymoxanil (1.8+0.2)	3.4								C + T	2001
ametoctradin + mancozeb (2.5)	3.7		? ⁸	? ⁸	●●●	0	0	●●●	C + C	2011
amisulbrom + mancozeb (0.5+2.0)	4.5	3.7		●	●●●	0	?	●●●	C + C	2007
benalaxyl-M + mancozeb ²	3.0		●●	●●	●●●	●●●	●●●	●●●	S + C	1981
benthiavalicarb (0.5)	4.2								T	2018
benthiavalicarb + mancozeb (2.0)	3.7			●● ⁵	●●●	●●	●	●●●	T + C	2003

EuroBlight Fungicide Tables

Product (Dose rate (litre or kg/ha))	Leaf blight	Tuber blight	New growth	Stem blight	Protectant	Curative	Anti-sporulant	Rain-fastness	Mobility	Year
copper				●	●●	0	0	●	C	1900
dithiocarbamates (2.0) ¹	2.0	0.0		●	●●	0	0	●●	C	1961
chlorothaloni				●	●●	0	0	●●●	C	1964
cyazofamid (0.5)	3.8	3.8	●●	●	●●●	0	0	●●●	C	2001
fluzinam (0.4)	2.9			●	●●●	0	0	●●●	C	1992
zoxamide + mancozeb (1.8)	2.8			● ⁵	●●●	0	0	●●●	C + C	2001
amisu/brom + mancozeb (0.5+2.0)	4.5	3.7		●	●●●	0	?	●●●	C + C	2007
ametoctadin + mancozeb (2.5)	3.7		?	?	●●●	0	0	●●●	C + C	2011
fluzinam + azoxystrobin (0.5)	3.6								C + C	2016
fenoxadone + cyproconil				●●	●●	●●	●	●●●	C + T	1996
(zoxamide + mancozeb) + cyproconil (1.8+0.2)	3.4								C + T	2001
mandipropamid (0.6)	4.0		●●	●●	●●●	● ⁶	●●	●●●	C/T	2005
mandipropamid + difenoconazole (0.6)	4.0		●●	●●	●●●	● ⁶	●●	●●●	C/T + C	2005
benthiavalicarb (0.5)	4.2								T	2018
benthiavalicarb + mancozeb (2.0)	3.7			●● ⁵	●●●	●●	●	●●●	T + C	2003
cyproconil + metiram				●●	●●	●●	●	●●	T + C	1976
cyproconil + copper				●●	●●	●●	●	●●	T + C	1976
cyproconil + mancozeb				●●	●●	●●	●	●●	T + C	1976
dimethomorph + mancozeb (2.4)	3.0			●●	●●●	●	●●	●●●	T + C	1988
dimethomorph + fluzinam (1.0)	3.7	3.3	●	●	●●●	●	●●	●●●	T + C	2012
fenamidone + mancozeb (1.5)	2.6			●● ⁵	●●●	0	●● ⁶	●●	T + C	1998
(zoxamide + cyproconil) + fluzinam (0.45+0.4)	4.0								C/T + C	2013
(zoxamide + dimethomorph) + fluzinam (1.0+0.4)	4.2								C/T + C	2015
mandipropamid + cyproconil (0.6)	4.4		●●	●●	●●●	●●	●●	●●●	C/T + T	2013
(pyraclostrobin + dimethomorph) + adjuvant (2.5+1.0)	4.0 ⁷								C/T + T	2012
benalaxyl-M + mancozeb ²	3.0		●●	●●	●●●	●●●	●●●	●●●	S + C	1981
metalaxyl-M + mancozeb ²			●●	●●	●●●	●●●	●●●	●●●	S + C	1977
metalaxyl-M + fluzinam ²			●●	●●	●●●	●●●	●●●	●●●	S + C	
propamocarb + cyproconil + cyazofamid (2.0)+0.5)		4.6							S + T + C	2012
propamocarb + cyproconil (2.0)					●●	●●● ⁸	●●●		S + T	2011
propamocarb-HCl + fenamidone (2.0)	2.5		●●	●●	●●●	●●	●●	●●●	S + T	1998
propamocarb-HCl + fluopicolide (1.8)	3.8	3.9	●●	●●	●●●	●●	●●●	●●●	S + C/T	2006
oxathioprolin (0.15)			●●●	●●●	●●●	●●	●●●	●●●	S	2017

¹ Includes maneb, mancozeb, propineb and metiram. ² See proceedings for comments on phenylamide resistance. ³ Based on EuroBlight field test in 2006-2015. ⁴ Based on EuroBlight field trials 2009-2012. ⁵ Based on limited data. ⁶ In some trials there were indications that the rating was 1%. ⁷ A provisional rating based on 5 EuroBlight experiments. ⁸ Observations from several trials indicated that both New growth and Stem blight were ++. ⁹ In some trials the curative activity was +++.



EuroBlight – Early Blight / Alternaria Table 2005

Table 3. Efficacy of fungicides for the control of early blight caused by *Alternaria solani* and *Alternaria alternata*.

Product	Efficacy ¹
azoxystrobin	+++
fluazinam	(+)
metiram/mancozeb ²	++
propineb	++
chlorothalonil	+(+)
famoxadone+cymoxanil	++
fenamidone+mancozeb or propamocarb ³	++
zoxamide+mancozeb	++(+)

PPO-AGV, NL - *Alternaria* 2014

Merksnaam	blad bescherming a)	curatieve werking	stopt sporenvorming	nieuwe groei		knol bescherming a)	Alternaria ^c aandroogtijc (in uren)	regen vastheid	
				preventief	curatief				
contactfungiciden									
Shirlan (0,4 l/ha) b	2,9	-	-	(+)	-		(+)	1-2	++(+)
Ranman Top (0,5 l/ha)	3,8	-	-	++	-	3,8	-	0.5-1	+++
maneb/mancozeb (2,0/2,25 kg/ha)	2,0	-	-	+	-	0	++	2-6	+(+)
Canvas + mancozeb (0,5 l/ha + 2,0 kg/ha)	4,5	-	?	?	-	3,7	++	1-2	+++
Unikat Pro (1,8 kg/ha)	2,8	-	-	?	-		++(+)	2-6	++(+)
contact + lokaal-systemisch									
Curzate M WG (2,5 kg/ha)		++	+	+	++		++	2-6	++
Orvego (0,8 l/ha)		+(+)	++	+(+)g	+(+)		-	0.5-1	+++
Banjo Forte (1,0 l/ha) b	3,7	+	++	?	+	3,3	(+)	1-2	++(+)
Acrobat DF (2,0 kg/ha)	3,1	+	++	+	+		++	2-6	++(+)
Valbon (2,0 kg/ha)	3,7	+(+)	+	+(+)	+(+)		++	1-2	++(+)
Mixanil (2,0 l/ha)		++	-	?	++		+(+)	2-6	++(+)
Revus (0,6 l/ha)	4,0	+ ^d	+(+)	++	+ ^d		-	0.5-1	+++
lokaal-systemisch									
Curzate Partner (0,2 kg/ha) f		++	+	-	++		-	2	
Cymbal (0,25 kg/ha) f		++	+	-	++		-	2	
contact + systemisch									
Fubol Gold (2,5 kg/ha) b		++(+)	++(+)	++	++(+)		++	2-6	+++
lokaal-systemisch + systemisch									
Infito (1,6 l/ha)	3,8	++	++(+)	++	++	3,9	-	1-2	++(+)
Consento (2,0 l/ha)	2,5	++	++	+(+)	++		++	1-2	+++
Proxanil (2,0 l/ha)		++(+)	++(+)				-	2-6	
Specifiek tegen Alternaria									
Amistar (0,25 l/ha)	-	-	-	-	-	-	+++(+)	1-2	+++
Signum (0,2 kg/ha)	-	-	-	-	-	-	+++(+)	1-2	+++
Narita (0,5 l/ha)	-	-	-	-	-	-	+++ h	1-2	+++

EuroBlight Early Blight / Alternaria Table 2014

2014 EuroBlight classification of fungicides for the control of *Alternaria* spp. In potatoes

Product	Efficacy
Azoxystrobin	+++(+)
Fluazinam	(+)
Mancozeb *	++
Chlorothalonil	+(+)
Famoxadone+Cymoxanil	++
Fenamidone+Propamocarb	++
Zoxamide+Mancozeb	++(+)
Pyraclostrobin+Boscolid	+++(+)
Difenoconazole+Mandipropamid	+++

Key to the ratings

0 = no effect
 + = some effect
 ++ = reasonable effect
 +++ = Good effect

* Applies to mancozeb containing products when used at highest dose rates (>1500g/ha). Less than this and the rating will not be appropriate

EuroBlight Early Blight Fungicide Table 2017

Product	Efficacy rating ^{1,2}		
	14 day interval	Strategy	7 day interval
Spray interval 14 days			
mancozeb 2.0	1.7	-	-
Spray strategy³			
(zoxamide + mancozeb) ^a 1.8 + azoxystrobin ^{b,5} 0.5 ⁴	-	3.7	-
(zoxamide + mancozeb) ^a 1.8 + difenoconazole ^b 0.5	-	3.9	-
Spray interval 7 days			
mancozeb 2.0	-	-	2.5
(zoxamide + mancozeb) 1.8	-	-	2.8
(fenamidone ⁵) + propamocarb) 2.0	-	-	2.2
(fluazinam + azoxystrobin ⁵) 0.5	-	-	3.1
(dimethomorph + mancozeb) 2.0	-	-	2.9

Based on the new 1-5 ratings protocol and all treatments submitted for evaluation

EuroBlight Proceedings and Presentations

Workshop proceedings 1996-2015

The proceedings from previous workshops are available in PDF format. You need Adobe Acrobat to read them. Acrobat is freely available from the [Adobe site](#). Left click with the mouse to read it. Right click for download

Venue City	Year	Proceedings	Presentations
Lelystad	1996	Proceedings	-
Carlow	1997	Proceedings	-
Uppsala	1998	Proceedings	-
Oostende	1999	Proceedings	-
Munich	2000	Proceedings	-
Edinburgh	2001	Proceedings	-
Poznan	2002	Proceedings	-
Jersey	2004	Proceedings	-
Tallinn	2005	Proceedings	-
Bologna	2007	Proceedings	Presentations
Hamar	2008	Proceedings	Presentations
Arras	2010	Proceedings	Presentations
St Petersburg	2011	Proceedings	Presentations
Limassol	2013	Proceedings	Presentations
Brasov	2015	Proceedings	Presentations

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How Can I Utilize this Data?

Thank You