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Organic vegetables cultivation (open field)

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Organic vegetables	2010	2011	2012	2013	2014	2015	2016
Total organic vegetables cultivation area in Germany*	10.590 ha	10.890 ha	10.470 ha	10.470 ha	10.749 ha	10.750 ha	12.399 ha
Of which recorded in monitoring**	86 ha	3019 ha	2559 ha	1.268 ha	1.725 ha	5.160 ha	2.743 ha
Percentage of total area	0,81 %	27,7 %	24,5 %	12,11 %	16,05 %	48,00 %	22,12 %
Percentage of recorded area treated with copper	57 %	*2,8 %***	3,9%**	3,9%**	9,4%**	5,0%**	14,42 %

* In organic vegetable growing, there is in principle a not inconsiderable proportion of land which is farmed according to the criteria of the EU Organic Regulation and was not recorded here.

** Data from Bioland and Naturland. No data from Demeter because Demeter didn't allow Cu application in vegetables cultivation until yet.

Organic vegetables cultivation (open field)

Organic medical and aromatic plants	2010	2011	2012	2013	2014	2015	2016
Total area of organic medical and aromatic plants cultivation	ca. 800 ha	ca. 780 ha	ca. 800 ha	ca. 800 ha	ca. 800 ha	ca. 800 ha	ca. 800 ha
Of which recorded in monitoring**	0,0 ha	0,0 ha	0,0 ha	0,0 ha	0,0 ha	0,0 ha	0,0 ha
Percentage of total area	---	---	---	---	---	---	
Percentage of recorded area treated with copper	---	---	---	---	---	---	

Copper application rates in organic vegetable crops 2010

Crop	Ø Cu in kg/ha on treated areas	Evaluated area treated with Cu in ha	Percentage of total area treated with Cu in %
Celery	**2,32**	**19,8**	**65,5**
Pumpkin	**1,80**	**2,53**	**22,0**
Cucumber	**1,43**	**26,7**	**60,7**

Copper application rates in organic vegetable crops 2011

Crop	Ø Cu in kg/ha on treated areas	Evaluated area treated with Cu in ha	Percentage of total area treated with Cu in %
Celery	**1,1**	**10,3**	**34,6**
Pumpkin	**2,1**	**2,9**	**0,93**
Fennel	**0,9**	**3,4**	**5,7**
Leek	**3,0**	**3,0**	**100**
Asparagus	**2,0**	**63,7**	**29,7**
Greenhouse crops	**1,4**	**98,3**	**1,1**
Vegetables others*	**1,8**	**0,6**	**0,04**

* Vegetable crops in small sets cultivated in open field.

Copper application rates in organic vegetable crops 2012

Crop	Ø Cu in kg/ha on treated areas	Evaluated area treated with Cu in ha	Percentage of total area treated with Cu in %
Celery	**0,85**	**5,3**	**20,0**
Pumpkin	**1,4**	**13**	**2,7**
Asparagus	**1,2**	**64,3**	**28,1**
Vegetables others*	**1,1**	**18,3**	**1,05**
Greenhouse crops	**1,3**	**3,8**	**5,6**
Flowers / ornamental plants	**0,1**	**0,8**	**5,1**

* Vegetable crops in small sets cultivated in open field.

Copper application rates in organic vegetable crops 2013

Crop	Ø Cu in kg/ha on treated areas	Evaluated area treated with Cu in ha	Percentage of total area treated with Cu in %
Onions	**0,85**	**9,78**	**9,7**
Pumpkin	**0,36**	**5,04**	**2,0**
Asparagus	**1,09**	**81,81**	**35,2**
Vegetables others*	-	-	-
Greenhouse crops	-	-	-
Flowers / ornamental plants	-	-	-

* Vegetable crops in small sets cultivated in open field.

Copper application rates in organic vegetable crops 2014

Crop	Ø Cu in kg/ha on treated areas	Evaluated area treated with Cu in ha	Percentage of total area treated with Cu in %
Onions	**2,17**	**37,17**	**17,1**
Pumpkin	**0,98**	**3,28**	**0,8**
Asparagus	**0,92**	**82,91**	**33,2**
Vegetables others*	**-**	**-**	**-**
Greenhouse crops	**-**	**-**	**-**
Flowers / ornamental plants	**1,5**	**36,24**	**0,14**

* Vegetable crops in small sets cultivated in open field.

Copper application rates in organic vegetable crops 2015

Crop	Ø Cu in kg/ha on treated areas	Evaluated area treated with Cu in ha	Percentage of total area treated with Cu in %
Celery	**1,25**	**8,26**	**30,2**
Onions	**1,63**	**43,79**	**16,8**
Pumpkin	**1,48**	**8,53**	**2,3**
Asparagus	**1,27**	**83,81**	**28,7**
Carrots	**1,50**	**107,07**	**11,4**
Vegetables others*	**0,50**	**6,57**	**0,30**

* Vegetable crops in small sets cultivated in open field.

Copper application rates in organic vegetable crops 2016

Crop	Ø Cu in kg/ha on treated areas	Evaluated area treated with Cu in ha	Percentage of total area treated with Cu in %
Onions	**2,01**	**59,30**	**19,3**
Pumpkin	**2,45**	**28,60**	**6,5**
Asparagus	**1,03**	**111,42**	**28,9**
Cucumber	**3,00**	**108,31**	**100,0**
Carrots	**1,49**	**87,85**	**8,3**
Celery	**-**	**0,00**	**0,00**
Vegetables others*	**-**	**0,00**	**0,00**
Greenhouse crops	**-**	**0,00**	**0,00**

* Vegetable crops in small sets cultivated in open field.

1. Achievement of the objectives within the framework of the Cu strategy (organic vegetable cultivation / horticulture)

- Cu is currently indispensable in organic vegetable cultivation.
- A reduction to 2.5 kg/ha/year over 5 years seems possible for vegetable cultivation.
- A flexible interpretation of this rule within a period of time would be desirable.
  → demand depending on crop, year and weather (risk minimization)

2. Work and research needs

- Variety breeding - more resistant or tolerant varieties necessary.
- For expected new indications efficacy trials are necessary
- Cultivation methods --> development, testing of new cultivation methods (optimisation of crop management and irrigation to improve the crop climate, further development of weed control methods including practical trials)
- Development of a Cu-reducing application technique for the application of Cu agents in organic vegetables cultivation.
- Development of practicable crop specific forecast models (analogous to Öko-Simphyt)