

## CARBOFURAN (096)

### EXPLANATION

A 2 mg/kg limit for the sum of carbosulfan, carbofuran, 3-hydroxy-carbofuran and 3-keto-carbofuran in citrus fruits was estimated by the 1984 JMPR. The 1991 JMPR revised the definition of the residue to separate the carbosulfan limit from that of its metabolites. This resulted in separate 2 mg/kg limits, one for carbosulfan and one for the sum of carbofuran and 3-hydroxy-carbofuran to replace the original proposal. The estimate for the sum of carbofuran and 3-hydroxy-carbofuran was intended to accommodate residues resulting from the use of carbosulfan. Keto-carbofuran was deleted from the definition. The numerical levels were not revised, pending the evaluation of additional information submitted too late for review. Critical supporting information had been requested since 1984 and additional requirements added in 1991. Some delegations to the CCPR had expressed the view that the proposed limits were not supported.

The Meeting received additional data on residues of carbosulfan and its metabolites in citrus and other commodities resulting from the use of carbosulfan, and comments from the German government explaining its view that the 2 mg/kg proposals were not supported by the data provided.

Summary residue data and information on Spanish GAP for applications of carbofuran to potatoes, onions and tomatoes were also received (Spain, 1993).

### USE PATTERN

The Meeting received information on Spanish and Australian GAP for carbofuran on several commodities which is summarized in Table 1.

Table 1. Summary of registered or authorized uses of carbofuran on selected commodities.

Country/Crop	Application			PHI (days)	Comments
	Formu- lation	Rate, kg ai/ha	No.		
<u>Spain</u>					
Banana	SL	5.6	?	60	Drop irrigation
Cotton	GR	0.6-0.75	?	60	In soil at seeding
Maize	GR	0.6-0.75	?	60	same
Potato	GR	0.6-0.75	?	60	same
Sorghum	GR	0.6-0.75	?	60	same
Sugar beet	GR	0.6-0.75	?	60	same
Sunflower	GR	0.6-0.75	?	60	same
Tomato	SL	0.8	?	45	Drop irrigation (Field or glasshouse)
<u>Australia</u>					
Rice	GR	1	2	42	Not for upland rice
Sugar cane	GR	3 or (4.5 gai/ 10 M row)	1	30 wk.	Incorporate by irrigation or tillage in 21 cm band either side of row at 3- 5 leaf stage.

**RESIDUES RESULTING FROM SUPERVISED TRIALS**

Summary data were provided by the Spanish government from supervised trials on potatoes, onions and tomatoes (Spain, 1993).

Potatoes. In one of two supervised trials in Germany in 1972 residues of carbofuran were 0.05 mg/kg 160 days after one application of a granular formulation at 5 kg ai/ha. In the other residues were 0.23 mg/kg after 106 days. No data were provided at the 60-day Spanish GAP PHI, nor was other additional supporting information provided.

Onions. In a 1984 supervised trial in Spain on onions carbofuran residues were 0.19 and 0.7 mg/kg and 3-hydroxy-carbofuran 0.28 and 0.39 mg/kg on onion plants 106 days after the application of a granular formulation at 0.92 mg/kg. Residues in the bulb were <0.05 mg/kg for both carbofuran and 3-hydroxy-carbofuran. No GAP information was provided for onions.

Tomatoes. Summary data were available from 4 supervised trials in Spain (Table 2). Residues of both carbofuran and 3-hydroxy-carbofuran were <0.05 mg/kg after 30 and 60 days from applications of 6.3 kg ai/ha compared to the Spanish GAP PHI of 45 days and application rate of 0.8 kg ai/ha. No other supporting information was provided.

Table 2. Residues in tomatoes resulting from supervised trials in Spain.

Year	Application			PHI (days)	Residues (mg/kg) at given Interval		Ref.
	Formulation	Rate, kg ai/ha	No.		Carbofuran	3-OH-Carbofuran	
Not given	Not given	4.2	Not given	0	<0.05	<0.05	HUK 73/70 B
				7	<0.05	<0.05	
				15	8.1	<0.05	
	8.4	Not given	0	<0.05	<0.05		
			7	<0.05	<0.05		
			15	0.12	<0.05		
1982	SC	6.3 <sup>1</sup>	2	30	<0.05	<0.05	FC 47
	SC	6.3 <sup>1</sup>	2	60	<0.05	<0.05	

<sup>1</sup> Indoor. Not indicated for other trials.

**NATIONAL MAXIMUM RESIDUE LIMITS**

National MRLs reported to the Meeting are summarized below.

Crop	Country	MRL (mg/kg)
Banana	Australia	0.1
	Spain	0.1
Cotton	Spain	0.1
Edible offal	Australia	0.05
Eggs	Australia	0.05
Maize grain	Spain	0.1
Maize fodder	Spain	2.0
Meat	Australia	0.05
Meat of poultry	Australia	0.05
Milk	Australia	0.05
Potato	Spain	0.2
Rice	Australia	0.2
Sugar cane	Australia	0.1
Water	Australia	0.03
Wheat	Australia	0.2

**APPRAISAL**

The 1992 CCPR held the 2 mg/kg carbofuran citrus limit at Step 7B pending a JMPR review of country comments to be submitted. The Meeting considered comments from Germany on the proposed citrus limit, as well as supervised trials data for potatoes, onions and tomatoes. In addition to being only summarized, the data for potato did not reflect the GAP PHI. No GAP information was provided for onions. For tomato important information was missing for two of four trials. The Meeting did not consider the summary data with no additional supporting information from limited trials sufficient for estimating maximum residue levels.

**RECOMMENDATIONS**

Because the current 2 mg/kg temporary limit for carbofuran in citrus fruits was recommended to accommodate residues resulting from the use of carbosulfan and because withdrawal of the limit for carbosulfan is recommended (see the monograph on carbosulfan), the Meeting also recommends withdrawal of the current temporary limit for carbofuran in citrus fruits.

Definition of the residue: sum of carbofuran and 3-hydroxycarbofuran

CCN	Crop	Maximum residue limit (mg/kg)	
		new	previous
FC 0001	Citrus fruits	W <sup>1</sup>	2 T

<sup>1</sup> withdrawn

**REFERENCES**

Spain, 1993. Information on GAP and summary data for potato, onions and tomato:

<u>Crop</u>	<u>Report No.</u>
Potato	197/72; 62/72
Onion	FCC 68/1; ?/72
Tomato	HUK 73/70 B; FCC 47