

**A STATISTICAL SURVEY OF CLINICAL CASES OF POISONING BY
AGRICULTURAL PESTICIDE IN JAPAN AND CHINA**

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In Toyama we started the project to gather the clinical cases of poisoning by agricultural pesticides from 1980. The method of survey is sending the investigation papers to all physicians, surgeons, children's doctors eye doctors and dermatologists in Toyama Prefecture, numbers are about 650. From 1990 in Henan (China) using the same method Chinese doctors started project of the survey of pesticides poisoning.

In this report we compare the Toyama's 90 cases (from 1988 to 1992) with Chinese 563 cases (from 1990 to 1993). Chinese studying area is showed by Fig 1, and Toyama's by Fig 2. The outlines of the surveying areas is showed by table 1. Chinese total area is about 1,281 km², Toyama's about 4,253 km². Chinese population is 891,000, Toyama's 1,211,000. Chinese population of farmer's house is 800,000, Toyama's 230,000.

In Toyama average of annual poisoning is 18. Recovery of investigation papers is about 70%. By this recovery we count backward the real poisoning cases, that is about 25.7. From this 25.7 and population, we tried to estimate the poisoning cases by agricultural chemicals in Japan. The result of cases is about 2,900, or 2.3 per 100,000 population. By the same estimation Chinese incident is about 460,000 or 40.2 per 100,000 population.

By cause, in Toyama the rate of during spraying is 47.8%, suicide 44.4%, misused 7.8%. in China during spraying 67.3%, suicide 26.8%, misused 4.6%, contamination 0.4%, residue 0.9%. In China the incidence of poisoning in spraying is very high. In China I had some chances of looking the spraying style, all sprayers put on no mask, and some cases the upper half of bad were styles are too.

In China to prevent of the poisoning from agricultural chemicals, for farmer poisoning education is very important. In Toyama the death rate of poisoning from agricultural chemicals is 30.0%, in China 2.1%. The rate of Japanese death rate of poisoning is very higher than China's. In Japan the paraquat which is herbicide, is permitted to use. There is no way to cure for poisoning from this paraquat is too dangerous, so in Japan the paraquat must be prohibited by law.

Table 1 Summary of surveying areas

	Japan	China (Henan)		
	Toyama	温 県	武陟県	Total
total area(km ²)	4,253	465	816	1,281
cultivated area(km ²)	665	243	416	659
rate of cultivated area(/total)	15.6	52.1	51.0	51.4
population	1,211,228	369,968	521,217	891,185
population of farmer's house	234,690	317,048	489,957	807,005
rate of famer's population(/total)	20.9	85.7	94.0	90.6
organization of hygiene		38	43	81
hospitals	638	15	17	32

Table 2 Annual cases of poisoning(by cause)

year	area cause	Toyama				China					
		in spraying	suicide	misused	total	in spraying	suicide	misused	conta- mination	residue	total
88		7	13	3	23						
89		5	9	1	15						
90		9	5	1	15	47	34	5	2		88
91		11	3	1	15	51	25	9		2	87
92		11	10	1	22	259	84	12		3	358
93						22	8				30
total		43	40	7	90	379	151	26	2	5	563
dead			23	4	27	3	9				12

Table 3 Poisoning cases(by cause)

	cases		rate		Dead		Death rate	
	Toyama	China	Toyama	China	Toyama	China	Toyama	China
in spraying	43	379	47.8	67.3	0	3	0.0	0.8
suicide	40	151	44.4	26.8	23	9	57.5	6.0
misused	7	26	7.8	4.6	4		57.1	0.0
contamination		2		0.4				0.0
residue		5		0.9				0.0
total	90	563	100.0	100.0	27	12	30.0	2.1

Table 4 Age distribution of poisoning

	in spraying		suicide		misused		contamination	residue	total	
	Toyama	China	Toyama	China	Toyama	China	China	China	Toyama	China
0 ~					1	15			1	15
5 ~						4		1	0	5
10 ~		9		3	1				1	12
15 ~		26	1	17		1			1	44
20 ~	2	85	1	49		3			3	137
25 ~		62	2	33				2	2	97
30 ~		53	1	12					1	65
35 ~		48	1	11		2		2	1	63
40 ~	5	51	2	12					7	63
45 ~	4	17	4	4	1	1			9	22
50 ~	2	10	4	2				1	6	13
55 ~	5	9	10	2					15	11
60 ~	10	9	3	6	1			1	14	16
65 ~	6		7		1				14	
70 ~	6		4		2				12	
total	40	379	40	151	7	26	2	5	87	563

Table 5 Monthly incidence of poisoning patients

month	in spraying		suicide		misused		contamination	residue	total	
	Toyama	China	Toyama	China	Toyama	China	China	China	Toyama	China
1			1	14					1	14
2		2	3	7					3	9
3	2		2	9					4	9
4	5	2	2	17		2			7	21
5	6	4	3	13		2		1	9	20
6	6	15	4	16	1	5			11	36
7	2	199	5	22		5		1	2	229
8	9	106	6	14	1	3			16	123
9	2	20	3	11	2	5		1	7	37
10	3	5	5	11	1	1			9	17
11		1	4	8	2	3		1	6	13
12	1	3	2	4				1	3	8
others	7	22		5					7	27
total	43	379	40	151	7	26	2	5	90	563

Table6 Seasonal distribution of poisoning

	in spraying		suicide		misused		contamination	residue	total	
	Toyama	China	Toyama	China	Toyama	China	China	China	Toyama	China
Spring	13	6	7	39		4		1	20	50
Summer	17	320	15	52	2	13	1	2	34	388
Autumn	5	26	12	30	5	9		2	22	67
Winter	1	3	2	25			1		3	29
Total	36	355	36	146	7	26	2	5	79	534

Table7 Poisoning from agricultural chemicals in China(by type)

	in spraying	suicide	misused	contamination	residue	total	dead	death rate
Organophosphorus	365	114	21	2	5	507	10	2.0
Carbamate	11	13	2			26	1	3.8
Decamethirin	1	15	3			19		
Oranochlorine		3				3		
Arsenide	1					1		
Fluoride		1				1		
Phosphatidic Compound		1				1		
oters	1	4				5	1	
total	379	151	26	2	5	563	12	2.1

Table8 Poisoning from agricultural chemicals in Toyama(by type)

		in spraying	suicide	misused	total	death rate
Herbicides	Paraquat	0 / 21	20 / 24	3 / 3	23 / 48	47.9
	others	0 / 3	1 / 3	1 / 1	2 / 7	28.6
Insecticides	Organic Phospher	0 / 8	0 / 8	0 / 2	0 / 18	0.0
	Carbamate	0 / 1	0 / 1		0 / 2	0.0
	Others	0 / 3	1 / 2	0 / 1	1 / 6	16.7
Fungicide		0 / 5			0 / 5	0.0
others		0 / 2	1 / 2		1 / 4	25.0
total		0 / 43	23 / 40	4 / 7	27 / 90	30.0

(deads/cases)

Fig. 1 Studying Area in China



Fig. 2 Studying Area in Japan

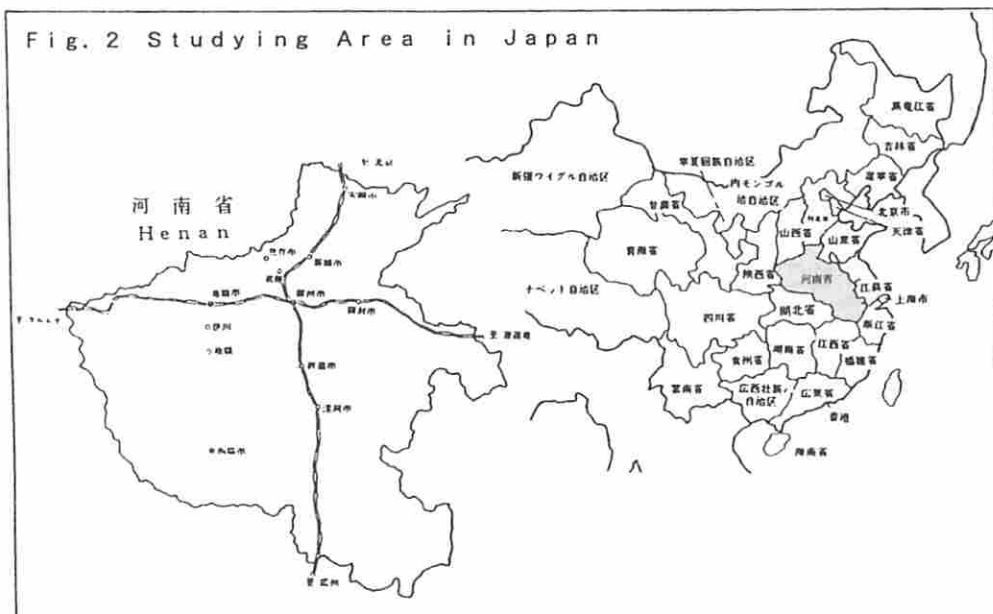


Fig. 3 Cause of poisoning from Agri. Pesticide

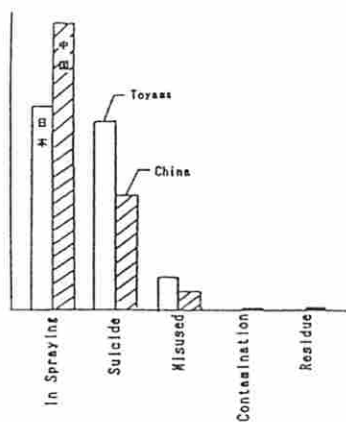


Fig. 4 Death Rate of poisoning from Agri. Pesticide

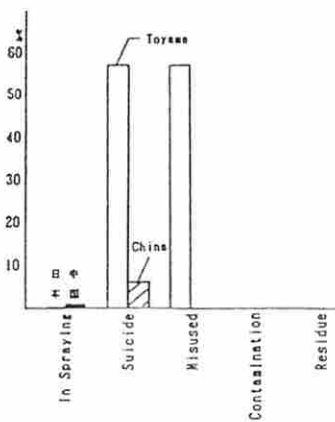


Fig. 5 Rate of Clinical Cases by Age

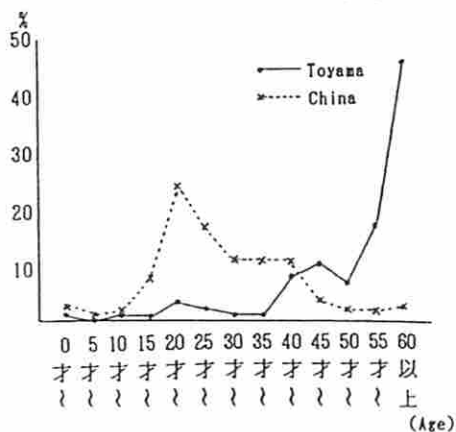


Fig. 6 Rate of Clinical Cases by Age (In Spraying)

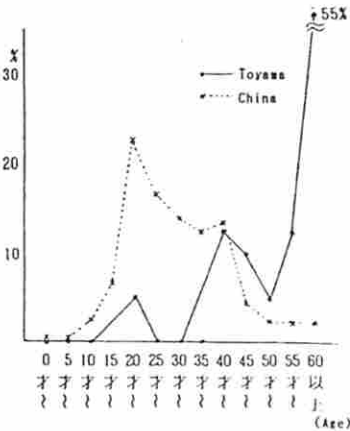


Fig. 7 Rate of Clinical Cases by Age (Suicide)

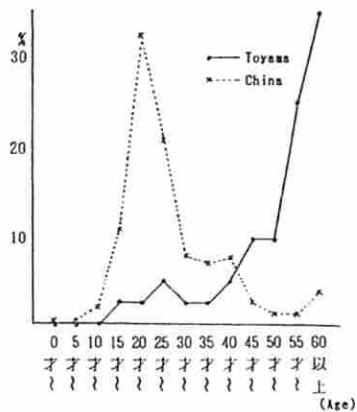


Fig. 8 Seasonal Incidence of Poisoning (In Spraying)

