

ACARIOSIS OF BEES IN POLAND AFTER 1975

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S u m m a r y

The mite *Acarapis woodi* (Rennie) was often detected in bees originating from the former provinces of Jelenia Góra, Bielsko-Biała and Zamość. Acariosis of bees was diagnosed from February to May, and usually the disease was recognised in April. In many apiaries acariosis of bees was reported in 1978, and the year 1977 was exceptionally unfavourable for beekeepers in Poland in respect of honey production. After 1988 acariosis of bees was not included in monthly reports on notifiable animal diseases in Poland. In line with the tradition dating back to a ruling issued in 1946 it is suggested that bee imports from countries which are not members of the World Trade Organisation should be restricted to apiaries situated in the centre of a 5 km zone in which bees have shown no sign of acariosis for at least 12 months. A part of Poland's territory should be considered free of acariosis of bees.

Keywords: *Acarapis woodi*, Poland, acariosis, honey bee, occurrence, control.

INTRODUCTION

Acariosis of bees was under the state control in Poland in the years 1946 - 1997. Until December 14, 1997 it was mandatory to report the occurrence of the disease. However, it was changed as acariosis was not listed in enclosure no.1 to the Polish law on the control of infectious animal diseases (Ustawa 1997, Ustawa 2001). The Chief Veterinary Officer commented that that law was subject to pre-notification to the European Union and to the World Trade Organization (WTO) - (Anonymous 1998). Bees imported from the countries in which *A. woodi* is present should not be located in an area of the country with a previous record of acariosis incidence since it is bound to affect the population of those insects. Bees have been imported, indeed. In 1996, 850 packaged bees were brought in and fewer than 200 were sold to beekeepers. In the subsequent years the respective numbers were 950 and 800 (Wilde 1998). In 1998, Polish beekeepers ordered 2,500 packaged

bees but that number could have increased (Wilde 1998).

Acariosis of bees was a serious epizootical problem in the USA (Morse and Nowogrodzki 1990), and according to beekeepers honey bee mites „Tracheal Mites” - that is *A. woodi* - are „...nowadays the greatest threat to bees in Arizona” (Ostrowski and Bakier 2001).

In Poland *A. woodi* mites can be problematic due to their previous occurrence record and hence the hazard regions should be well recognized. There is scarcity of data about the distribution of acariosis in some provinces. Acariosis of bees was recorded in south provinces, such as: Katowice, Opole, Rzeszów, Wrocław and on Roztocze Lubelskie, in the region of Kraśnik and for many years it did not show any tendency to spread (Hartwig 1996). The former provinces of Cracow and Zielona Góra should also be mentioned (Jeliński 2000). In the accessible literature there is a lack of data on the number of locations at which that disease was reported in each province. This

paper is intended to fill this gap starting from 1976.

METHODS

The studies relating to the occurrence and to the control of acariosis of bees were conducted using the following materials:

A) monthly reports on notifiable animal diseases issued by:

- Ministry of Agriculture - Department of Veterinary Medicine (1. 01. 1976 to 30. 06. 1981),
- Ministry of Agriculture and Food Economy - Department of Veterinary Medicine (1. 07. 1981 to 31. 10. 1985),
- Ministry of Agriculture, Forestry and Food Economy - Department of Veterinary Medicine (1. 11. 1985 to 31. 12. 1987),
- Ministry of Agriculture, Forestry and Food Economy - Inspectorate of Veterinary Medicine (1. 01. 1988 to 31. 12. 1988),
- Ministry of Agriculture, Forestry and Food Economy - Department of Veterinary Medicine (1. 01. 1989 to 31. 12. 1989),
- Ministry of Agriculture and Food Economy - Department of Veterinary Medicine (1. 01. 1990 to 31. 12. 1997),

B) archival records („Archives PIWet.”) and namely: reports on diagnoses of diseases of bees of regional veterinary diagnostic laboratories and other laboratories and fact sheets of veterinarians,

C) sources described earlier (Jeliński 2000).

RESULTS AND DISCUSSION

The data contained in Table 1 show that in 1987 the fewest apiaries were reported as having acariosis of bees (3) and from 1989 that disease did not appear in bulletins of

infectious animal diseases. From 1987 number of apiaries in which acariosis of bees was recorded dropped abruptly. Then in April that disease appeared in only 1 apiary. Usually, it is in that month that the greatest numbers were observed. In the years 1977/78 acariosis of bees was consistently reported every month (from February to February) - (Table 1).

Data in Table 2 show the distribution of acariosis of bees across the provinces from 1976 to 1988. Most frequently, in 142 localities, acariosis was recorded in the province of Jelenia Góra to be followed by the province of Bielsko-Biała and Zamość. Acariosis of bees was reported also in other provinces: Katowice, Kraków, Krosno, Legnica, Nowy Sącz, Opole, Tarnobrzeg, Tarnów, Wałbrzych, Wrocław and Zielona Góra. In each of the following provinces: Kielce, Lublin and Rzeszów the disease was reported from a single location. According to the reports in the bulletins of infectious diseases of animals the provinces of Białą Podlaska, Chełm, Gdańsk and Włocławek should also be included here (Table 2). In some provinces bordering with the eastern states of German Federal Republic (GFR) acariosis of bees was not reported. Those were Gorzów and Szczecin (Table 2). In other provinces bordering on the west or south with GFR, Czech Republic and Slovakia acariosis of bees was reported. Those were Krosno, Nowy Sącz, Bielsko-Biała, Katowice, Opole, Wałbrzych, Jelenia Góra and Zielona Góra. Of the eastern border provinces the province of Zamość should be included (Table 2). In some regions acariosis of bees was of enzootic character.

In the wake of the new rules of conduct for the veterinary services pertaining to the control of infectious diseases of bees in the frontier zone issued on 30 November 1977 (Pismo Ministerstwa Rolnictwa 1977) acariosis of bees was reported in many villages in 1978. The reports were especially

Table 1

Number of apiaries in which acariosis of bees was reported in 1976 - 1988.

Year	Months												Apiaries in which acariosis was reported - total
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
1976	10	11	26	25	9	3	-	1	-	-	-	-	85
1977	-	20	52	55	21	6	15	1	2	1	1	1	175
1978	3	14	44	72	76	3	8	9	-	-	-	-	229
1979	2	8	31	30	34	40	-	3	-	-	-	-	148
1980	-	10	23	33	15	4	1	2	1	-	-	-	89
1981	-	2	12	29	16	17	2	-	-	-	-	-	78
1982	-	5	30	23	2	8	-	-	4	-	-	-	72
1983	-	10	12	21	9	8	1	-	-	-	-	1	62
1984	1	5	12	16	11	3	-	-	-	-	-	-	48
1985	-	10	17	17	9	-	-	-	-	-	-	-	53
1986	-	-	1	29	1	-	2	-	-	-	-	-	33
1987	-	1	1	1	-	-	-	-	-	-	-	-	3
1988	-	-	1	-	-	-	-	2	1	-	-	-	4
1989	-	-	-	-	-	-	-	-	-	-	-	-	-

Code: - = disease not reported

Table 2

Number of villages in the former provinces in which acariosis of bees was reported in 1976 - 1988

Province	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	Total
1. Warszawa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Cracow, Kraków	-	1	2	1	-	-	-	-	-	-	-	-	-	4
3. Łódź	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Biała Podlaska	1	-	-	-	-	-	-	-	-	-	-	-	-	1
5. Białystok	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6. Bielsko-Biała	4	19	29	31	18	8	6	4	4	7	1	-	3	134
7. Bydgoszcz	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8. Chełm	-	-	-	-	1	-	-	-	-	-	-	-	-	1
9. Ciechanów	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10. Częstochowa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11. Elbląg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12. Gdańsk	-	-	-	-	-	-	-	-	-	1	-	-	-	1
13. Gorzów	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14. Jelenia Góra	23	30	9	7	6	9	13	15	11	17	2	-	-	142

Province	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	Total
15. Kalisz	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16. Katowice	5	11	8	1	4	3	1	5	5	3	-	-	-	46
17. Kielce	1	-	-	-	-	-	-	-	-	-	-	-	-	1
18. Konin	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19. Koszalin	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20. Krosno	1	-	-	-	-	-	3	-	-	-	-	-	-	4
21. Legnica	2	3	-	3	5	4	3	5	4	-	2	-	-	31
22. Leszno	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23. Lublin	-	1	-	-	-	-	-	-	-	-	-	-	-	1
24. Łomża	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25. Nowy Sącz	4	16	32	17	7	7	4	3	-	2	-	-	-	92
26. Olsztyn	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27. Opole	2	13	17	4	1	8	5	-	7	-	-	-	-	57
28. Ostrołęka	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29. Piła	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30. Piotrków	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Płock	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32. Poznań	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33. Przemyśl	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34. Radom	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35. Rzeszów	-	-	1	-	-	-	-	-	-	-	-	-	-	1
36. Siedlce	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37. Sieradz	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38. Skierniewice	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39. Słupsk	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40. Suwałki	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41. Szczecin	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42. Tarnobrzeg	-	-	-	-	2	-	2	-	2	6	3	-	-	15
43. Tarnów	1	7	15	2	1	1	2	1	-	-	-	-	-	30
44. Torun	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45. Wałbrzych	1	3	16	12	2	-	5	2	-	1	2	-	1	45
46. Włocławek	-	-	1	-	-	-	-	-	-	-	-	-	-	1
47. Wrocław	2	3	5	-	-	-	2	9	3	1	-	-	-	25
48. Zamość	17	21	21	14	14	13	8	5	7	3	3	3	-	129
49. Zielona Góra	-	8	2	8	-	-	2	4	4	2	10	-	-	40

numerous from the border provinces of Nowy Sącz, Opole and Wałbrzych (Table 2). Those data can show that the inspection of dead bees received from the frontier zone - from the bottom board of the hive in winter - allowed the recognition of *A. woodi*.

In the province of Cracow - according to the information from the Regional Veterinary Diagnostic Laboratory in Cracow in the years 1981 - 1985 - only in 1982 the disease was not detected (Archives PIWet.). In the province of Bielsko-Biała acariosis of bees was noted every year from 1981 to 1985. It was diagnosed at the Regional Veterinary Diagnostic Laboratory in Cracow (Archives PIWet.). It is probable that the information on a single locality in the province of Chełm where acariosis of bees was reported in 1980, was actually a reference to varroosis. In the province of Jelenia Góra the Diagnostic Laboratory in Zgorzelec screened adult bees for the presence, among others, of acariosis of bees (Archives PIWet.).

In the province of Katowice acariosis of bees was recorded every year from 1981 to 1985 (Archives PIWet.). The Silesian Laboratory for Bee Diseases Investigation in Wodzisław was in this area in which parasitological examinations of bees originating from the frontier zone were done (Archives PIWet.). In the province of Kielce acariosis of bees was reported only in 1976. The Regional Veterinary Diagnostic Laboratory in Rzeszów positively confirmed the diagnosis of that disease in the province of Krosno in 1976. According to Michalski and Kudela (1980) in 1976 acariosis of bees was diagnosed in one sample. It also appeared in the province of Legnica but in the years 1978 and 1985 the disease was not reported there. Contrary to that report, in the years 1986 - 1992 the Regional Veterinary Diagnostic Laboratory in Lubin did not report on diagnosing the

presence of acariosis of bees in that province (Archives PIWet.).

In the province of Lublin acariosis of bees was recorded only in 1977. Regional Veterinary Diagnostic Laboratory in Cracow diagnosed it in the province of Nowy Sącz in 1981, 1982, 1983 and 1985 (Archives PIWet.). The province of Opole borders on the Czech Republic and in 1978 the highest number of locations that reported the occurrence of acariosis of bees was in that area. According to the Regional Veterinary Diagnostic Laboratory in Opole in the years 1981 - 1985 the disease was not diagnosed only in 1985 (Archives PIWet.). In the province of Rzeszów acariosis of bees was reported in 1978 in one locality and the report was positively confirmed by the Regional Veterinary Diagnostic Laboratory in Rzeszów (Michalski and Kudela 1980). In the province of Tarnów the disease was diagnosed at a laboratory in Tarnów in 1982 and in 1983, and at the Regional Veterinary Diagnostic Laboratory in Cracow in 1981 (Archives PIWet.). In the province of Wałbrzych the highest number of localities for which acariosis was reported was in 1977.

Niementowski (1986) reported on the localities at which acariosis of bees appeared in the province of Wrocław. According to that author an increased number of positive cases was reported which could be connected to the uncontrolled moving out of bee colonies by many beekeepers to heather pastures. Folbex was usually used to control that disease there. Fourteen bee colonies were killed in the province of Wrocław in connection with acariosis of bees in 1983. In 1985, the last case of that disease was reported in that province.

In the province of Zamość the disease was reported every year from 1976 to 1987.

According to Zamorska and Deptuła (1987) in the province of Zielona Góra *A. woodi* was detected every year from 1974

to 1984. Only the northern part of that province and the province of Gorzow were free of that parasite. From 1980 in the province of Zielona Góra only a few *A. woodi* infested bee colonies were reported but that disease appeared in apiaries in which those parasites had been detected several years earlier. Acariosis of bees in that province was an enzootic disease and did not spread to the northern areas of Poland. *A. woodi* could not be found in the bee samples received from some regions of the province of Zielona Góra and that was due to small samples (in some there was only a dozen or so of bees) or to inadequate numbers of delivered samples.

The fact that acariosis of bees was recorded in every month at the end of 1977 and at the beginning of 1978 can be explained by a very high number of bees that were the source of infestation in bee colonies (Borchert 1974). The year 1977 was exceptionally unfavourable in respect of production of honey (Gromisz and Kochańska 1978).

Acariosis of bees was usually not diagnosed in October, November and December. In those months samples of bees were usually not sent for testing.

Banaszak (1980) published a map that showed the distribution of the cases of acariosis of bees in Poland in 1973. The author showed that the disease was reported in southern provinces. The data demonstrate that the epizootiological situation did not change considerably over a dozen years.

The information about acariosis of bees in the province of Gdańsk (1985) most likely referred to varroosis. In the Regional Veterinary Diagnostic Laboratory in Gdańsk acariosis of bees was not diagnosed in the years 1981 - 1985 (Archives PIWet.). Dubiety relating to the province of: Białą Podlaska (1976) and Włocławek (1978) is based on other authors' opinion about lack of acariosis of bees in open area lowland and in lake districts in Poland

(Czerwiński et al. 1963). One should add that in the north of the GFR in the states of Schleswig-Holstein and Lower Saxony acariosis of bees was not diagnosed in the years 1970 - 1979 (Müller 1980). A similar situation was in the former German Democratic Republic (GDR) in 1976 (Fritzsich 1977).

Acariosis of bees was in Poland and in Germany under the State control, and appropriate rulings were issued to that effect. The use of Folbex in Polish apiaries did not cause a complete eradication of that disease (Instrukcja Nr 2 Ministerstwa Rolnictwa 1966). In the former GDR, the province of Dresden, eight applications of smoke strips in the spring were recommended in 1976 (Fritzsich 1977). According to Müller (1980) in the GFR the German law made it obligatory to control acariosis of bees, but paradoxically no efficient acaricide was registered for use. Recommended in Poland (Pismo Ministerstwa Rolnictwa 1974), thymol had its opponents. It was expected that the drug used for the control of varroosis (Gliński and Chmielewski 1988) and also efficient in acariosis of bees - Folbex VA - will play an essential role in the eradication of the disease. This acaricide was however not used on wide scale in Poland. Varroacidal drugs containing fluvalinate as e.g.: Apistan did not show acaricidal action on *A. woodi* (Scott-Dupree and Otis 1992). One should assume that like in the GFR these parasites still exist in Poland, a country where varroosis was also universally treated (Anonymous 1993).

The ruling of September 24, 1946 (Rozporządzenie 1946) laid down the following general rules for the control of acariosis of bees:

- Mandatory notification of the disease §1
- Following the outbreak or suspected outbreak of acariosis it was prohib-

- ited to move bees to and from the apiary§2 paragraph 2
- Removal inquiries and collecting samples for testing§3 and §4
- Obligatory treatment of all bee colonies affected with acariosis§8
- Official recognition of an apiary as affected with acariosis and drafting a decision§9
- Advising different institutions of the outbreak of the disease§5 and §6
- Labelling of an apiary in which acariosis of bees appeared§7
- Inspection of apiaries with suspected bee colonies for infestation, it can involve all apiaries in a defined area§5
- Prohibition of the movement of bee colonies and bees without permission within a radius of 5 km from apiary in which acariosis of bees appeared§10
- Possibility for an apiary to be officially recognized as free of acariosis in the following spring and advising concerned institutions about it§13 and §14

Legal regulations in force in the GFR (Pittler 1989) were similar to those in Poland. There existed also certain differences. E.g in accordance with §15 of the German ruling (Pittler 1989) prohibition of the movement of bee colonies without permission could cover an area within 2 km from the apiary in which acariosis of bees had appeared. In the former GDR since acariosis of bees was an enzootic disease the endangered area was 5 km in radius (Fritzsich and Bremer 1975). In the European Union acariosis of bees is among the diseases for which national programmes may be recognised under Council Directive 92/65/EEC of 13 July 1992 (Council Directive 92/65/EEC).

A proper handling of an outbreak of acariosis of bees by the veterinary service in

accordance with Instruction No 2 (Instrukcja Nr 2 Ministerstwa Rolnictwa 1966) as amended on 19 April 1974 (Pismo Ministerstwa Rolnictwa 1974) is based on the following basic recommendations:

1. The conduct in an apiary in which acariosis of bees appeared involved:
 - simultaneous treatment of all bee colonies in the apiary - beekeepers covered the costs of the drug /Folbex or thymol/,
 - prohibition of the movement of swarms, of bee colonies and of queens into or out of the apiary,
 - ordering liquidation of captured swarms of unknown origin,
 - after-treatment inspection and collection of samples of dead winter bees in the spring of the following year,
 - recognition of an apiary as free of acariosis of bees based on the control treatment, spring inspection and a negative result of laboratory tests of dead bees collected from the bottom board of the hive in winter.
2. In the endangered zone within 3 - 5 km from the apiary in which acariosis of bees had appeared it was recommended to:
 - prohibit the movement of bee colonies, queens and bees without permission; a movement of an apiary from the endangered area could be allowed on condition that all bee colonies in a given apiary were treated with Folbex before intentional movement,
 - prohibit bee exhibitions and auctions,
 - issue orders to collect samples of bees from apiaries in an endangered area
 - carry out inspections of all apiaries in the spring of next year and to collect samples of dead winter bees for laboratory tests.

3. All apiaries in a defined area are subject to inspection if the results of the inquiries give ground for suspicion that not all cases of acariosis of bees have been brought to light. It was recommended that in such a case the measures to be adopted should be similar to those applied in an endangered area.
4. In the areas adjacent to the border - in frontier zones about 3 km wide - with former Czechoslovakia and the former GDR in accordance with the Ministry of Agriculture circular letter of 30 November 1977 (Pismo Ministerstwa Rolnictwa 1977) it was recommended to:
 - carry out inspection all of apiaries at least once a year,
 - examine adult dead bees sampled from the bottom board of the hive in winter months from February to March for the presence of *A. woodi* and,
 - destroy bee colonies affected with the American foulbrood and acariosis under compensation.

According to Tomaszewska and Chorbiński (1995) acariosis of bees disappeared from epizootiological maps of Poland. It can be connected with the discontinuation of mass surveillance of bees for that disease (Instrukcja Nr 28 Ministerstwa Rolnictwa 1973). It also appears that this fact was in connection with the drafting of the circular letter by the Ministry of Agriculture, Forestry and Food Economy (Pismo Ministerstwa Rolnictwa, Leśnictwa i Gospodarki Żywnościowej 1988). It made void another circular issued by the Ministry of Agriculture (1980) concerning varroosis, which is another acarine disease. In practice, however, from 1989 acariosis of bees did not appear in bulletins of infectious diseases of animals. The disappearance can be accounted for by the fact that since the 1980's varroosis has been a greater economic problem in Poland than acariosis of

bees. Parasitological tests for the presence of *A. woodi* were done in Poland mostly in the years 1950 - 1988. One cannot however supply documentary evidence that *A. woodi* has been completely eradicated in Polish apiaries. According to Michalski and Kudela (1980) 2177 bee samples were examined for acariosis in 1976 and the disease was diagnosed in one of them. In the subsequent years examined insects could originate mostly from the same apiaries, and also can be rareness that one places an order for investigation of bees to detect acariosis of bees. Probably not long ago acariosis of bees was diagnosed in the province of Nowy Sącz. It is also suggested that bees from the areas in which acariosis was reported should be examined for the disease. One should add that queens with attendant workers can spread *A. woodi* (Giordani 1977).

Acariosis of bees is on list B of animal diseases and Poland is obliged to submit annual reports on that disease to the World Organisation for Animal Health (Office International des Epizooties) in Paris. Alongside with data on the disease occurrence the reports should also contain information about prevention and chemical control or other management methods (Kołacz 1987).

It is necessary to stress that enclosure No 2 to the Polish law - a list of infectious diseases of animals subject to obligatory registration - contains acariosis of bees (Ustawa 2001). In line with the established tradition dating back to a ruling issued in 1946 the foreign animal health certificate for bees imported to Poland from WTO non-member countries (Ustawa 1997) requires that in their zone of origin formed by the apiary and a 5 km area around it the bees should have shown no sign of acariosis for a period of at least 12 months (Jeliński 1998). Together with those data an official animal health certificate should contain a statement that the apiary of origin and its

vicinity are free of acariosis of bees (Mól 1996).

The survey of data indicates that a part of Poland's territory should be considered free of acariosis of bees.

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CHOROBA ROZTOCZOWA PSZCZOŁ W POLSCE PO 1975 R.

Jeliński M.

S t r e s z c z e n i e

Roztocze *Acarapis woodi* stwierdzano często u pszczoł pochodzących z byłych województw: jeleniogórskiego, bielskiego i zamojskiego. Akarapidozę przeważnie wykrywano od lutego do maja, a zazwyczaj chorobę tę rozpoznawano w kwietniu. W wielu pasiekach notowano akarapidozę w 1978 r., a rok 1977 był dla pszczelarstwa w Polsce wyjątkowo niepomyślny pod względem produkcji miodu. Po 1988r. nie wykazano w biuletynach epizootycznych akarapidozy w kraju. Na podstawie tradycji wynikającej z rozporządzenia z 1946 r. od krajów nie będących członkami WTO w zagranicznym świadectwie zdrowia wskazane byłoby wymaganie, żeby pszczoły importowane do Polski pochodziły z pasieki wolnej od akarapidozy i zlokalizowanej w centrum terenu, na którym w promieniu 5 km w okresie ostatnich 12 miesięcy nie stwierdzono choroby roztoczej. Część terytorium Polski trzeba uznać za wolne od akarapidozy

Słowa kluczowe: *Acarapis woodi*, Polska, akarapidoza, pszczoła miodna, występowanie, zwalczanie.