

ADDITIONS TO THE PERONOSPORALES IN THE CANARY ISLANDS

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SUMMARY

Erysimum bicolor and *E. scoparium* are reported as new host for *Albugo candida* while *Hirschfeldia incana* has previously been recorded as a host in the Canaries.

Peronospora affinis on *Fumaria parviflora*, *P. aparines* on *Galium aparine*, *P. chenopodii-polyspermi* on *Chenopodium murale*, and *P. myosotidis* on *Myosotis latifolia* are all new to Canary Islands. *F. parviflora* and *M. latifolia* are both reported as new hosts for the fungi mentioned.

RESUMEN

Se reporta la presencia de *Albugo candida* como huesped de *Erysimum bicolor* y *E. scoparium*, el cual ya habia sido dado para Canarias como huesped de *Hirschfeldia incana*.

Peronospora affinis sobre *Fumaria parviflora*, *P. aparines* sobre *Galium aparine*, *P. chenopodii-polyspermi* sobre *Cheropodium murale* y *P. myosotidis* sobre *Myosotis latifolia* son todos nuevos para las Islas Canarias. *F. parviflora* y *M. latifolia* son ambas como nuevos hospedantes de los hongos mencionados.

INTRODUCTION

To my knowledge, very little has been published on Peronosporales in the Canary Islands. Bornmüller (1903) reported *Albugo candida* (Pers.) Kze. on *Hirschfeldia incana* (L.) Heldr. (= *H. incana* (L.) Lagr.-Foss.) from Tafira in Gran Canaria. Later Urries (1957) reported *Cystopus convolvulacearum* Otth. (= *Albugo ipomoeae-panduratae* (Schw.) Swingle) on *Convolvulus siculus* L. from Aldea de San Nicolás, also in Gran Canaria. Jorstad (1962) added two species of *Albugo* and a number of new hosts for *A. cruciferarum* (= *A. candida*). He also reported on *Bremia lactucae* Regel and six species of *Peronospora*, all new to the Canary Islands.

The material presented here, preserved in herb. O, was collected by myself as a member of the excursions arranged from the Botanical Museum of the University of Oslo and sponsored by Norwegian Research Council for Science and the Humanities. The hosts are identified by Dr. Per Sunding, Botanical Museum in Oslo, to whom I want to express my sincere thanks.

CATALOGUE

- Albugo candida* (Pers. ex Hook.) Kze. Rev. Gen. Plant., 2: 658, 1891. Syn. *A. cruciferarum* DC. ex S.F. Gray, Nat. Arrang. Brit. Pl. 1: 540, 1821.
 On *Erysimum bicolor* (Hornem.) DC. (syn. *Cheiranthus virescens* Webb ex Christ).
 Hierro, above Sabinosa, 2 IV 1978.
 On *Erysimum scoparium* (Brouss. ex Willd.) Wettst. (syn. *Cheiranthus scoparius* Brouss. ex Willd).
 Tenerife, near km. 26 on road to Las Cañadas, 1550 m above sea level, 18 III 1973.
 On *Hirschfeldia incana* (L.) Lagr.-Foss.
 La Palma, bco. above Las Toscas, 25 III 1974.

Conidia on *E. bicolor* measured 15-21 x 14-19.5 μm , on *E. scoparium* 14-20 x 14-19.5 μm , and on *H. incana* 15.5-19.5 x 13-18.5 μm . Oospores were not seen.

In his monograph on *Albugo*, Biga (1955) has given the total range of conidial size as 10-22.5 μm . He recognized two varieties, viz. var. *candida* with conidia 12.5-15 μm in diameter, covering most of the cruciferous hosts registered. The var. *macrospora* Togashi, mainly on *Brassia* spp., has conidia measuring 15-17.5 μm . The measurements given for the Canarian specimen show values indicating var. *macrospora*, but in the list of hosts given by Biga (op.cit.) for this variety the Canarian hosts are not included.

In addition to Bornmüller (see above) Jorstad (1962) reported the fungus on *H. incana* from four of the Canarian islands including La Palma, but the two *Erysimum* spp. represent a new host genus in this archipelago. They are not listed as hosts by Biga (op.cit.) either.

E. bicolor is endemic in Macaronesia, known from Madeira, Salvage and all Canarian Islands but Lanzarote, while *E. scoparium* is known from Tenerife only. *H. incana*, known from all the Canary

Islands, is also recorded from the Azores and Madeira, and it is widespread in S. Europe.

Peronospora affinis Rossmann in Rabh. Herb. Myc. II, 489.

On *Fumaria parviflora* Lam.

Gran Canaria, Bco. de Moya, at Los Tilos, 10 I 1973.

Conidia 15-23 x 13-16 μm . Oospores were not seen.

P. affinis has been reported on several *Fumaria* spp. in Europe (cf. e.g. Gäuman 1923), but I have not been able to trace any records on *F. parviflora*, so it might be a new host for this fungus.

The host is widespread in Southern and Central Europe. In Macaronesia it is found only on Lanzarote, Fuerteventura and Gran Canaria.

Peronospora aparines (de Bary) Gäum., Svensk Bot. Tidskr. 12: 444, 1919.

On *Galium aparine* L.

Gran Canaria, Bco. near San Roque, 16 I 1973; Bco. de Moya at Los Tilos, 10 I 1973.

Conidia 22.5-31 x 20-24 μm . Oospores were not seen.

The fungus is widespread in Europe on this host and it is also reported from U.S.A. Gäumann (op.cit.). The host which is widespread in Macaronesia, has been found on all Canarian islands, but to my knowledge there are no records of the fungus from this area.

Peronospora chenopodii-polyspermi Gäum., Mitt. Naturf. Ges. Bern 1918: 64, 1919. Syn. *P. muralis* Gäum., Beitr. Krypt.-Fl. Schweiz 5: 223, 1923.

On *Chenopodium murale* L.

Tenerife, El Pilar, 28 III 1974.

Conidia 21-26 x 17-23.5 μm . Oospores were not seen.

In older literature the downy mildews on *Chenopodium* and related genera were often recognized as varieties or specialized forms of *P. effusa* (Grev.) de Bary. Later especially Gäumann (1923), in his monograph, has listed several species attacking different *Chenopodium* spp. However, some of these species are reduced to synonyms, e.g. by Kochzman & Majewski (1970). The downy mildew on *C. murale* has been reported from several European countries, and also from Argentina (Gäumann, op.cit.).

Peronospora myosotidis de Bary, in Rabh. F. eur. 572, 1863.
On *Myosotis latifolia* Poiret.
Hiero, W of Los Gramales, 2 IV 1978.
Conidia 16.5-22 x 15.5-19.5 μm . Oospores were not seen.

P. myosotidis is also a new member of the Macaronesian flora, but it is widespread in Europe on other *Myosotis* spp. (Gäumann, op.cit.) and it is also reported from New Zealand (Jafar 1962) and N. America (e.g. Shaw 1955). *M. latifolia* which probably is a new host for the fungus, is reported from the Azores, Canary Islands and N.W. Africa. In the Canaries it is reported from all islands except Lanzarote and Fuerteventura.

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