Draft Assessment Report

Evaluation of Active Substances

Plant Protection Products

Prepared according to **Regulation (EC) 1107/2009**
as it applies in Great Britain

Bixlozone (F9600)

Volume 3 – B.3 (AS)

Data on Application

Great Britain

July 2022

Version History

When	What
July 2022	Initial DAR

Table of contents

B.3. DATA ON APPLICATION

B.3.1. USE OF THE ACTIVE SUBSTANCE

Bixlozone is intended to be used as a selective herbicide for the control of annual monocotyledonous and dicotyledonous weed species in agricultural crops. Bixlozone will be applied after sowing but pre-emergence to winter wheat, winter barley, winter oilseed rape and maize or early post-emergence to winter wheat.

B.3.2. FUNCTION

Herbicide.

B.3.3. EFFECTS ON HARMFUL ORGANISMS

Bixlozone is a broadcast soil applied residual herbicide. After being absorbed by the roots and shoots, it is translocated upwards in water through the xylem tissue and then diffuses within the plant. It acts as a carotenoid biosynthesis inhibitor causing bleaching of weeds. Once in contact with light, the emerging seedlings of susceptible weed species express bleaching symptoms and die.

Bixlozone does not appear to demonstrate downward systemic action or upward translocation from leaf to leaf. This may account for the inability to control larger weeds post-emergence, as well as explaining the appearance of chlorotic symptoms on contacted foliage with minimal or no effect on subsequent new growth.

B.3.4. FIELD OF USE ENVISAGED

Agriculture.

B.3.5. HARMFUL ORGANISMS CONTROLLED AND CROPS OR PRODUCTS PROTECTED OR TREATED

Bixlozone is intended to be used as a selective herbicide for the control of various susceptible annual monocotyledonous and dicotyledonous weed species in winter wheat, winter barley, winter oilseed rape and maize. It will be applied to the soil post-sowing pre-emergence to control susceptible weeds yet to emerge. In winter wheat only, it may be applied early post-emergence, to control very small susceptible emerged weeds.

Bixlozone will be used both in the autumn for weed control in autumn sown crops, and in the spring for weed control in maize. It is intended to be used solo and but also in co-formulated mixtures with other active substances for the purposes of broadening the weed control spectrum and for resistance management purposes.

Control of the following weeds was confirmed, at the proposed doses in the GAP; *Alopecurus myosuroides, Lolium multiflorum, Capsella bursa-pastoris, Stellaria media, Veronica* spp., *Galium aparine, Matricaria* spp., *Poa annua, Sisymbrium officinale, Lamium purpureum, Echinochloa crus-galli, Chenopodium album, Mercurialis annua, Fallopia convolvulus, Persicaria lapathifolia, Persicaria maculosa* and *Solanum nigrum.*

B.3.6. MODE OF ACTION

Bixlozone belongs to the isoxazolidinone chemical family. It is proposed to be classified as a member of HRAC (Herbicide Resistance Action Committee) group 13: inhibitor of 1-DEOXY-D-XYLULOSE 5-PHOSPHATE SYNTHASE and as a group 13 herbicide in the WSSA (Weed Science Society of America) herbicide classification system.

Bixlozone inhibits the biosynthesis of carotenoids. Deprived of protective carotenoids, chlorophyll as well as other components of the photosynthetic apparatus are susceptible to photo-oxidation and are subsequently photodegraded, resulting in bleaching symptoms on susceptible plants.

B.3.7. INFORMATION ON THE OCCURRENCE OR POSSIBLE OF THE DEVELOPMENT OF RESISTANCE AND APPROPRIATE MANAGEMENT STRATEGIES

Bixlozone will be classified in HRAC group 13. According to the website 'International Survey of Herbicide Resistant Weeds' (www.weedscience.org), globally there are two weed species which have been reported resistant to HRAC group 13. These cases of resistance are both to the active substance clomazone, which is the only other active substance in HRAC group 13. Resistance to clomazone has been reported in *Lolium rigidum* in Australia in 1982 and in *Echinochloa crus-galli var. crus-galli* in the USA in 2008. No resistance cases have occurred in Europe so far, despite the long-term use of clomazone.

For the resistance case in *Echinochloa crus-galli var. crus-galli* in the USA, no investigations were conducted, and no information has been reported on the underlying resistance mechanism.

The resistant biotype of *Lolium rigidum* found in South Australia in 1982 was also resistant to herbicides from six other HRAC groups (A, B, K1, K2, K3, N). Investigations have shown that clomazone resistance had occurred, even though the *Lolium rigidum* population had never previously been exposed to clomazone. Therefore, in this particular case, it is likely that the resistance to clomazone was related to enhanced metabolism.

Cereals, oilseed rape and maize are widely grown crops in the UK, which may favour the development of resistance. However, for all of these crops there are authorised products containing herbicides from alternative HRAC groups. Additionally, herbicides with different modes of action to bixlozone may be applied to the crops grown in rotation.

Bixlozone will only be applied once to these crops and the only other HRAC group 13 active substance, clomazone, will not be applied to the same crop, as it is used at the same timing. In the case of cereals, clomazone is not present in any authorised products.

Overall, the risk of resistance developing to HRAC group 13 is low. Nevertheless, it remains important to have a management strategy in place to help prevent resistance developing. The exact management strategy for products containing bixlozone can be considered at the product authorisation stage.

B.3.8. CONSIDERATION OF RACEMIC MIXTURE

Not applicable.

B.3.9. REFERENCES RELIED ON

Data Point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Data protection claimed Y/N	Justification if data protection is claimed	Owner	Previous evaluation
Volume 3CA point B.3	Unknown	2018	Volume 3 Annex B3 (AS) Data on application and efficacy – Efficacy summary dossier	N	N	Not applicable	FMC	None (new active)