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## **6. Bio-herbicides with their Application in Agriculture**



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## 6.1 Definition, concept and application of bio-herbicide

A **bioherbicide** is a biologically based control agent for weeds. Bioherbicides may be compounds derived from microbes such as fungi, bacteria, viruses, or protozoa; or phytotoxic plant residues, extracts or single compounds derived from other plant species.



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## 6.2 History of bioherbicides

In the 1950s the Russians mass-produced the spores of *Alternaria cuscutacidae* and applied them to the parasitic weed dodder (*Cuscuta* spp.). In 1963 the Chinese mass-produced a different fungus (*Colletotrichum gloeosporioides* f. sp. *cuscutae*) for the same weed. They called their mycoherbicide 'LuBao' and an improved formulation is still in use today.



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## **6.3 Benefits of bioherbicides over other herbicides**

Because the plant pathogens used in bioherbicides usually occur naturally in the areas where they are utilized, they tend to be less harmful to the environment than chemical herbicides. The fungi are often more selective in their mode of action so the risk of damage to other plants is reduced. Bioherbicides are, as a rule, less toxic to people and animals than chemical herbicides.



## 6.5 Some Commercial Mycoherbicides in Use Abroad

Product	Content	Weed controlled
<b>De-Vine</b>	A liquid suspension of fungal spores of <i>Phytophthora palmivora</i> It causes root rot in the weed.	Strangler-vine. ( <i>Morrentia odorata</i> ) in citrus orchards.
<b>Collego</b>	Wettable powder containing fungal spores of <i>Colletotrichum gloesporioides</i> Sub sp. <i>aeschynomone</i>	Jointvetch ( <i>Aeschynomone sp</i> ). In rice fields. The bioherbicide causes stem and leaf blight in the weed.
<b>Bipolaris</b>	A suspension of fungal spores of <i>Bipolaris sorghicola</i> .	Johnsongrass ( <i>Sorghum halepense</i> )
<b>Bioloφος</b>	A microbial toxin produced as fermentation product of <i>Streptomyces hygrosopicus</i> .	Non-specific, general vegetation.
<b>Luboa-2</b>	<i>Colletotrichum gloesporioides</i> spp.Cuscuta	Cuscuta