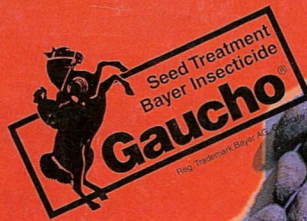
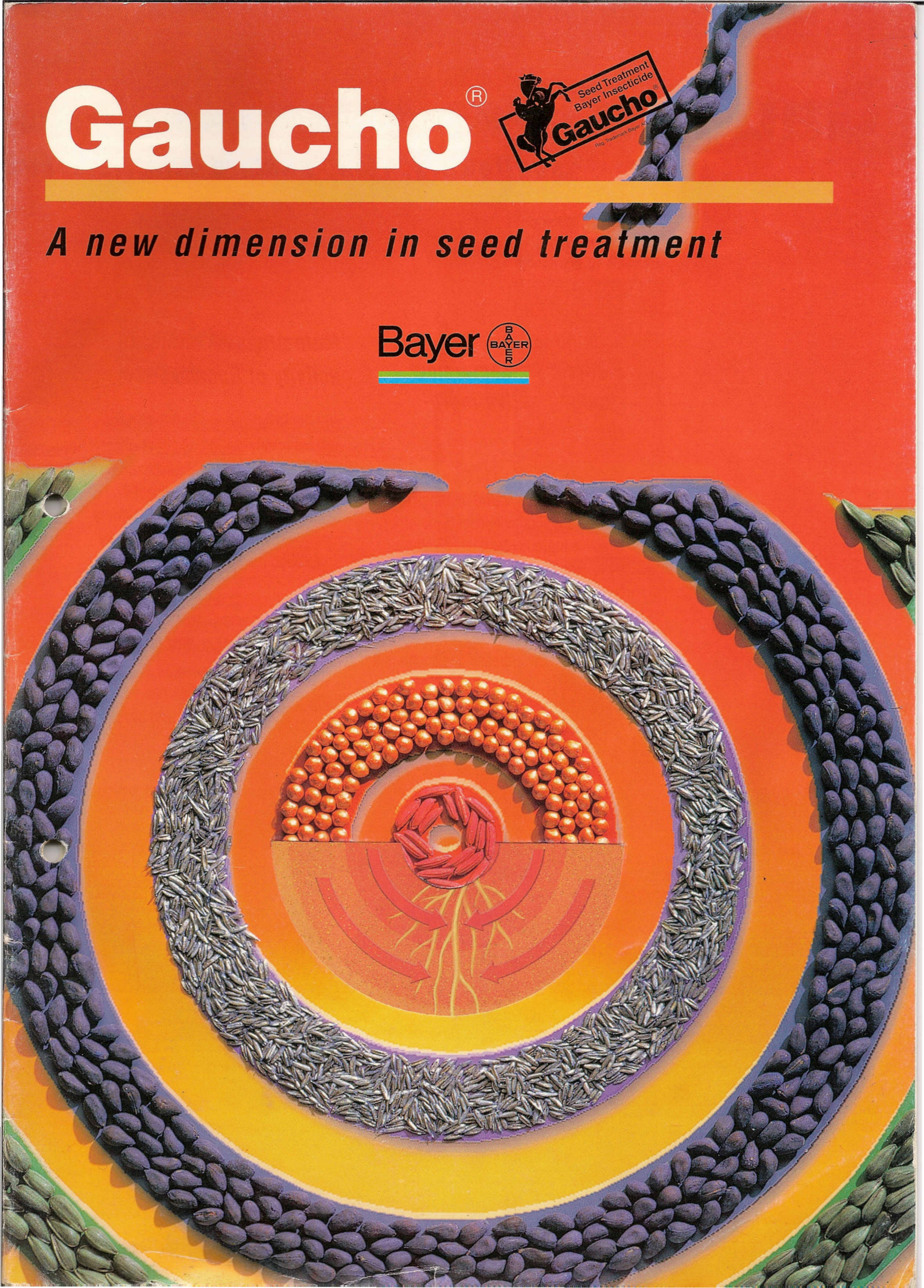


Gaucho[®]



A new dimension in seed treatment

Bayer 



Gaicho

The insecticidal seed treatment for sugarcane, sunflowers, rice, pasture and field beans

Gaicho is an insecticide from a new group of active ingredients

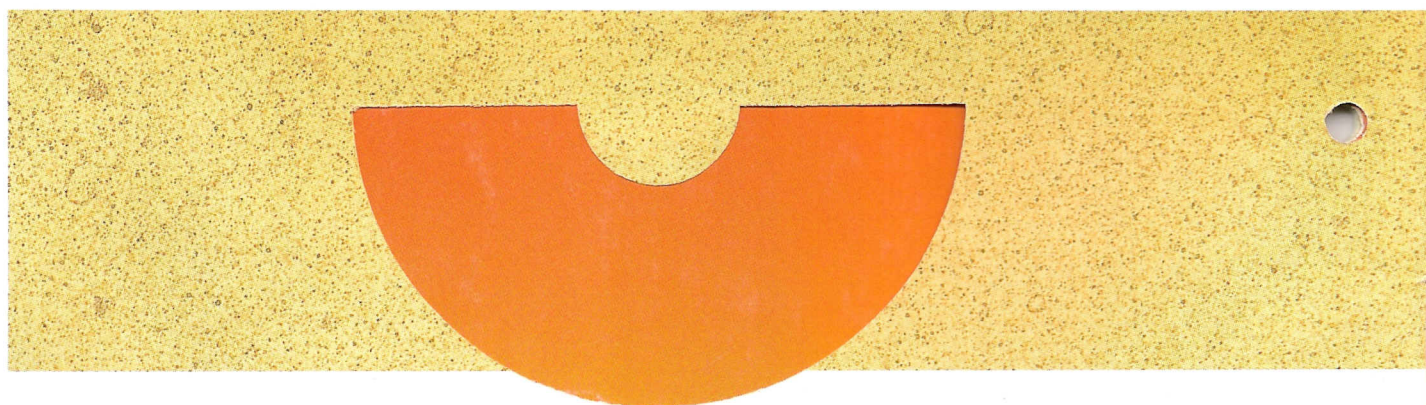
The active ingredient in Gaicho, common name imidacloprid, belongs to the new chloronicotinyle insecticide group of active ingredients. It was synthesized by chemists at the Bayer affiliate Nihon Bayer Agrochem K.K. (formerly NITOKUNO) in Japan, and then developed by Bayer for worldwide market release as a seed dressing. Gaicho is a low-toxicity, systemically acting insecticide with a broad spectrum of activity for use in important crops.

Main areas of activity of Gaicho:

sucking insects/vectors of viral diseases, especially aphids, plant- and leaf-hoppers, thrips (except Frankliniella spp.) and whiteflies. Some species cause much greater damage as carriers of viruses and mycoplasmas than they do through their sucking activity alone.

some beetle species
e.g. rice water weevil, wireworms (click beetle larvae), pygmy beetle, and Diabrotica spp.

some Diptera species
e.g. frit fly, beet fly, and onion maggots.



(The complete spectrum of activity is given under the recommended uses for the various crops.)

Excellent rootsystemic properties

In the soil the active ingredient imidacloprid is released from the seed and forms a treatment halo around the seed.

It is taken up very efficiently by the germinating plant and transported in the sap flow to the shoot (stems and leaves). This ideal property of the active ingredient means that one product suffices to

control both soil pests and sucking and various biting insects on the above-ground parts of the plant. Thus, Gaucho provides effective protection against a large number of pests.

Important examples of the broad action spectrum of Gaucho:



green rice leafhopper (*Nephotettix cincticeps*)



green peach aphid (*Myzus persicae*)

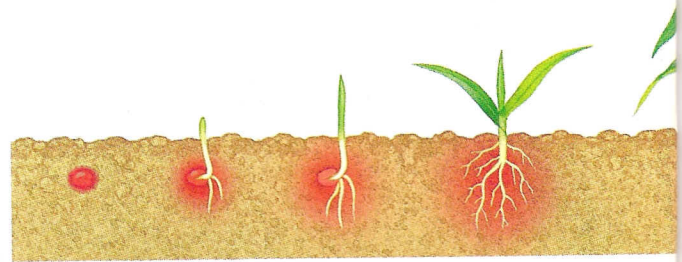


wireworm (*Agriotes sp.*)

Gaucho

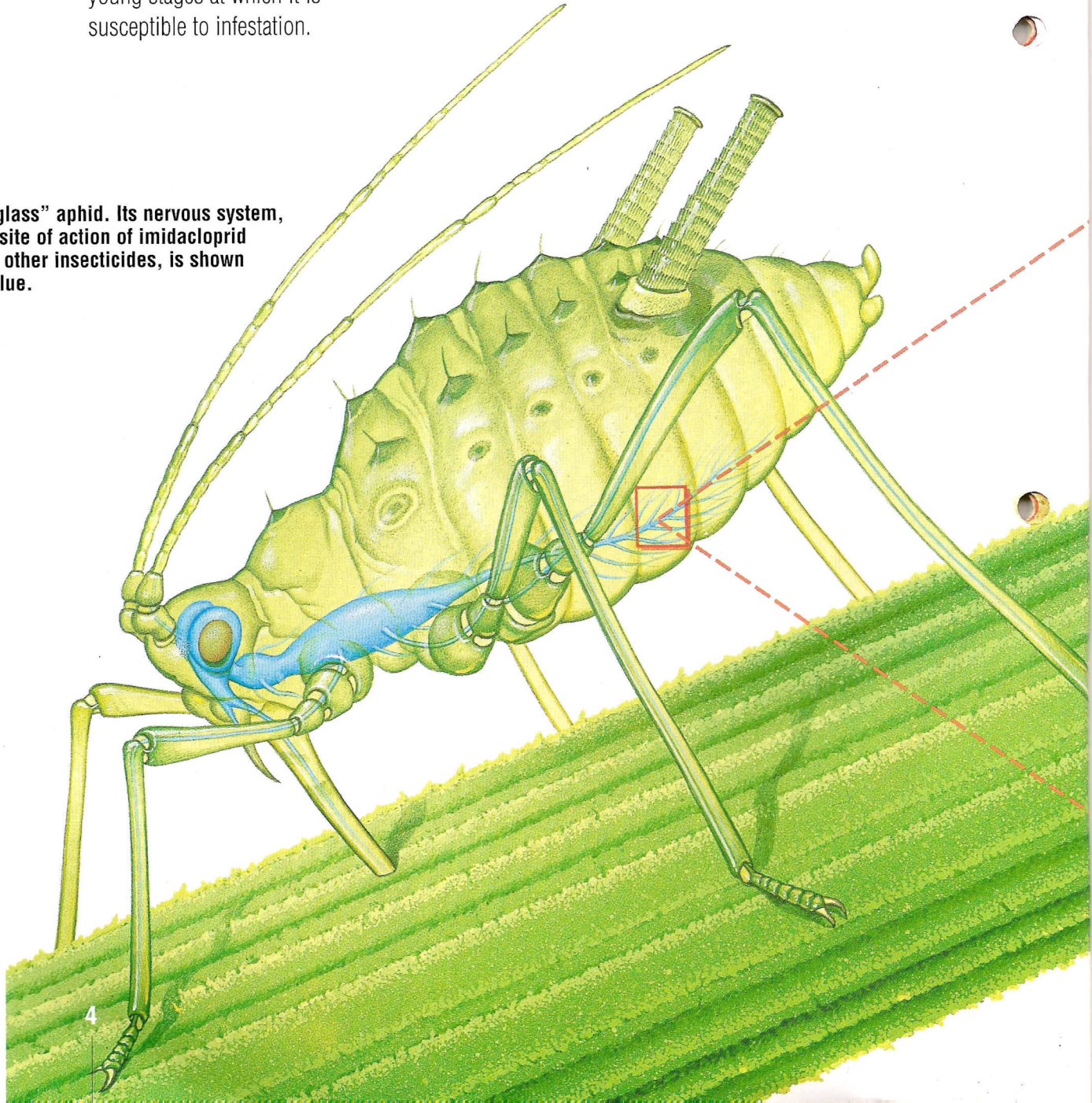
Long lasting control

Imidacloprid acts as a stomach and contact insecticide. Its long lasting effect, e.g. several weeks against rice leaf- and planthoppers and two to three months against aphids on sugar beet, is particularly advantageous. After seed treatment the crop is protected from germination of the seed until the plant has grown beyond the young stages at which it is susceptible to infestation.



Gaucho protects the plant against pests from the time of sowing until well into the growing period.

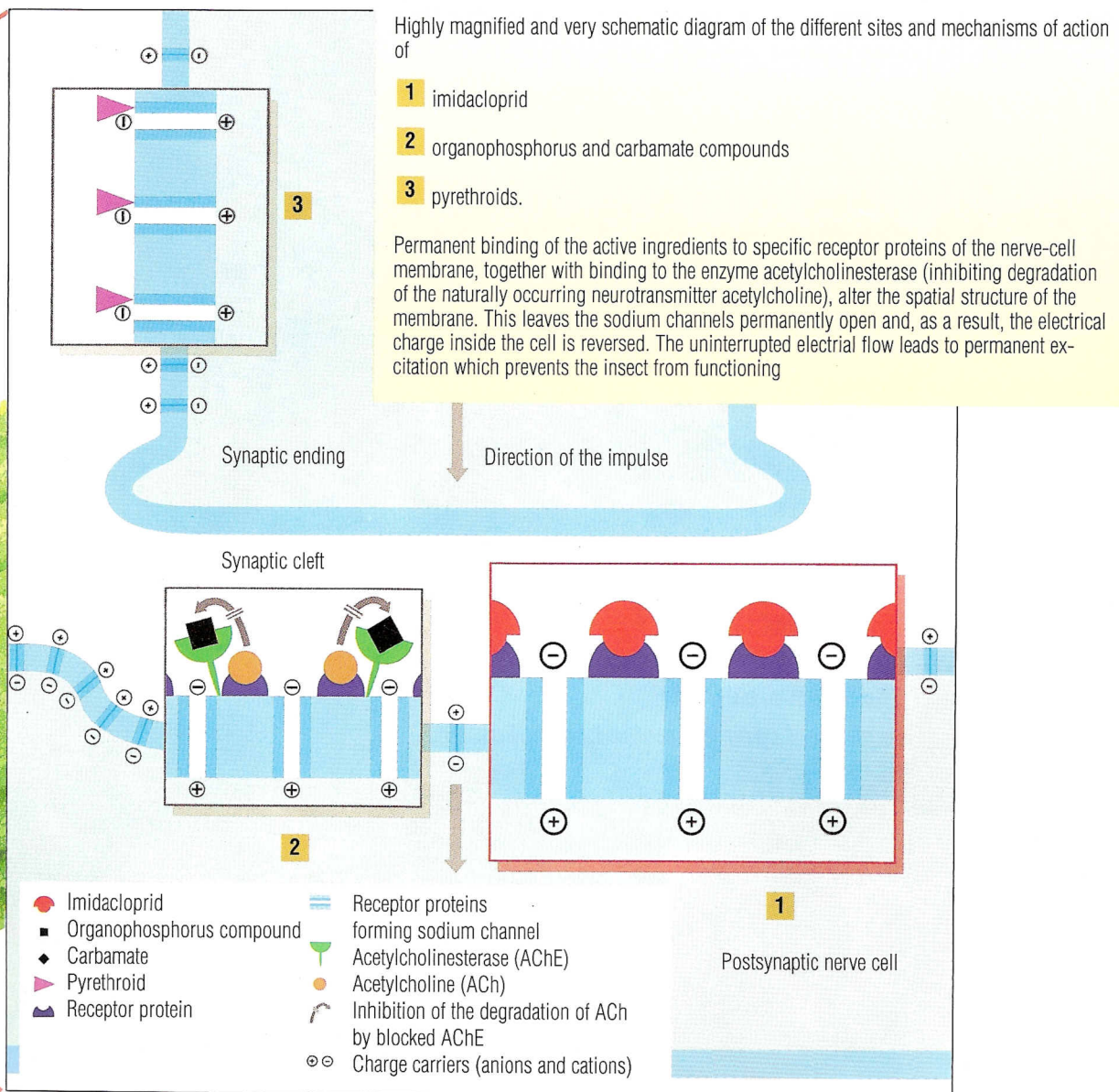
A "glass" aphid. Its nervous system, the site of action of imidacloprid and other insecticides, is shown in blue.



A new mode of action

Imidacloprid acts by interfering with the transmission of nerve impulses in insects. Like acetylcholine, the naturally occurring signal substance, imidacloprid stimulates certain nerve cells by acting on a receptor protein in the nerve fibre membrane. In contrast to acetylcholine, which is quickly degraded by the enzyme acetylcholinesterase, imidacloprid is either not degraded or only slowly. The pro-

duct's prolonged action disrupts the operation of the insect's nervous system which results in its death. The action mechanism of imidacloprid differs not only from that of the organophosphorus compounds and carbamates (both of which are acetylcholinesterase inhibitors) but also from that of the pyrethroids, which act on other nerve fibre membrane proteins.



Gaicho

What advantages does this new mode of action have in controlling the various insect species?

Gaicho permits the effective control of insect strains which have developed resistance to organophosphorus compounds, carbamates, and pyrethroids. This applies particularly to aphids, leaf- and planthoppers, and whiteflies.

Other benefits of seed treatment with Gaicho

Because of its excellent root-systemic properties, seed treatment with Gaicho has some major advantages:



seed treatment with Gaicho approx. 58 m²



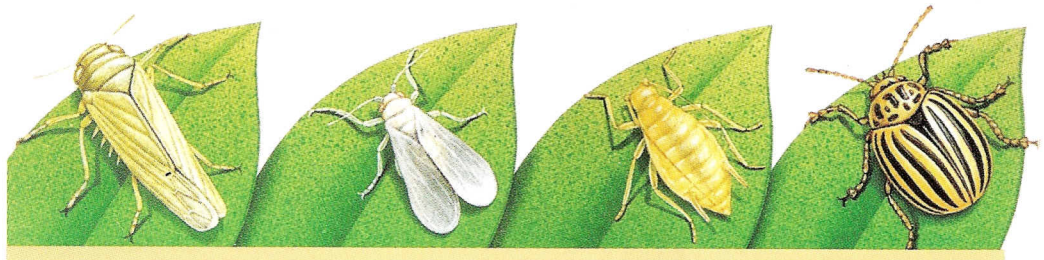
furrow treatment with granules approx. 500 m²





whole-area treatment with spray approx. 10,000 m²


The actual area treated, dependent upon the method of application, for 1 ha of maize.


*Should other insecticides become ineffective
Gaucho controls resistant strains.*



 A relatively low application rate of the active ingredient is required per unit area compared to conventional treatment programmes.

 Long-lasting plant protection is provided from the seedling stage onwards against virus-carrying aphids, leaf- and plant-hoppers, and whiteflies (preventing the spread of viral diseases since the sucking insects are irreversibly affected and can no longer act as vectors).

 Treatment with Gaucho replaces the need for overall application which in some cases must be carried out repeatedly.


 Gaucho can be used in new indications for insecticidal seed dressing (in winter barley against aphid vectors of BYDV).


Gaicho

FS formulation


User-friendly formulations

Gaicho is available in two formulations for use with water:

 flowable concentrate (FS) containing 600 g active ingredient/litre for seed treatment.

 water dispersible powder (WS) containing 70% active ingredient for seed treatment.

Additionally, Gaicho is also available in various ready to use combinations with fungicidal active ingredients (e.g. BAYTAN, EUPAREN, RAXIL, SIBUTOL) to control insects and seed as well as soilborn pathogens simultaneously.

 Further insecticide/fungicide combinations are currently being developed.

At the recommended application rates these formulations of Gaicho are well tolerated in all crops.



WS formulation

For industrial high-technology seed treatment

Gaicho is only suitable for use in industrial, professional seed treatment. Both formulations (FS and WS) can easily be incorporated into large-scale industrial processes. The high quality of seed treatment achieved with industrial processes allows the optimisation of the insecticidal properties of Gaicho.

Gaicho has also proved eminently suitable for pelleted sugar beet seed, a treatment carried out by specialized seed dressing units.



**Example:
Automatic and accurate
seed treater for seeds
like corn, cotton etc.**

Principle of operation

Seed dosage

The measurement of the seed is by weight. This is automatically done by an auto-calibrated dosing belt. The capacity is easily adjustable from the computer.

Chemical application

Each chemical flow is independent until it reaches the seed. This allows the filmcoating of noncompatible chemicals. The pumps are very accurate and each flowrate is always controlled by the computer.

The machine exists from 1 to 6 dosing units. This allows pure products application.

Control of operations

Monitoring

The operator controls the machine through a panel computer. Everything is running automatically, on the basis of the recipe datas. On the screen, one can always read the main parameters of treatment: t/h of seeds, l/t of each product.

A precise application can also be done by non computerised seed treaters.

The slurry

Gaicho formulations are incorporated in special recipes from the seed plants with

**water,
stickers,
house-colors,
inerts (facultative)**

to make a high quality seed coating.

The seeds are totally covered, they show no abration during transport and sowing. This means safety for the user.



Photo: Declic (Etampes)

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Spectrum of activity and recommendations

All recommendations relate to active ingredient.

Sugar beets

Rate of application
(g ai/100,000 monogermic seeds [unit])

Clickbeetle larvae (wireworms)
(*Agriotes* spp.)

Aphids*
(*Aphis fabae*, *Myzus persicae*) **1 5**

Pygmy beetle
(*Atomaria linearis*) **2**

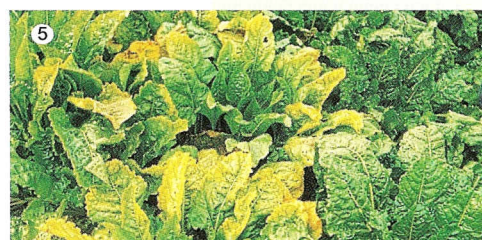
Beet fly
(*Pegomya hyoscyami*) **3**

Flea beetle
(*Chaetocnema tibialis*)

Beet root weevil
(*Bothynoderes punctiventris*) **4**

90

*Virus vectors for yellow virus (Beet wild yellow virus [BMV])
Beet yellow virus (BYV) **5**





Maize and millet/sorghum

	Rate of application	
	(g ai/100 kg seed)	(g ai/50,000 seeds [unit])
Clickbeetle larvae (wireworms) (<i>Agriotes</i> spp.)	1 350 – 490	50
June beetle larvae (<i>Phyllophaga</i> spp.)	2 350 – 490	50
Aphids* ¹⁾ (<i>Metopolophium dirhodum</i> , <i>Rhopalosiphum maydis</i> , <i>R. padi</i> , <i>Toxoptera graminum</i>)	3 350 – 490	50
Fritfly (<i>Oscinella frit</i>)	4 350 – 490	50
Maize leafhopper* ²⁾ (<i>Cicadulina mbila</i> , <i>Empoasca</i> spp.)	350 – 490	50
Sorghum jassid* ²⁾ (<i>Cicadulina bipunctella</i>)	350 – 490	50

* Virus vectors for

¹⁾ maize dwarf mosaic

²⁾ corn streak



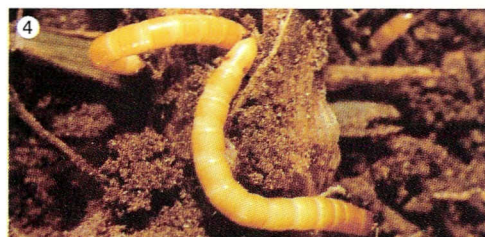
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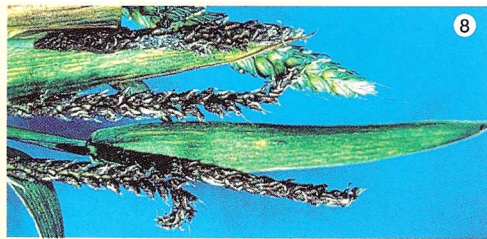
Cereals

		Rate of application (g ai/100 kg seed)
Aphids* (e.g. <i>Myzus persicae</i> , <i>Macrosiphum avenae</i> ,	1	35 – 70
<i>Metopolophium dirhodum</i> , <i>Rhopalosiphum</i> spp., <i>Toxoptera graminum</i>)	2	
(<i>Schizaphis graminum</i> <i>Diuraphis noxia</i>)		70 – 140
Leafhoppers ▲ (<i>Empoasca</i> spp., <i>Cicadulina</i> spp.)		70
Fritfly (<i>Oscinella frit</i>)	3	70
Termites (<i>Coptothesmes</i> spp., <i>Heterothesmes</i> spp.)		140
Clickbeetle larvae (wireworms) (<i>Agriotes</i> spp.)	4	70

* Virus vector for barley yellow dwarf (on wheat and barley)

▲ Virus vector for wheat dwarf (WDV)





Rate of application
(g ai/100 kg seed)

Beetle (<i>Zabrus</i> spp.)	140
Fungal disease* (<i>Helminthosporium gramineum</i> , <i>Ustilago nuda</i> , <i>Tilletia tritici</i> , <i>Ustilago tritici</i> , <i>Fusarium</i> spp.)	5 6 7 8

* Combination products with BAYTAN or RAXIL or SIBUTOL



Gaucho

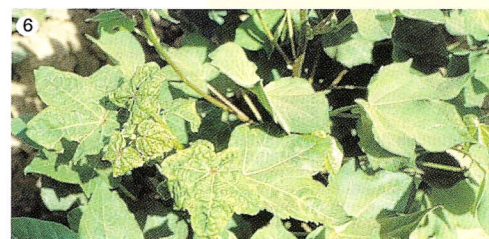
Cotton

		Rate of application (g/ai 100 kg seed)
Cotton aphid* ¹⁾ (<i>Aphis gossypii</i>)	1	250 – 350
Cotton whitefly* ²⁾ (<i>Bemisia tabaci</i>)	2 6	350 – 490
Cotton seedling thrips (<i>Thrips tabaci</i>)	3	250 – 490
Leafhoppers (<i>Empoasca</i> spp.)	4	250 – 490
Cotton root weevil (<i>Eutinobothrus brasiliensis</i>)	5	280 – 350

* Virus vectors for ¹⁾ leaf curl, top curl ²⁾ mosaic crumpling

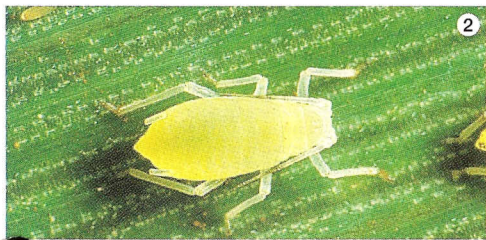
Combination products containing GAUCHO plus fungicidal active ingredients (e.g. MONCEREN, EUPAREN) are currently developed for additional control of damping off diseases.

Note: Good seed quality (i.e. quality delinted seed), a small sowing quantity, and not too shallow sowing (minimum 2 cm) are essential prerequisites for successful treatment with Gaucho.





1



2



3



4

Sunflowers

	Rate of application	
	(g ai/100 kg seed)	(g ai/150,000 seeds [unit])
Aphids (e.g. <i>Myzus persicae</i> , <i>Brachycaudus helichrysi</i> , <i>Macrosiphum avenae</i> ,	1050	105
<i>Metopolophium dirhodum</i> , <i>Rhopalosiphum</i> spp.)	1	2
Clickbeetle larvae (wireworms) (<i>Agriotes</i> spp.)	1050	75 – 105
Beetles (<i>Diabrotica speciosa</i> , <i>Diabrotica</i> spp.)	1050	105



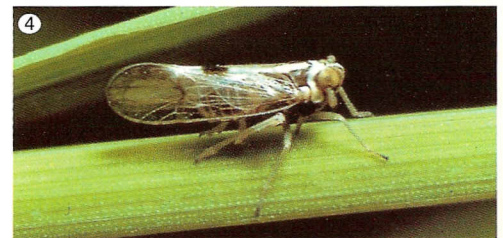
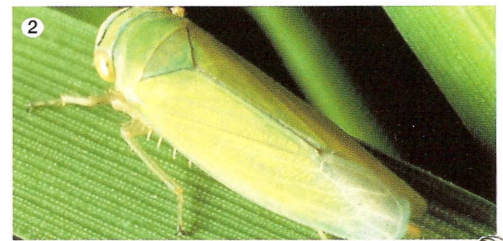
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Rice

Rate of application
(g ai/100 kg seed)

Leaf- and planthoppers e.g. Brown planthopper (<i>Nilaparavata lugens</i>)	1	49 – 70
Green leafhopper* ¹⁾ (<i>Nephotettix cincticeps</i>)	2	
Smaller brown planthopper* ²⁾ (<i>Laodelphax striatellus</i> = <i>Calligypona marginata</i>)	3	
Whitebacked planthopper (<i>Sogatia furcifera</i>)	4	
Rice delphacid* ³⁾ (<i>Sogatia oryzaicola</i>)		
Rice water weevil (<i>Lissorhoptrus oryzophilus</i>)	5	210
Rice leaf beetle (<i>Lema oryzae</i>)	6 7	210
Smaller leafminer (<i>Hydrellia griseola</i>)		49 – 70
Termites (<i>Coptotermes</i> spp., <i>Heterotermes</i> spp.)		210
Rice thrips (<i>Stenchaeto thrips biformis</i> , <i>Thrips oryzae</i>)		10 – 14

* Virus vector for
¹⁾ rice dwarf, transitory yellow, tungro, yellow dwarf
²⁾ stripe
³⁾ white leaf ("hoja blanca")





Grassland/pasture

Rate of application
(g ai/100 kg)

Aphids (<i>Schizaphis graminum</i>)	70 – 105
Grubs (<i>Costelytra zealandica</i>)	350

Beans (*Phaseolus vulgaris*)

Rate of application
(g ai/100 kg)

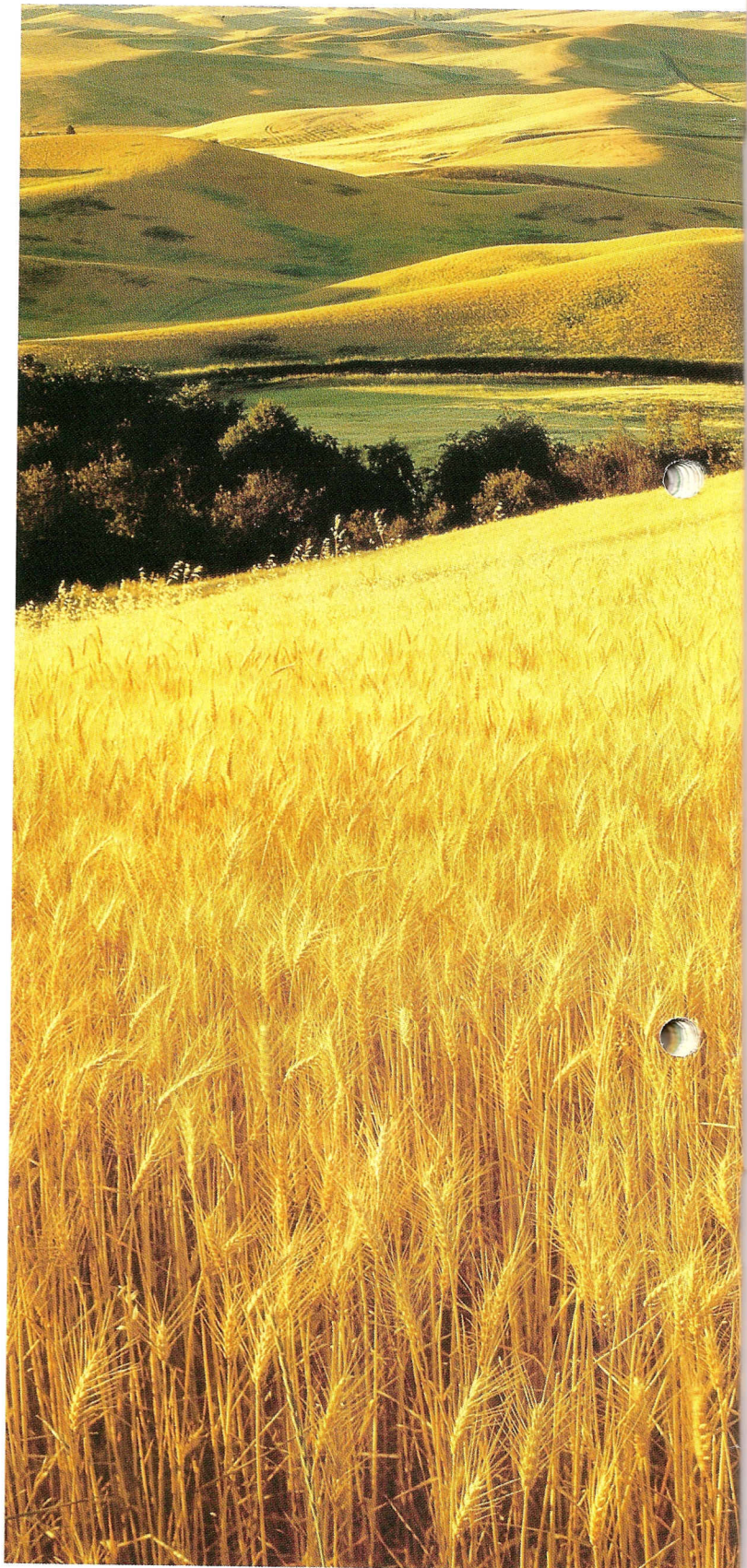
Aphids (e.g. <i>Aphis fabae</i> , <i>Aphis gossypii</i> , <i>Myzus persicae</i>)	1	140
Leafhopper (<i>Emposca</i> spp., <i>Cicadulina</i> spp.)	2	140
White flies (<i>Bemisia tabaci</i> , <i>Trialeurodes vaporariorum</i>)	3	140
Beetles (<i>Diabrotica speciosa</i> , <i>Diabrotica</i> spp.)	4	140
Click beetle larvae (wireworms) (<i>Agriotes</i> spp., <i>Melanotus</i> spp.)	5	140
Grubs (<i>Phyllophaga</i> spp.)		140



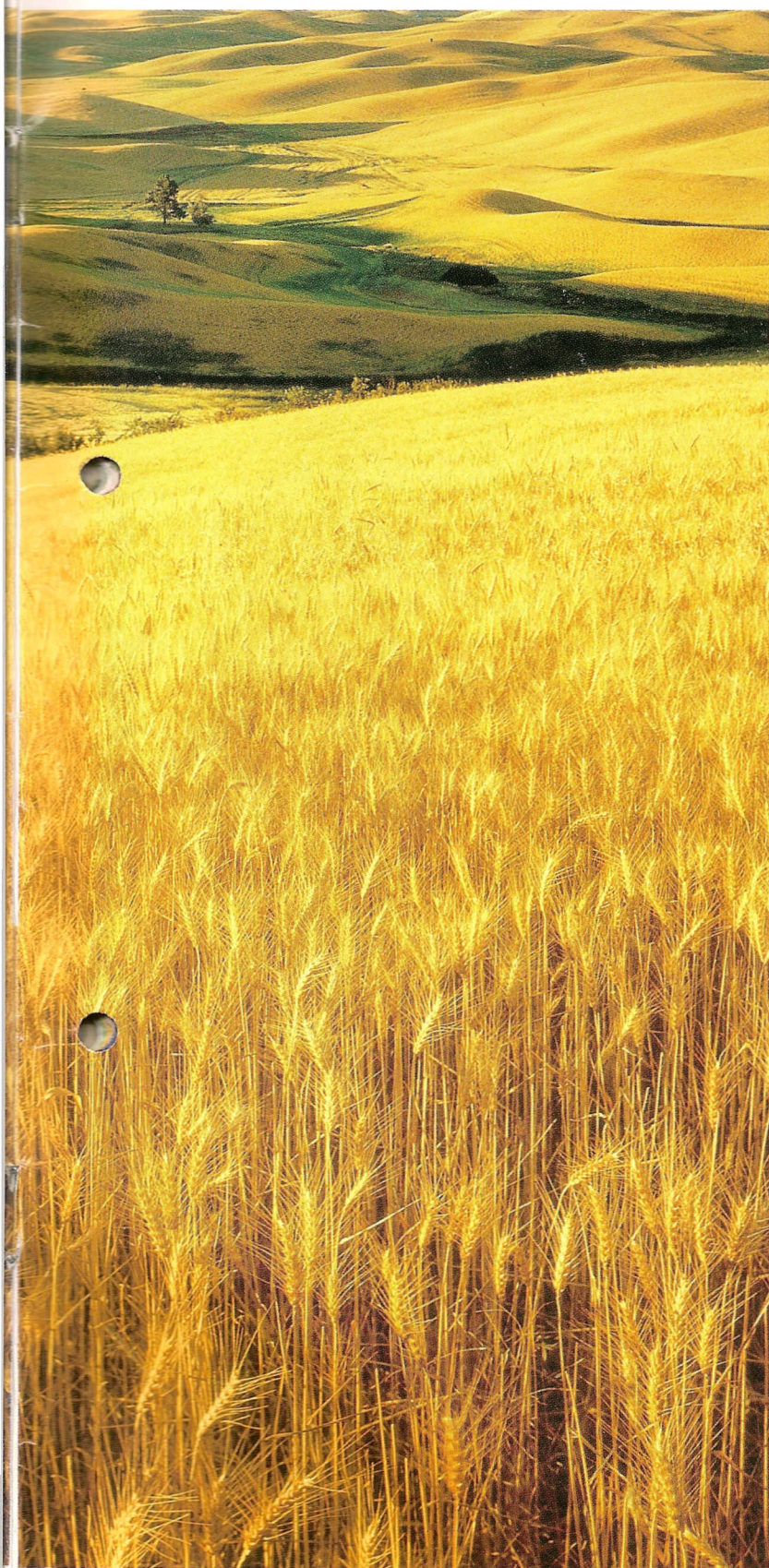
Gaucho

Besides its excellent biological activity against a wide range of pests, Gaucho, used in accordance with good agricultural practice, offers an exceptionally high degree of environmental safety.

The treatment and pelleting of seed are a highly targeted form of use. Because the active ingredient is limited to the immediate vicinity of the seed, there is very little exposure of the substance to soil-dwelling organisms.



Environmental protection has priority



When used correctly it is thus unlikely that there will be any damage to soil microorganisms and earthworms. Damage to populations of beneficial insects such as ground beetles, predatory mites or parasitic insects is low.

Birds are also at a little risk, since seed treated with Gaucho has a clear deterrent effect on them. Small mammals will not be affected due to the overall low mammalian toxicity.