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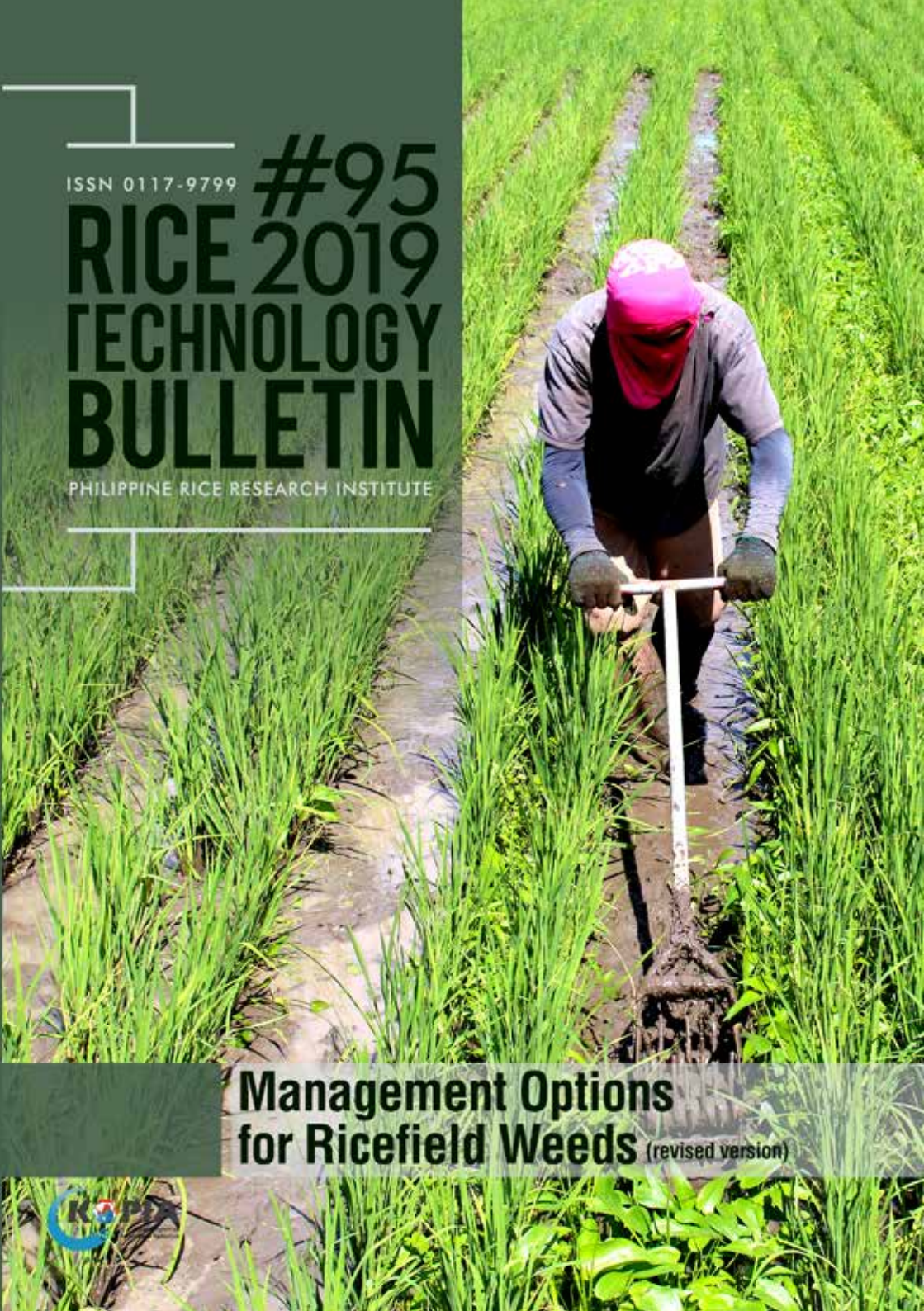
#95 RICE 2019 TECHNOLOGY BULLETIN

PHILIPPINE RICE RESEARCH INSTITUTE



Management Options for Ricefield Weeds (revised version)

Rice Technology Bulletin Series

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3 Paggawa ng Maligaya Rice Hull Stove
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FOREWORD

Weeds pester rice farmers. They compete with rice for spaces, nutrients, sunlight, and water resulting in reduced yield by 5-90% and low quality owing to seed mixtures. Weeds even serve as alternative hosts for pests and diseases. Their existence could also incur additional production cost. Hence, it is important to manage weeds to ensure more and high-quality harvest.

The field should be weed-free starting from seed germination through panicle initiation or booting stages. It is at this time that rice is most vulnerable to weed competition. Thus, precise weed identification and proper management should be practiced by farmers.

With this bulletin, it is hoped that farmers gain more knowledge in proper weed management.

SAILILA E. ABDULA
Acting Executive Director

WHAT ARE WEEDS?

Plants that are not wanted or out of place.

WHAT ARE THEIR MAJOR CHARACTERISTICS?

1. Grow fast and mature early;
2. Prolific seed producer and store numerous seeds in the soil (seed banking);
3. Can propagate through asexual reproduction (tubers, rhizomes, stem cuttings, etc.) aside from seeds; and
4. Resilient or can survive a wide range of harsh environmental conditions.

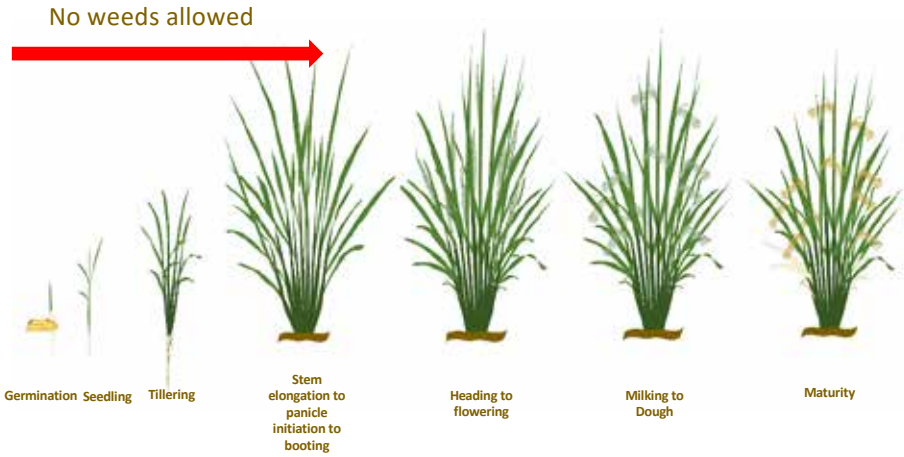
WHAT ARE THEIR IMPACTS ON RICE?

1. Reduce rice yield from 5-90% by competing with cultivated rice on nutrients, sunlight, and water;
2. Reduce the quality of rice grains when their seeds are accidentally mixed with rice seeds during harvests;
3. Serve as alternate hosts of disease-causing microorganisms, insect-pests, rats, and other pests of rice; and
4. Incur additional cost especially at times when more laborers are hired to do manual and mechanical weeding, or apply herbicides in the field.

Rice black bug (L) and golden apple snail on *Echinochloa* weed (R)

AT WHAT STAGE DO WEEDS AFFECT THE RICE PLANT?

Weeds are very competitive at 0-40 days after transplanting (DAT) or days after sowing (DAS). Rice plants should be free from weed infestation within 0-40 DAT/DAS or from germination to stem elongation/panicle initiation/ booting stages.



WHAT ARE THE GROUP OF WEEDS?

Weeds are commonly grouped according to morphological characteristics. Other ways of grouping weeds are based on life cycle, habitat, and photosynthetic activities. Knowledge on weed classification is very important in selecting, designing, planning, and implementing cost-effective and environment-friendly weed management strategies.

Weed groups based on morphology

Grasses
Leaves are long and narrow, which usually arise alternately in two rows from the nodes; ligules are present and sometimes with auricles; leaf veins are in parallel while leaf sheaths are split around the stem; stems are called culms with well-defined nodes and internodes, and are round and hollow inside. Examples are *Echinochloa* spp., *Leptochloa chinensis*, and weedy rice.

Sedges
Leaves are also long and narrow but do not have ligules and auricles; leaf veins are also parallel but the leaf sheaths are continuous around the stem; and stems are triangular and have no nodes and internodes. Examples are *Cyperus* spp., and *Fimbristylis miliacea*.

Broadleaves
Leaves are fully expanded with netted veins; leaves, flowers, stems, and branches are broadly arranged in various shapes, colors, and structures. Examples are *Monochoria vaginalis*, *Sphenoclea zeylanica*, *Ipomoea aquatica*, and *Ludwigia* spp.

Characteristics	Weed groups according to physical characteristics		
	Grasses	Sedges	Broadleaves
Leaf design			
Leaf venetion			
Leaf shape			

Weed groups based on life cycle

Annuals
Weeds that complete their life cycles from seed to seed in less than a year or in one growing season within a year.

Perennial
Weeds that complete their life cycles in more than a year. They can be simple or creeping. Simple perennials spread through seeds and by vegetative propagations. They may regenerate vegetatively

into a new plant if their shoots are injured or cut off from the mother plant. Creeping perennials, on the other hand, are those that reproduce by seeds and vegetative organs, such as stolons (creeping above-ground stems), rhizomes (creeping below-ground stems), tubers, aerial bulblets, and bulbs.

Weed groups based on habitat

Aquatic
Weeds that emerge and grow in very wet or submerged soils (wet to moist)

Semi-aquatic
Weeds that grow in dry lands with some tolerance to submergence conditions (dry to wet)

Terrestrial
Weeds that grow in dry lands (moist to dry)

WEED MANAGEMENT OPTIONS

Use high-quality seeds

This technique is very effective in preventing contaminations and further entries of weed seeds in the field. Using high-quality rice seeds that are pure, full, and uniform ensures a minimum of 85% germination rate and better growth of healthy seedlings.

Practice field sanitation

Keeping the seedling nurseries, irrigation canals, and field bunds clean and weed-free helps prevent entries of volunteer weed seeds and asexual propagules into the fields. Using clean equipment also helps prevent further contamination in the field.

Keeping the fields weed-free after harvest and during fallow period before the next cropping season helps reduce weed seed population in the soil seedbanks and reduce weed infestations in the next cropping season.

Practice thorough land preparation

This helps control weeds by burying them under the soil, separating shoots from roots, encouraging germination of dormant seeds, desiccating shoots, and exhausting carbohydrate reserves of perennial weeds.

Stale seedbed technique

This technique involves repeated plowing and harrowing weeks or months before crop establishment. The purpose of this technology is solely to flush or allow seeds and other asexual parts of the weeds to germinate, which later can be

eradicated by another round of harrowing or herbicide application. This technique has been proven effective against tubers of *Cyperus rotundus* (mutha) and other seeds of major weeds.

Recommended steps for stale seedbed technique:

1. Flood the field within 1-2 days whenever water is available and enough to irrigate the area. Plow the field and keep it submerged for 1 week to soften lumped soil and decompose organic materials. Allow the water to drain naturally to allow the germination of weed seeds that will be killed later by harrowing; and
2. Harrow the field 2-3 times at 1-week interval and then level it evenly by any means. Evenly leveled field facilitates good management of water, nutrients, and pests, particularly weeds and golden apple snails.

Practice good water management

This helps suppress weed growth in the field especially when applied at the right time and level. For irrigated lowland fields, introduce water 3-4 days after transplanting at 2-3cm level; 7-10 days after direct seeding at 3-5cm level. Increase the water level and maintain at 5-7cm, as the rice plants grow later in the season.

Perform manual and mechanical weeding

Manual weeding is basically handweeding and may involve the use of small hand tools like sickles and bolos. This technique is very effective and efficient in removing weeds that grow within rows and hills of rice. It is also effective in preventing the spread of resistant weed biotypes by pulling the whole weed plant or by removing the inflorescence that carries the weed seeds. Mechanical weeding involves bigger tools. This technique is best accomplished in straight row-planted rice plants using a rotary weeder. Growth of weeds is suppressed by cutting, trampling, and burying weeds and plant parts into the soil.

Weed pulling

Use of rotary weeder

Use biological control

This approach involves the deliberate use of beneficial organisms (plant-feeding insects, disease-causing microorganisms, and growth-suppressing plants) to inhibit weed growth or reduce its population to a level where yield of rice is not affected. This method is highly recommended for organically grown rice where use of synthetic pesticides is strictly prohibited. An effective biological control agent is Azolla, a freshwater plant that can fix nitrogen through its symbiotic relationship with blue-green algae. It has been proven to suppress weed growth up to 80% both in transplanted and direct-seeded rice. Other biological control agents are the fungus *Alternaria alternata* f.sp. *sphenocleae* causing foliar blight to *Sphenoclea zeylanica*; *Puccinia philippinensis* causing leaf rust disease on leaves of *Cyperus rotundus*; and black beetle namely *Altica* sp. feeding on foliages of *Ludwigia* species.

Azolla in the rice field

Altica in the weed *kahoy-kahoy*

Use herbicides

Herbicides are synthetic chemicals that are used to suppress the growth of weeds. They are among the most commonly used weed control technique by many farmers in the Philippines because of their efficacy and ease in application, wide range of coverage, and immediate visibility of the results after application. This should be the last resort in managing weeds.

Constant advisories are always presented to the public because incorrect usage of herbicides can harm humans, animals, and environment. Continuous use of the same kind of herbicide, incorrect dosages, and wrong timing of herbicide application may also result in the evolution of herbicide-resistant weeds.

Reminders on the use of herbicides

1. Read, understand, and follow instructions that are written on the bottle/box of herbicide;
2. Always wear protective equipment. Use appropriate cover for the head, eyes, nose, mouth, and hands. Wear hat, sunglasses, face mask, long-sleeved shirts, long pants, gloves, and field boots;
3. Avoid mixing herbicide when the direction of the wind is going towards you ;
4. Separately wash contaminated clothes after use;
5. Never use the mouth to blow or sip blocked nozzles;
6. Wash thoroughly the knapsack sprayer using clean water; and
7. Wash hands and other parts of the body after cleaning the sprayer.

LIST OF HERBICIDES FOR TRANSPLANTED RICE IN THE PHILIPPINES

Active ingredient	Weeds controlled	Time of application
2, 4-D a. 2, 4-D amine b. 2, 4-D IBE	sedges and broadleaves	21-28 DAT
Bensulfuron methyl	broadleaves	4-8 DAT
Butachlor	grasses, sedges, and broadleaves	2-5 DAT
		2-4 DAT
		2-4 DAT (*Dapog*)
		0-4 DAT (Wetbed)
Butachlor + Propanil	grasses, sedges, and broadleaves	6-10 DAT
Fenoxaprop P-ethyl + ethoxysulfuron	annual grasses	15-20 DAT
MCPA	annual grasses, sedges, and broadleaves	25-30 DAT
Metsulfuron-methyl + chlorimuron	grasses, sedges, and broadleaves	5-8 DAT
		20-35 DAT
Oxadiazon	grasses, sedges, and broadleaves	3-5 DAT
Pretilachlor	grasses, sedges, and broadleaves	0-3 DAT

DAA- Days After Application; DAT- Days After Transplanting
Herbicides identified above are among those registered by the Fertilizer and Pesticide Authority (FPA) as of September 2016.

Rate of Application	Reminders
1.0-1.5L/ha	Reduce water level to expose weeds before application. Re-irrigate within 2-3 DAA.
500-700g/ha	Works best with standing water that should be retained for at least 4 days. Compatible with other herbicides. Spray volume is 80-160L/ha.
0.75-1.0L/ha	Apply to moist and puddled soil. Control water normally after applying without submerging seedlings. Spray volume is 200L/ha.
20kg/ha	Apply to field with 3-5cm water. Maintain water until 4-5 DAA for better weed control.
1.0L/ha	Apply to field with 3-5cm water. Maintain water until 4-5 DAA for better weed control. If applied on saturated soil, irrigate immediately. Maintain 2-3cm water for 4-6 DAA.
1.5-2.0L/ha	Apply to saturated soil. Flood the field 1-3 DAA. Spray volume is 200L/ha.
500mL/ha	Flush field or reduce water to expose the grass weeds. Rice plants must not be submerged after herbicide application.
1.0L/ha	Reduce water to expose weeds. Re-flood within 2-3 DAA.
40g/ha 30g/ha	Apply to saturated soil or with 2-3cm water. If on saturated soil, re-irrigate 3-4 DAA. Symptoms appear at 5-7 DAA. Spray volume is 160L/ha.
1.5-2.0L/ha	Works best with standing water or at least moist soil even after application; compatible with commonly used herbicides; can be used in upland or dry-seeded rice; spray volume is 500-600L/ha.
1.0L/ha	Apply to saturated soil. Spray volume is 160-224L/ha.

Source: Donayre DKM, EC Martin, SE Santiago, and LJ Taek. 2018. Weeds in Irrigated and Rainfed Lowland Ricefields in the Philippines. 2nd Edition. Philippine Rice Research Institute, Maligaya, Science City of Muñoz, Nueva Ecija, Philippines. p. 197.

LIST OF HERBICIDES FOR DIRECT-SEEDED RICE IN THE PHILIPPINES

Active ingredient	Weeds controlled	Time of application
2, 4-D a. 2, 4-D amine b. 2, 4-D Isobutyl Ester	annual sedges and broadleaves	21-28 DAS
Bensulfuron methyl	broadleaves	4-8 DAS
Bentazon	perennial and annual sedges	weeds at 2 to 10-leaf stage
Bispyribac sodium	annual grasses except for *L. chinensis*, sedges, and broadleaves	20-35 DAS
Butachlor (emulsifiable concentrate with safener)	grasses, sedges, and broadleaves	2-5 DAS
Butachlor (Granule)	grasses, sedges, and broadleaves	2-4 Days Before Seedling
		6-8 DAS
Butachlor + propanil	annual grasses, annual and perennial sedges, and broadleaves	6-10 DAS
Clomazone +propanil	annual grasses, sedges, and broadleaves	6-10 DAS
Cyhalofop-butyl	annual grasses	8-15 DAS
MCPA	annual sedges and broadleaves	6-10 DAS
Metsulfuron + chlorimuron	sedges and broadleaves	25-30 DAS

DAA- Days After Application; DAS- Days After Seeding;

Rate of Application	Reminders
1.0-1.5L/ha	Apply to saturated soil or reduce water to expose weeds. Re-irrigate within 2-3 days after spraying.
500-700g/ha	Works best with standing water that should be retained for at least 4 days; spray volume is 8-160L/ha.
2.0L/ha	Apply to saturated soil or reduce water to expose weeds. Spray volume is 500L/ha.
250ml/ha	Before spraying, drain excess water until half part of the target weeds appear. Re-irrigate within 1-3 days after spraying.
0.75-1.0L/ha	Apply to moist and puddled soil. Control water normally after applying without submerging seedlings. Spray volume is 200L/ha.
20kg/ha	Broadcast seeds 4 days after herbicide application.
20kg/ha	Strictly irrigate the field at 6-8 DAS because early irrigation after seeding will cause severe rice plant injury (*phytotoxicity*). Maintain water at 2-3cm for 1-2 days.
1.5-2.0L/ha	Apply to saturated soil. Irrigate the field 1-3 DAA. Spray volume is 200L/ha.
1.0L/ha	Apply to saturated soil. Re-irrigate the field at 3 DAA.
1.0L/ha	Apply to saturated soil. Re-irrigate the field at 3 DAA.
1.5-2.5L/ha	Apply to saturated soil or reduce water to expose weeds. Re-irrigate within 2-3 DAA.
30g/g/ha	Apply to saturated soil or with 2-3cm water. In saturated soil, re-irrigate 3-4 DAA. Symptoms appear at 5-7 DAA. Spray volume is 160L/ha.

LIST OF HERBICIDES FOR DIRECT-SEEDED RICE IN THE PHILIPPINES

Active ingredient	Weeds controlled	Time of application
Oxadiazon	grasses, sedges and broadleaves	3-5 DAS
Penoxsulam + cyhalofop butyl	grasses, sedges and broadleavess	15-25 DAS
Pretilachlor +feclorim	grasses, sedges and broadleaves	0-3 DAS
Pyribenzoxim	annual grasses	8-16 DAS
Pyribenzoxim + cyhalofop butyl	annual grasses	12-16 DAS
		30-35 DAS *(Rescue)*
Thiobencarb	annual grasses and sedges	5-7 DAS
		30 DAS

DAA- Days After Application; DAS- Days After Seeding

Herbicides identified above are among those registered by the Fertilizer and Pesticide Authority (FPA) as of September 2016.

Rate of application	Reminders
1.5-2.0L/ha	Apply to saturated soil or at least moist soil. Spray volume is 500-600L/ha.
0.5-1L/ha	Apply to saturated soil or reduce water to expose weeds. Spray volume is 160-200L/ha.
1.0L/ha	Apply to saturated soil; spray volume is 160-224L/ha.
500-600mL/ha	Apply to saturated soil or reduce water to expose weeds. Re-irrigate within 1-3 DAA.
1.0L/ha	Apply to saturated soil or reduce water to expose weeds. Re-irrigate within water at 1-3 DAA.
1.0L/ha	Rescue application may be done at 30-35 DAS.
1.5L/ha	Keep water low enough to avoid submerging the rice plants.
1.5L/ha	Reduce water to expose the weeds during application.

Source: Donayre DKM, EC Martin, SE Santiago, and LJ Taek. 2018. Weeds in Irrigated and Rainfed Lowland Ricefields in the Philippines. 2nd Edition. Philippine Rice Research Institute, Maligaya, Science City of Muñoz, Nueva Ecija, Philippines. p. 197.

LIST OF ACTIVE INGREDIENTS AND PRODUCT NAMES OF HERBICIDES IN THE PHILIPPINES

Active Ingredient	Product Name/s
2,4-D Isobutyl Ester (IBE)	2,4-D Ester 2,4-D Ester 40 EC Ace 2,4-D ester 400 EC Agribase 2,4-D Ester Agrisolutions Master 2,4-D Ester Agrotech 400 EC Aktiv 2,4-D Ester Aljay 2,4-D Ester Angelstar 2,4-D Ester ASIA Gold 2,4-D Ester Bespray Cat 2,4-D Ester CB Andrew 2,4-D Ester 400 EC DCDM 2,4-D Ester EON 2,4-D Ester FortresS 2,4-D Ester Full Green 2,4-D Ester Gem 2,4-D Ester Grandia 2,4-D Ester Lagri 2,4-D Ester ICTC 2,4-D Ester EC Leads 2,4-D Ester MAS 2,4-D Ester EC My Farm 2,4-D Ester Novo Chrisantis 2,,4-D Ester 40 EC Plantcare 2,4-D Ester Radisson 2,4-D Ester 400 EC RNE 2,4-D Ester S&P 2,4-D Ester Shell 2,4-D Ester Shelter 2,4-D Ester Sinochem 2,4 D Ester Sun 2,4-D Ester Super 2,4- Ester Swat 2,4-D Ester Teamagro 2,4-D Ester Top Agro 2,4-D Ester Uniscope 2,4-D Ester Vann Hawk 2,4-D Ester Vast 2,4-D Ester Weedkill 2,4-D Weedtrol 40 EC 490 g

Active Ingredient	Product Name/s
2,4-D amine	2,4 Amine 40 EC 2,4-D Amine EC Aeon 2,4-D Amine Agrisolutions Starshine 2,4-D Amine AgwaY 2,4-D Amine Aktiv 2,4-D Amine Aljay 2,4-D Amine Amina Angelstar 2,4-D Amine Aries Head-on 2,4-D Amine Cat 2,4-D Amine Complete 2,4-D Amine DCDM 2,4-D Amine DMA 3.34 LBS/USG Double Kill 2,4-D Amine Flag Leaf 2,4-D Amine Full Green 2,4-D Amine Gem 2,4-D Amine Grandia 2,4-D Amine Hedonal Liq SL 400 Herbitox Lagri 2,4-D Amine ICTC 2,4-D Amine Lead Agri 2,4-D Amine MJ 2,4-D Amine PlantCare 2,4-D Amine Prima 2,4-D Amine R & A 2,4-D Amine ACTION Radisson 2,4-D Amine 40 EC S&P 2,4-D Amine Sharp 2,4-D Amine Shell 2,4-D Amine Shelter 2,4-D Amine Sinochem 2,4 Amine Sun 2,4-D Amine Super 2,4-D Amine Teamgro 2,4-D Amine Top Agro 2,4-D Amine Triple 2,4-D Amine Turmoil 2,4-D Amine Uniscope 2,4-D Amine Vann Hawk 2,4-D Amine

LIST OF ACTIVE INGREDIENTS AND PRODUCT NAMES OF HERBICIDES IN THE PHILIPPINES

Active Ingredient	Product Name/s
Bensulfuron methyl	Londax 10 WP
Bentazone	Basagran 48 EC
Bispyribac-sodium	AR 10 SC Aspire 10 SC Baxprol Cisig sc 100 Candidate 10 SC Choice 10 SC Demolish 100 SC Dominate SC 100 Exacto sc 100 Guarantee 10% SC Lampas Nomess SC 100 Nominee 100 SC Nominee 400 SC Nominee One Post herb 10% SC Priority SC 100 Ravage 10% SC Razer 10 SC Rescuer Segador 10 SC Sharbis 10 SC Vero 10 SC Yieldmaster SC 100 Zytox 10 SC
Butachlor	Anchlor 60 EC Berris 60 EC Blade 60 EC Bolo 60 EC Burado 60 EC Butachem Butachlor 600 EC Butaclean 60 EC Butagrand 60 EC Butakill 600 EC Butamaxx 600 EC Butastar 60 EC Derby 70 EC

Active Ingredient	Product Name/s
	Direk 800 EC Full Butachlor 60 EC Gapascythe 600 EC Grassfree 60 EC Ground Zero Herbarium 60 EC Herbistar 60 EC Katana 600 EC Mach-7 60 EC Machete 600 EC MachismO 60 EC Maxshell 60 EC Panday 60 EC Pro-Rice 600 EC RAC Butachlor 60 EC Rainbow Butachlor 60 EC Ricebro 60 EC Ricegard 600 EC Sonic 600 EC Whiplash 600 EC
Butachlor + propanil	Ace 700 EC Advance EC Advent 70 EC Advice 70 EC Agrobonds 70 EC Ahead 70 EC Aktachlor 70 EC Andari 70 EC Butaprop CAT Butachlor + propinil 70 EC Charge 70 EC Crimson 70 EC Eraser 70 EC Exceed 70 EC Excelpro 70 EC Forward 70 EC Full House Grasscutter 70 EC Grastop 70 EC Herbimix 70 EC Hero 70 EC Klik 700 EC Korvance 70 EC

LIST OF ACTIVE INGREDIENTS AND PRODUCT NAMES OF HERBICIDES IN THE PHILIPPINES

Active Ingredient	Product Name/s
	Lagaraw 70 EC Modelstar 70 EC Mustang 70 EC Polygon 70 EC Prepona 700 EC RAC Butachlor + propanil RE 70 EC Reactor 70 EC Sacati 70 EC Sadam-O 70 EC Save Crop Scalpel 70 EC Six Tons 70 EC Smooth 70 EC Spike 70 EC Squeeze 70 EC Stripper 70 EC Super Herbicide 700 EC Surestop 700 EC Switch 70 EC Topline 70 EC Tornado 60 EC Tornado 70 EC Tremor 70 EC Turbomax 700 EC Twister 70 EC Unleash 70 EC Weed Clean 700 EC
Clomazone + propanil	Command Plus 600 EC
Cyhalofop-butyl	Calibre 100 ec Clincher 100 ec Cranstan 100 ec Damolis 10 ec Finale 10 ec Sharphil rycfop 100 ec
Fenoxaprop p-ethyl + ethoxysulfuron	Ricestar EC Ricestar Xtra
Metsulfuron methyl + chlorimurone	Almix 20 WP

Active Ingredient	Product Name/s
MCPA	Agroxone S Boshido 40 SL Karet 40 Steel 40 SL
Oxadiazon	Cropstar 25 EC Ox Star 25 EC Oxatex 25 EC Ronstar 25 EC
Penoxsulam + cyhalofop-butyl	Topshot 60 OD
Pretilachlor	Sofit 300 EC
Pyribenzoxim	Pyanchor 5 EC
Pyribenzoxim + cyhalofop-butyl	Pyanchor Ultra 8.5 EC
Thiobencarb + 2,4-D IBE	Grassedge 800 EC
Thiobencarb + propanil	Satunil 600 EC

Herbicides listed above are among those registered by Fertilizer and Pesticide Authority (FPA) as of December 2016.

COMMON WEEDS IN THE RICEFIELD

Scientific Name	Local Names	Life Cycle
GRASSES		
Echinochloa colona	*Dukayang, lau-lau, pulangpwet*	Annual
Echinochloa crus-galli ssp. *hispidula*	*Telebisyon, antena, bayakibok, biyuro, humay-humay, marapagay, naik, palay-pato*	Annual
Echinochloa glabrescens	*Telebisyon, antena, dawadawa, marapagay, paray-paray, humay-humay*	Annual
Ischaemum rugosum	*Ipot-doron, bika-bika, bulo-bulo, gulong-lapas, limba-limba, salsaladay, tinitrigo, trigo-trigohan, sabay, lapu-lapu*	Annual
Leptochloa chinensis	*Kuring-kuring, marapagay, maroy-paroy, salay-maya, palay-maya*	Annual, sometimes perennial
Oryza sativa L. (weedy rice)	*Halo, lahok, lakay, sabag, weder-weder*	Annual
Paspalum distichum	*Bakbaka, barit, damong-ube, lubid-lubid, malit-kalabaw, ragitnit*	Perennial
BROADLEAVES		
Aeschynomene indica	*makahiyang lalaki*	Annual
Eclipta prostrata	*Higis-manok, tultulisan, tinta-tinta*	Annual
Hydrolea zeylanica	*Kangkong-kangkungan, garampingat, lupo-lupo*	Annual, perennial

Propagation	Method of Crop Establishment	Rice Ecosystem
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds, stem cutting	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Rhizomes, stolons, and seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds, stem cutting	Transplanted and direct-seeded	Irrigated and rainfed lowland

COMMON WEEDS IN THE RICEFIELD

Scientific Name	Local Names	Life Cycle
Ipomoea aquatica	*Balangeg, kangkong*	Perennial
Ludwigia hyssopifolia	*Kahoy-kahoy, malapako, tina-tina*	Annual, sometimes perennial
Ludwigia octovalvis	*Kahoy-kahoy, malapako, tina-tina*	Annual, sometimes perennial
Monochoria vaginalis	*Gabi-gabi, gabi-gabihan*	Annual, perennial
Pistia stratiotes	*Kiapo, kiyapo*	Annual
Sphenoclea zeylanica	*Balabalanob, burat-aso, mais-mais, silisilihan, ukim-ukim*	Annual
SEDGES		
Cyperus difformis	*Baong-baong, butobutones, payong-payong, siraw-siraw, treskantos, tuhog-dalag, ubod-ubod*	Annual
Cyperus iria	*Payong-payong, siraw-siraw, taga-taga*	Annual
Cyperus rotundus	*Barsanga, mutha, sudsud*	Perennial
Fimbristylis miliacea	*Bungot-bungot, buntotpusa, gumi, siraw-siraw, sirisibayas, sumpana-balik*	Annual

Propagation	Method of Crop Establishment	Rice Ecosystem
Seeds and stem cuttings	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds and stem cuttings	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds and stem cuttings	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds and tubers	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds and stem cuttings	Transplanted and direct-seeded	Irrigated
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland
Rhizomes and tubers	Transplanted and direct-seeded	Irrigated and rainfed lowland
Seeds	Transplanted and direct-seeded	Irrigated and rainfed lowland

COMMON WEEDS IN THE RICEFIELD

Echinochloa colona (L.) Link

Local Name: *Dukayang, lau-lau, pulang-pwet*

Echinochloa crus-galli (L.) P. Beauv. ssp. *hispidula* (Retz.) Honda

Local Name: *Telebisyon, antena, bayakibok, biyuro, humay-humay, marapagay, naik, palay-pato*

COMMON WEEDS IN THE RICEFIELD

Echinochloa glabrescens Munro ex Hook. f.

Local Name: *Telebisyon, antena, dawa-dawa, marapagay, paray-paray, humay-humay*

Ischaemum rugosum Salisb.

Local Name: *Ipot-doron, bika-bika, bulo-bulo, gulong-lapas, limba-limba, salsaladay, tinitrigo, trigo-trigohan*

COMMON WEEDS IN THE RICEFIELD

Leptochloa chinensis L.

Local Name: *Kuring-kuring, marapagay, maroy-paroy, salay-maya, palay-maya*

Oryza sativa L. (weedy rice)

Local Name: *Halo, lahok, sabag, weder-weder*

COMMON WEEDS IN THE RICEFIELD

Paspalum distichum L.

Local Name: *Bakbaka, barit, damong-ube, lubid-lubid, malit-kalabaw, ragitnit*

Cyperus difformis L.

Local Name: *Baong-baong, buto-butones, payong-payong, siraw-siraw, treskantos, tuhog-dalag, ubod-ubod*

COMMON WEEDS IN THE RICEFIELD

Cyperus iria L.

Local Name: *Payong-payong, siraw-siraw, taga-taga*

Cyperus rotundus L.

Local Name: *Barsanga, mutha, sudsud*

COMMON WEEDS IN THE RICEFIELD

Fimbristylis miliacea (L.) Vahl

Local Name: *Bungot-bungot, buntot-pusa, Gumi, siraw-siraw, sirisibayas, sumpana-balik*

Aeschynomene indica L.

Local Name: *Makahiyang-lalaki*

COMMON WEEDS IN THE RICEFIELD

Eclipta prostrata (L.) L.

Local Name: *Higis-manok, tultulisan, tinta-tinta*

Hydrolea zeylanica (L.) Vahl

Local Name: *Kangkong-kangkungan, garampingat, lupo-lupo*

COMMON WEEDS IN THE RICEFIELD

Ipomoea aquatica Forsk.
Local Name: *Balangeg, kangkong*

Ludwigia hyssopifolia (G.Don) Exell
Local Name: *Kahoy-kahoy, malapako, tina-tina*

COMMON WEEDS IN THE RICEFIELD

Ludwigia octovalvis (Jacq.) Raven

Local Name: *Kahoy-kahoy, malapako, tina-tina*

Monochoria vaginalis (Burm. f.) C. Presl

Local Name: *Gabi-gabi, gabi-gabihan*

COMMON WEEDS IN THE RICEFIELD

Pistia stratiotes L.

Local Name: *Kiapo, kiyapo*

Sphenoclea zeylanica Gaertn.

Local Name: *Balabalanob, burat-aso, mais-mais, silisilihan, ukim-ukim*

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NOTES:

NOTES:

Authors

Dindo King M. Donayre
Salvacion E. Santiago
Edwin C. Martin
Jeong Taek Lee
Madonna C. Casimero*
Anita V. Antonio*

Managing Editor/Design/Layout Artist

Reuel M. Maramara

Photographer

Dindo King M. Donayre

Editorial Advisers

Sailila E. Abdula
Ronan G. Zagado

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We are a government corporate entity (Classification E) under the Department of Agriculture. We were created through Executive Order 1061 on 5 November 1985 (as amended) to help develop high-yielding and cost-reducing technologies so farmers can produce enough rice for all Filipinos. With our "Rice-Secure Philippines" vision, we want the Filipino rice farmers and the Philippine rice industry to be competitive through research for development (R4D) work in our central and seven branch stations, including our satellite stations, coordinating with a network that comprises 60 agencies strategically located nationwide. We have the following certifications: ISO 9001:2015 (Quality Management), ISO 14001:2015 (Environmental Management), and OHSAS 18001:2007 (Occupational Health and Safety Assessment Series).

CONTACT US:

0917-111-7423

www.philrice.gov.ph
www.pinoyrice.com

rice.matters

PhilRiceTV

prri.mail@philrice.gov.ph

PHILRICE CENTRAL EXPERIMENT STATION
Maligaya, Science City of Muñoz, 3119 Nueva Ecija
Tel: (44) 456 -0277 • Direct line/Telefax: (44) 456-0354

BRANCH STATIONS :

PHILRICE BATAC, MMSU Campus, Batac City, 2906 Ilocos Norte
Telefax: (77) 772-0654; 670-1867; Tel: 677-1508
Email: batac.station@philrice.gov ph

PHILRICE ISABELA, Malasin, San Mateo, 3318 Isabela
Mobile: 0908-875-7955; 0927-437-7769
Email: isabela.station@philrice.gov.ph

PHILRICE LOS BAÑOS, UPLB Campus, College, 4030 Laguna
Tel: (49) 536-8620; 501-1917; Mobile: 0920-911-1420
Email: losbanos.station@philrice.gov.ph

PHILRICE BICOL, Batang, Ligao City, 4504 Albay
Tel: (52) 284-4860; Mobile: 0918 946-7439
Email: bicol.station@philrice.gov.ph

PHILRICE NEGROS, Cansilayan, Murcia, 6129 Negros Occidental
Mobile: 0949-194-2307; 0927-462-4026
Email: negros.station@philrice. gov.ph

PHILRICE AGUSAN, Basilisa, RTRomualdez, 8611 Agusan del Norte
Telefax: (85) 343-0768; Tel: 343-0534; 343-0778
Email: agusan.station@philrice.gov.ph

PHILRICE MIDSAYAP, Bual Norte, Midsayap, 9410 North Cotabato
Telefax: (64) 229-8178; 229-7241 to 43
Email: midsayap.station@philrice.gov.ph

PHILRICE FIELD OFFICE, CMU Campus, Maramag, 8714 Bukidnon
Mobile: 0916-367-6086; 0909-822-9813

LIAISON OFFICE, 3rd Flor. ATI Bldg, Elliptical Road, Diliman, Quezon City
Tel/Fax: (02) 920-5129

SATELLITE STATIONS:

MINDORO SATELLITE STATION, Alacaak, Sta. Cruz, 5105 Occidental Mindoro
Mobile: 0908-104-0855; 0948-655-7778

SAMAR SATELLITE STATION, UEP Campus, Catarman, 6400 Northern Samar
Mobile: 0948-754-5994; 0909-370-1332

ZAMBOANGA SATELLITE STATION, WMSU Campus, San Ramon,
7000 Zamboanga City; Mobile: 0948-754-5994; 0910-645-9323