

Rice

PRODUCTION GUIDELINES

CROP HANDBOOK

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CROP HANDBOOK

Statistic

RICE PRODUCTION BY COUNTRY		
Country	(Values in Metric Tons)	
China	146.500.000	
India	105.000.000	
Others	41.545.000	
Indonesia	36.600.000	
Bangladesh	34.550.000	
Vietnam	28.500.000	
Thailand	17.000.000	
Burma	12.500.000	
Philippines	12.000.000	
Brazil	8.500.000	
Japan	7.680.000	
United States	7.335.000	
Pakistan	6.900.000	This month the United States Department of
Cambodia	4.700.000	Agriculture (USDA) estimates that the World Rice Production 2016/2017 will be 480.71 million metric tons.
Korea, South	4.000.000	
Egypt	4.000.000	Rice Production last year was 470.49 million tons. This year's 480.71 estimated million tons could represent an increase of 10.22 million tons or a 2.17% in rice production around the globe
Sri Lanka	3.400.000	
WORLD	480.710.000	



Production Guidelines

RICE			
OPERATIONS	AGRONOMICS AND TIMING		
Crop rotation	Best after soybeans, corn for silage, tomato, cabbage and others. Monoculture is possible for up to 3-5 years		
Primary tillage	Minimum tillage (max 15 cm) • Plough • Heavy cultivator • Heavy disk Or sod seeding Levelling		
Secondary tillage	Harrows, spike harrows, light field cultivators		
Planting (Northern Hemisphere)			
Timing	Spring, April to May. Germination minimum temperature is about 13°C, optimum 18°C at soil level		
Population at harvest	250-400 ears per square meter		
Distance between rows	18-33 cm		
Quantity of seeds	About 400-500 grains/square meter (160-200 kg/ha) weight of 1000 seeds 30-45 grams		
Depth	2 cm max		
Fertilizying (Guidelines, to be adjusted on soil analysis base)			
Nitrogen (N kg/ha)	50 kg/ha before planting , and then 30 kg/ha during tillage and at the beginning of jointing		
Phosphorus (P ₂ 0 ₅ kg/ha)	70 kg/ha at planting or before 0 in soils with normal content of P		
Potassium (K ₂ 0 kg/ha)	0 K ₂ 0 kg/ha in good soils (K>100 ppm) 120 K ₂ 0 kg/ha in soils with K< 100 ppm at planting or before		
Weed control			
Minimum tillage:	Before emergence and post emergence		
Sod seeding	Glyphosate before sowing: post emergence as usual		
Pest control	Spraying		
Harvesting	When grain moisture is about 18%		



¹ The reproductive stage begins with panicle initation.

² Stage III begins when 50% of the florets are pollinated.

Crop Rotation - Crop Development

CROP ROTATION

• The investments for forming and maintaining rice fields and irrigation systems are high, so in many areas rice has a trend to monoculture. In some region, turf soil does not allows for rotation. Nevertheless, in order to control weeds and particularly red rice, rotation with corn, wheat and soybean are practiced and recommended. Usually rice is cropped for several years (3-5), after that other crops are farmed for 2 or three years.

WHY RICE IS IMPORTANT?

- **Rice** is one of the world's most important cereal crops, and is farmed in many regions of the world in some of the most diverse climatic and agronomic conditions. Rice and wheat are two of the most important cereal crops and together make up the majority of the world's source of calories. They feed the world.
- **Being a flood crop**, field forming and maintenance of rice fields can be expensive. Though possible, it is very complicated to crop rice without flooding.
- **If properly cropped**, rice can give yields from 5 to 7 tons/hectare. It is the most important cereal for human nourishment in Asia.
- Rice is grown under flooded conditions; therefore, it is best produced on land that is nearly level. Level tracts of land minimize the number of waterretaining barriers or levees required per unit of area. The practice of growing rice on "zero grade" or level fields has greatly gained in popularity and is highly recommended.

FIELD FORMING AND MAINTAIN

LASER LEVELLING

- Laser-leveling equipment development has drastically improved both accuracy and efficiency of land forming.
- A laser emitter is set up on a stationary platform. Tractor-drawn implements, ranging from a simple straight blade to massive dirt buckets, are equipped with laser receivers and a computer.
- **The computer** is programmed according to the needs of the grower and field. As the tractor travels over the field, the implement removes soil from the high areas and deposits it in low areas creating either a gradual slope or completely level field depending on the programming and intended farming practices.
- Accuracy of levelling can reach 4 mm on a distance of 1000 meters. Required power is about 25 hp per meter of blade.
- **Ideal surface** of rice field is between 5 and 20 hectares, which optimizes mechanization avoiding waves and plants drift in early stages in windy weather.

- An ideally perfect levelling of rice fields is necessary for uniform emergence of the crop. Difference in height more than 5 centimetres mean an advantage for certain grasses (Echinocloa spp), which can germinate in low water.
- Laser control levellers pulled by a tractor deliver the most efficient levelling.
- Laser levellers are made of two parts:
 - a) An hydraulic mechanical part, which moves the soil,
 - b) An electronic part, formed by a laser emitter, placed on a trivet, and a laser receiver placed on board of the leveller.
- The laser emitter forms a virtual zero grade slope, which is received by the receiver and copied on the soil by the hydraulic-mechanical part of the implement.

- The implements performs at the best on dry soil and after a ploughing. The goal is to move soil from the higher parts of the field to the lower part, in order to get a perfect level around the whole field.
- Substantial advantages of levelled fields are:
- 1) Water management becomes precise, meaning that it is possible to keep a regular layer of water on the fields and vary the eight of water as requested by the crop and operations: e.g. during germination and emergence of rice the optimum level of water is about 5 centimetres.
- 2) It is possible to spare important volumes of irrigation water.
- 3) Fertilizers and chemicals application become more precise and effective, because the chemicals are dispersed in an uniform layer of water.
- 4) Weeds, both grasses and broadleaves germinate better in fields with an irregular, rather low layer of water: a uniform layer of water hinders germination of such weeds and is useful for rice germination. If necessary, water height can be uniformly increased for better protection of rice and hindering of weeds.



Mechanical controlled levelling machinery also can do a sufficient work where fields are not very large.



- 1. Uniform flood depth reduces that quantity of seeds required because germination under an uniform layer of water is improved.
- 2. Large number of levees eliminated.
- 3. Rapid irrigation and drainage.
- 4. Straight parallel levees that will increase machine efficiency.
- 5. Hills and potholes that may cause delay of flood and/or less than optimum weed control and efficiency of fertilization are eliminated.
- 6. Water total amount necessary for irrigation is reduced, because of the uniform water level.
- 7. Chemicals and fertilizers are spread uniformly into the water for consistently positive effects.

FIELD FORMING AND MAINTENANCE



A SYSTEM BASED ON AGRONOMY



Tillage

Ploughing is still broadly used in rice cropping. In North Hemisphere the best choice is ploughing in fall, particularly when soil are clayish and heavy. The goal is oxygenation of fields and thus a better management of organic matter, which can transform in humus relatively more quickly. Manure and residue can be easily incorporated into soil. Working depth of 20-25 centimetres is sufficient, anyway we do not have to remove hard pans when present: hard pans are useful for maintaining water in the fields. A disk ripper applied in autumn is considered an alternative to plough, but working depth should be not deeper more than 20 centimetres. Disk harrows, tine harrows and rototiller are used for secondary tillage.

Levelling of fields with levellers, better if laser controlled, is certainly the most effective and modern practice to get a proper level field. However, levelling and tillage of rice field is possible also on flooded fields (puddling). In this case the operator uses the surface of water to determine when the soil is level: in other words, the water serves as a "bubble level".

This practice also allows for a certain oxygenation of the water, which is useful for rice germination, and also increase the "sealing" of field bottom with sediment, thus decreasing the total volume of water needed for rice cropping. Tractors used for such operations must be waterproof, as New Holland TT Compact Series.



CONVENTIONAL AND MINIMUM

- **Primary conventional tillage** is preferred for rice crops but not mandatory.
- A wide choice of tools are available for primary tillage: Working depth between 15-25 cm
 - Moldboard plow
 - Chisel plows
 - Disk rippers
 - Offset disk
 - Tandem disks

MINIMUM TILLAGE

- With less tillage, **weed control becomes more dependent on herbicides**. However, effective herbicides are available for controlling most weeds in conservation tillage systems. Herbicide selection, application rate, accuracy, and timing become more important. Application accuracy is especially important with drilled crops as wheat and other cereals, because in row cultivation weed management becomes difficult or impossible.
- Most rice in the world is grown using conventional tillage; however, conservation tillage has gained acceptance in many rice-growing areas.
- **Previous research**, conducted at the Louisiana State University Center for Rice Research Station since 1987 has addressed issues related to varieties not adapted to conservation tillage systems and yield reductions related to numerous factors

• Secondary tillage is carried out before drilling. The goal is to achieve a proper seedbed, which means level soil with particles of right size. This is important only in case of dry drilling.

• **Minimum tillage** avoids primary tillage and substitutes it with other patterns which are swifter and cheaper. It is mostly carried out on large farms, where in short periods of time large surfaces must be cropped. Minimum tillage can represent a sizeable reduction in fuel and labor costs.

involving conservation tillage. This research has firmly established the advantages and disadvantages of reduced-tillage rice production, and it has identified stand establishment and early-season plant density as critical components of managing a reduced-tillage rice production system.

• Preplant and/or early season vegetation management are vital elements in reduced-tillage rice production systems. By minimizing the amount of preplant vegetation present in the seedbed, competition between the vegetation and the establishing rice crop is reduced. Additionally, plant residue can increase immobilization and volatilization of N fertilizer applied during the rice seedling stage, so proper management of preplant and early season vegetation may also reduce the amount of N fertilizer lost due to immobilization and volatilization.



Ploughs are used to prepare seedbed for rice.



Depending on which cropping pattern has been chosen, seedbed preparation is possible both in dry or flooded conditions.

Seeding

- Germination capability of seed must be at least 85%, in order to get a sufficient stand. Seed rate depends on:
 - 1. Levelling of field
 - 2. Eight of water layer at planting (when seeding in water)
 - 3. Weight of 1000 seeds
 - 4. Variety capability of tillering

 As guidelines, a seed rate from 160 to 250 kg per hectare will do in most condition, with an average value of 200 kg per hectare. 300- 400 seeds per square meter are sufficient for a good stand in normal conditions, up to 600 in difficult conditions. Too late planting dates hinders high yields. Minimum temperature for germination is 12-13°C, at interface soil-water but we need 18-22°C at soil-water level to get a good start. Planting of rice can be performed in different ways.

DRY SEEDING

- **Dry seeding** is an easier way to plant rice and normally performs well in fields where the seedbed has been well-prepared and/or red rice is not a severe problem.
- Rice can be dry seeded using a grain drill. When the rice is drill-seeded, a well-prepared, leveled and weed free seedbed is advantageous.
 A well-prepared seedbed will facilitate uniform seeding depth, which is important in establishing a uniform stand.
- Seeding depth is important with all varieties. It is especially critical with semi-dwarf varieties because these varieties have inherently slower development during the seedling stage, and the mesocotyl length is shorter than conventional-height varieties. Therefore, semi-dwarf varieties should be seeded no deeper than 2 centimeters (¾ inch) to maximize uniform stand establishment.

WATER SEEDING

- Water seeding is the predominant method of rice seeding used in world. The use of a water-seeded system can provide an excellent cultural method for red rice suppression, which is the primary reason for the popularity of water seeding in many places.
- Producers have adopted water seeding as a matter of custom, convenience or both. Water seeding is also an alternative planting method when excessive rainfall prevents dry seeding.
- Seedbed preparation is somewhat different when water seeding is used compared with dry seeding.

- **Conventional-height varieties** may be planted somewhat deeper, but seeding depths greater than 3.8 centimeters (1.5 inches) should be avoided with any variety, in order to avoid lack of oxygen to seed when germinating.
- Where soil moisture is adequate, a flush, or surface irrigation, following seeding may not be necessary. When soil moisture is insufficient and rainfall is not imminent, the field should be flushed within 4 days of seeding to ensure uniform seedling emergence.
- This pattern simplifies tillage operations and completely avoid damages due to waves during germination. When rice is dry-drilled, tillering is normally inferior if compared with water-planted crop, thus seed rate should be increased of 10%. Dry drilled rice is less subject to lodging.

With water seeding, the seedbed is left in a rougher condition than for dry seeding. This is accomplished by preparing a seedbed consisting primarily of larger clods, which is often easier to attain with heavytextured soils.

• A flood is established as soon as possible following tillage, and rice is seeded within 3 to 4 days. This will reduce potential weed problems and provide a more favorable oxygen situation at the soil/water interface. Low oxygen levels are often a problem where floodwater is held for a long time before seeding.

- A preferable alternative to a rough seedbed is preparation of a smooth seedbed similar to that for drill seeding. Following smoothing, the seedbed is firmed with a grooving implement, resulting in a seedbed with grooves (2.5 to 5.0 cm deep) on 17 to 25 cm spacing. In some situations, a field cultivator can achieve the desired grooves. A rough seedbed will minimize seed drift following seeding and facilitate seedling anchorage and rapid seedling development. Seed and seedling drift is often quite severe, especially in large fields with zero grade levelling and windy weather.
- Water seeding may be done with dry or pre-sprouted seed. Pre-sprouted seeds offer advantages such as higher seed weight and faster initiation of germination because the seed has already imbibed water and is less susceptible to floatation.
- **Pre-sprouting** is accomplished by soaking seed for 24 to 36 hours followed by draining for 24 to 36 hours prior to seeding.
- These periods may need to be extended under cool conditions. A disadvantage to pre-sprouting is that seed must be planted shortly after pre-sprouting or deterioration will occur.



• Planting dates are extremely variable depending on region. At 45° latitude North, the useful period is from second decade of April to end of May. Optimum temperature for germination is 18°C at soil level. When sowing in floated fields, the period between floating and planting must be as short as possible, in order to avoid a prior germination of weeds and red rice.

SOD SEEDING - DIRECT SEEDING

FACTS

- **No-till rice** is planted directly into the residue of a previously harvested crop or native vegetation. Soybean, silage corn, fallow and cotton are typical rotational crops.
- **Preplant vegetation** is usually not uniform in size and usually consists of larger, woody winter weeds that create problems when controlling preplant vegetation.
- **Best results** in most burndown research have occurred with a 7- to 10-day preplant herbicide application timing. These results are especially true when residual herbicides are tank-mixed with burndown herbicides. Longer intervals between

burndown and planting reduce the effectiveness of residual weed control in planted rice crop.

- When to avoid no-till: excessive vegetation, hardto control weeds, rutted fields, unleveled fields and fields where red rice is a problem are situations where a producer should consider conventional tillage practices.
- Heavy vegetation reduces seed-to-soil contact and increases problems establishing adequate stand. Weeds not controlled before planting will cause significant problems after planting.
- Rutted and unleveled fields impact both flooding and draining of rice fields.

SOD SEEDING

STEALTH ENGAGING TOOLS

Sod Seeding Overview PROS: • Minimal moisture losses

Sod seeding Overview CONS: • Poor weed



Double Shoot: Seeds and fertilizer are drilled separately. Slightly higher initial cost, but allows the independent control of fertilizer applications (N) reducing fertilizer costs and increasing yield potential.



Single Shoot: Seeds and fertilizer are applied at a constant ratio with no control over fertilizer applications. Slightly lower initial cost, but higher lifetime cost due to effects of under/overfertilizing.



Tip and body opener.

NO TILLAGE (NO-TILL)

- No tillage is a practice which the reduces the tillage strategy to reduce farm operations, soil disturbance, and moisture losses.
- No-Till is normally carried out using only disks drills.



Water Management

 In Northern Hemisphere, basically Irrigation for rice is performed by keeping a certain layer of water on the fields, in order to achieve favourable conditions for crop development in different growth's stages, and particularly during germination, formation of pollen and fecundation of flowers. In other word, rice need a constant temperature for better growth and the water layer act as a thermic "flywheel" which maintain temperature in acceptable range especially at night. In the meanwhile, the presence (or temporary absence of water) should be compatible with other operations as fertilization and spraying.

PINPOINT FLOOD SYSTEM

- The most common water-seeding method is **the pinpoint flood system.**
- After seeding with pre-sprouted seed, the field is drained briefly. The initial drain period is only long enough to allow the radicle to penetrate the soil (peg down) and anchor the seedling. A 3- to 5-day drain period is sufficient under normal conditions.
- The field then is permanently flooded until rice near maturity (an exception is mid season drainage to alleviate straight head).
- In this system, rice seedlings emerge through the floodwater, and seedlings must be above the water surface by at least the four-leaf rice stage.
- Before this stage, seedlings normally have sufficient stored food and available oxygen to survive. Atmospheric oxygen and other gases are then necessary for the plant to grow and develop. The pinpoint flood system is an excellent means of suppressing red rice emerging from seeds in the soil because oxygen necessary for red rice germination is not available as long as the field is maintained in a flooded (or saturated) condition.

• A variation of pinpoint flood system is practiced in Northern Italy:

- Pre-sprouted seeds are spread in flooded fields (water layer about 5 cm).

- When seeding is finished, water flood is increased to 15 cm for 8-10 days which allows low germination of rice but hinders germination of grass weeds (barnyard grass) and red rice.
- After that the field is flushed, better oxygenation allows a quicker growth of rice during these 5-8 days. Finally the layer of water is restored at 10-15 cm.
- How much water?
 - As a general rule, you need a continuous flood during the growing season of about 2- 3 lt sec /ha or 15- 20 GPM/acre.
- (LSU modified)

DELAYED FLOOD SYSTEM

- An alternative is the delayed-flood system. In this system, fields are drained after water seeding for an extended period (usually 3 to 4 weeks) before the permanent flood is applied. This system is normally used in fields where red rice is not a problem because the delayed flood system provides no red rice suppression. Fertilizer application timings and water management after the initial drain are similar to those in dry-seeded systems.
- E.g. two water management systems are shown below as practiced in North Italy (45° latitude North). The first one is rather similar to pinpoint system; the second is for drilling rice in dry soil.
- These schemes vary depending on needs for further drains when controlling algae. Considered the thermic function of water, it is possible to increase the water layer height in particular phases, typically during germination and before flowering and pollination.
- Consumption of water varies in function of evapotranspiration and soil structure; in heavy soils, 1-2 litres per second per hectare are sufficient: in light soils consumption reach 5 litres per second per hectare. Considering an irrigation season of 5 months, between 13.000 and 65.000 cubic metres per hectare are needed for rice irrigation. In most conditions, 32.500 cubic metres per hectare seems a reliable average.



WATER SEEDING

DRY DRILLING



Crop Protection - Spraying

WEED CONTROL

• Weeds control is the most important and troublesome operation in rice cropping. Uncontrolled weeds can almost totally destroy the crop: things are complicated by the particular environment in which rice grows. Weeds compete for nutrients, light and space. Direct loss from weeds presence are measurable and they can reach the 80% of yield. Indirect losses are due to difficult harvesting and increased costs for grain drying.

SPRAYING

FACTS

• Weeds are some of the most troublesome pests in rice production in the world. Weeds compete with rice for nutrients, space, and light. Direct losses from weed competition are measurable and can be great. Indirect losses such as increased costs of harvesting and drying, reduced quality, and reduced harvest efficiency are not readily measured but also reduce profits.

 Chemical control of weeds and algae is thus of paramount importance for high yields. Possible guidelines concerning timeliness of herbicide applications are given in the chart "Rice irrigation"

- Five basic herbicide application timings should be considered when choosing a herbicide:
 - 1 Burndown prior to planting
 - 2 Pre-plant incorporated
 - 3 Pre-emergence prior to planting or pre-emergence after planting
 - 4 Delayed pre-emergence
 - 5 Post emergence



Flexibility, accuracy and reliability on different crops.

Uniformity of droplets to achieve desired results.

Fertilization

 As a rule, a part of fertilizers is applied after the primary tillage and before seedbed finishing. The period between end of seedbed finishing and flush (flooding with a low layer of water) or flood (flooding with an higher layer of water) of the field must be as short as possible, in order to avoid the loss of nutrients by leaking or volatilization. Total rates of fertilizers are determined by the results of soil tests, to be repeated every 4 or 5 years. However, some reliable guidelines are possible for yields of 6-7 tons per hectare:

Element	
Nitrogen (N)	110-150 kg/ha
Phosphorus (P ₂ 0 ₅)	50-70 kg/ha
Potash (K ₂ 0):	120-150 kg/ha

 Rice absorbs Nitrogen mainly in form of NH₄ (ammonia), thus it is suggested to apply fertilizers as Urea or ammoniac ones. Nitrogen is applied at a rate of 70% of total in pre-sowing and the remnant in top dressing: one or two passes are commonly carried out, at the stage of end of tillering and before flowering. The fertilizer is applied on floated or flushed field in order to avoid losses of Nitrogen. Phosphorus is applied in

pre-planting, and Potash is applied very much like N, 70% in pre-planting and 30% in top dressing at tillering.



Harvesting

- Optimum grain moisture content for harvesting is 20-22%; for varieties with larger kernels best content is 23-24%. Moisture content should be tested during the warmest hours of the day in last phase of maturation.
- Late harvesting means too dry kernels and worst quality of product (sun cracking); an early harvest means higher costs for drying at the farm.
- Combines are equipped with wheels or tracks, depending on nature of soils. Rotary combines are broadly used on rice, because of gentler thrashing (grain on grain), complete thrashing of the panicle and higher productivity. Grain losses at 1% are acceptable.

DRYING AT THE FARM

- **Proper drying of harvested grains** is also a very important operation to get high quality product. Ideal moisture content of row rice for storing is 11-12% Drying has to be performed as follows:
 - Bulk of row rice has to be continuously moved in the dryer, while a stream of warm air is running through at the temperature of 37°C and no more, for a period of 4 or 5 hours.
 - A 30 minute stop is then necessary. During this stop, moisture passes evenly from the inner part of grain to the surface, without cracking the grains.
 - This cycle should be repeated until the grains achieve a moisture content equal to 11%, which is the most suitable content for safe storeage.

- Harvesting is better carried out when moisture content in grains is 20% or less, 18% is ideal.
- Normal timeframe of Harvest is end of August through October, depending on varieties, locations, and sowing timing.
- Harvesting, if started at the incorrect time or performed on a poorly maintained combine, can be responsible of important field losses of up to the 25% and can result in damage to the combine.
- In order to get a good quality product when harvesting, it is important to register the rotation speed of the drums at a lower level than for wheat or other cereals. This avoids getting cracked grains or half cracked grains.
- For safe storage, kernels must have a moisture content of 11-12%; thus drying brown rice after harvesting is a very common operation. Temperature of dryer air during drying operations must be adjusted based on **air humidity:** when air has humidity content of 70-80% or higher, then drying temperature can reach 40-45°C; when air humidity is lower, it is necessary to decrease air temperature to 35-40°C. The reason is that **high drying temperatures plus low air humidity causes too rapid water evaporations inside the kernels,** which can crack: thus, the quality of white rice can be seriously damaged. At the end of the process, brown rice must be cooled for about two hours before storage.





Check separator and sieve loss here

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RIGID HEADER HIGH CAPACITY

Machinery

IMPLEMENTING YOUR GROWTH PROJECTS





NEW HOLLAND TRACTORS

All New Holland tractors series can be equipped with special features that allow for routine operations in flooded rice fields: however, rice fields' formation, maintenance and levelling are crucial and particularly challenging tasks. The results will affect all the following operations from drilling to irrigation and harvesting. For this purpose, T8 and T9 are equipped with special features for heavy duty scraping and levelling operations.

NEW HOLLAND TT

New Holland TT Compact Series

Operations in rice fields are often carried out in water, and they are very challenging for tractors. This is why New Holland TT Compact Series are water proof and designed for enduring hard conditions of work.

PRECISION DISK DRILL P2085

Precision Disk Drill P2085 with mounted tank

The Precision Disk Drill was designed with multiple crops and conditions in mind, included rice cropping. Its rugged and reliable frame will hold up to any conditions. The row unit has been proven to penetrate and place seed in most any soil/residue condition and can be equipped with extended wear hoses for handling abrasive rice seeds.









GUARDIAN

Guardian sprayer Series

Weed controls is particularly difficult in flooded rice fields. New Holland Guardian sprayers have clearance and balance which are crucial facts from agronomic point of view. The front boom allows for better focus and check on spraying operations. The cab forward, mid-ship mounted tank and rear-engine design gives an ideal weight distribution that leads to minimized field compaction and rutting, along with many other advantages and operator comforts. This optimum weight split and overall light footprint allows the Guardian sprayers to gain access to wet fields or soft ground well before the competitive models in its class and without the penalty of soil compaction or field rutting which can impact potential yield and productivity.

NEW HOLLAND COMBINES

TC, CX, conventional combines

New Holland has an established tradition in manufacturing harvesting combines, both conventional and rotor. When harvesting rice, many parts of combines are particularly under strain due to the abrasion of seeds and straw. Special features are in-built at the plant in order to increase the period of useful service of the machinery. **CX Combines can be ordered with SmartTrax™ rubber tracks in order to increase floatation.**

NEW HOLLAND CR

CR Rotor Combines Series

When harvesting rice, avoiding the "cracking" of brown rice is crucial for proper drying and obtaining quality grains. CR Combines are equipped with Twin Pitch rotors which feature 44 elements and deliver a performance increase in rice crops, while gently handling the grains. They are particularly suitable for damp conditions, where they can offer up to a 10% increase in capacity. You can also manually adjust the rotor vanes to ensure pitch perfect performance.

Two different kits are available which enable operations to select, or even convert between, rice and small grain configurations. CR also can be equipped with SmartTrax™ rubber tracks.

NEW HOLLAND BALER

New Holland Baler Series, from small square balers to round balers and up to large square balers are reliable machines when rice straw has to be baled for different purposes.





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AT YOUR OWN DEALER



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