A farmer in the central Thailand discovered by chance this method of growing a crop of ratoon rice from lodged stubble. Since then, his innovation has spread into many rice-growing areas. The net income is higher than the income from broadcast rice in both rain-fed and irrigated rice-growing areas.

“Ratoon cropping of lodged stubble” refers to ratoon rice plants grown from a single tiller growing from the first node of the rice stubble. A researcher from the Department of Agriculture found that this type of ratoon cropping gave a yield of 5 - 5.6 mt/ha. The number of tillers can be increased to two or three, if the dormant buds in all nodes of the stubble are activated to develop into tillers.

The stubble is managed in such a way as to bring it down close to the ground, so that the roots of the tillers can easily and deeply penetrate into the soil for better anchorage. This technology was later called “Lodged stubble ratooning”. It can be expected to produce a yield as high as 6 mt/ha. Currently, the area under lodged stubble ratooning in Thailand is estimated to cover about 23,853 ha.

How to grow ratoon crops from lodged stubble

Where land is being used to grow rice for the first time, prepare the soil thoroughly. Make sure the bunds are well-maintained, to minimize water seepage. Select a rice variety which is non-photosensitive and which matures in about 120 days. Sow the seed by broadcasting, at a rate of 93-125 kg/ha.

Approximately ten days before harvesting the rice, drain the field if it is waterlogged. If the field is not waterlogged, apply water to saturate the soil, then drain off any standing water.

Harvest the rice crop when it reaches maturity (Fig. 1). Do not burn the rice straw. Instead, spread the straw evenly over the field from one to three days after the harvest (Fig. 2). Do this either by tractor or by hand. The purpose of spreading the straw is to maintain a high soil moisture content and to cover any weeds. The rice straw used as a soil mulch will eventually become humus or organic fertilizer for the rice.

Crush the stubble flat to the surface of the damp soil by driving a tractor or a roller over the field in the same direction two or three times (Fig. 3 and Fig. 4). Farmers in Thailand usually do this early in the morning, while the stubble is still moist with dew.

After the stubble has been flattened, dig a shallow ditch in the field to facilitate drainage and to prevent the field from being waterlogged. Excess water might damage the young tillers.

When the tillers have 2 - 3 leaves, (about 10 - 15 days after the stubble was flattened), apply water
simply to moisten the soil. Do not flood the field. It is at this stage that the first application of fertilizer (93 - 125 kg of NPK 46-0-0/ha) should be given. Flood the field to a depth of about 5 cm, five to seven days after the first application of fertilizer.

Apply the second dose of fertilizer (125 - 156 kg/ha NPK 16-20-0/ha) 35-40 days after the stubble was flattened.

If the rice is not well grown and seems to need nitrogen, a third application of fertilizer, NPK 46-0-0, at a rate of 93-125 kg/ha, should be applied to the field. This third dose should be applied 50 - 55 days after the stubble was flattened.

**Benefits of the technology**

- It clearly reduces cost of rice production. This includes a reduction in the cost of land preparation, the smaller amount of seed used, and the reduced need for agrochemicals to control weeds and golden apple snails. Also, less fuel oil is needed for machines used to apply pesticides.
- Less labor, water, and time is needed than if the seed is broadcast. Less bund preparation is required than for direct-seeded rice.
- Yields range from 5.0 - 5.6 mt/ha. This level of yield is as high as that of direct-seeded rice (Fig. 5).
- The harvest is about 15 days earlier than that of broadcast rice.
- Tillers which arise from nodes close to the soil develop strong roots, as well as strong stalks that do not lodge easily.
- This production method reduces the problem of burning the straw after harvest.

**Points to consider about this technology**

- Water should be sufficient, and should be easily drained out of the field.
- The rice field should be flat and level.
- The rice should be harvested about 28 - 30 days after flowering, or when 80% of the panicles have turned a light brown.
- The rice straw should not be burnt. Instead, it should be spread evenly all over the field to cover the stubble.
- Stubble should not be infected with disease or infested with insects, especially rice stem borers. If any infestation occurs, the field should be plowed, and a new crop of broadcast rice should be sown.
- High-quality seeds with a high germination rate should be used for the initial rice crop.
- Make sure that the rice field is not waterlogged for about 15 - 20 days after the stubble is flattened. If heavy rainfall occurs during this time, the water should be drained out immediately.
- Lodged stubble ratooning should not be carried out for more than one or two crop cycles.
- The soil should be fertile. Lodged stubble ratoon crops grown on loamy clays soils give a higher yield than crops grown on sandy clay soils.
- Lodged stubble ratooning should not be done during the hottest months (in Thailand, March - April).

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Fig. 3. Flattening the rice stubble

Fig. 4. Close-up of lodged stubble

Fig. 5. Ratoon crop of rice grown from lodged stubble