Agri Express: **1 (01),** *Article No.* **V01I01.02**

System of wheat intensification (SWI)

A novel strategy for boosting wheat yield in a natural farming system

Aman Singh[1] and Avinash Chandra Maurya[2]

[1]Sam Higgin Bottom University of Agriculture & Technology Sciences, Prayagraj, U.P.

[2]Assistant Professor, B.R.D. P.G. College, Deoria, U.P.

Wheat Intensification System (SWI) is a wheat growing system that includes additional equipment for growing wheat, such as cultivating, cultivating, cultivating and nutrient management. These controls provide better conditions for the growth of crops in the root zone than plants planted as growing crops. It also allows crops to withstand biotic and abiotic stress that may become more severe as a result of climate change. The use of SWI can increase the productivity and income of poor farmers by saving agricultural inputs. It can reduce mowing time by one-third to one-half of the time required by current practices. SWI pesticides are effective, but farmers are developing or improving tools to reduce the labor hours required to control weeds. Therefore, SWI per drop of water and per drop of fertilizer, seeds, etc. It is a machine that focuses on improving rice yield, where all agricultural principles are put into practice in order to have maximum yield per kilogram of agricultural products such as.

Keywords: *Wheat, Intensification, Abiotic, Approach, Weed*

What is system of wheat intensification:

Time has great potential to produce more than one kilogram of agricultural inputs (fertilizer, seeds, etc.) per drop of water, and the use of different elements of SRI for rice crop is known as rice intensification system (Dhar et al. 2012)., 2014). Using this period can increase product yield by more than 2 times (Uphoff et al., 2011). SRI scientists (Sheehy et al., 2004) are recent researchers in the use of SRI technology for cultivation in China and Madagascar. SWI is a new concept of cultivation that includes many aspects of agriculture such as cultivation, cultivation, irrigation and nutritional management. These management practices lay the foundation for better crop production than conventionally grown crops.

Principles of SWI:

SWI is based totally on following standards of crop production.

1. Principle of root development.
2. Principle of intensive care.

Principle of root development

To improve the quality of the crop, a good foundation with a root system must be created. Root growth is the first stage of any plant's health and growth. It should be fed properly and there should be enough space around the plant. As noted by Anjuman and Bajwa (2010), root systems are less developed and have a significant impact on tillering capacity (41.6% reduction) and biomass yield (60–65% loss) in Lahore

(Pakistan). However, in the case of SWI the plants are widely spaced (20 cm apart), usually square in shape. A larger area (20 cm x 20 cm) may be more effective later on as SWI applications strengthen the soil over time.

Principle of intensive case

Density does not mean plant density per unit; rather, it is a place to clean and care for plants. To increase productivity, care should be taken at every stage of plant development, especially weed control, insects, diseases, organic fertilizers and irrigation.

Aims of basic principles

- Manage water well.
- Use a washing machine to remove weeds.
- Use organic matter/fertilizer.
- Replace green crops.
- Wide and sufficient difference.
- Crop management.
- Improve the land

Package of practices for SWI:

Cultivation in SWI is more or less the same; but it creates a good environment for crops through changes in cultivation, plant management and important fertilizers.It aims to increase product yield and reduce the use of external inputs while increasing the fertility of the soil.

Land selection and preparation

Well drained, loamy fertile soil with pH ranging 6.0 to 8.5 is considered idea for cultivation of wheat. Avoid water logged soils and select land with which is having adequate drainage facility for removing of excess water.

SWI To obtain good arable land, wheat cultivation needs to be ploughed. The first Plows were made to remove the roots of previous crops from the soil. After 1 to 1.5 months, compost is used and the soil is laid a second time. The final ploughing is done before the rice seeds are sown.

Manure application

A good wheat required adequate amount of Nitrogen, Phosphorus, Potash proper proportion, 80-125:40-60:30-40 kg/ha. Soil test-based nutrient has been recommended followed by the application of organic manures such as FYM, Vermicompost, NADEP compost, liquid manure like (Sanjivak, Jivamrut, Amritpani, Panchgavya, Dashagavya) and other manures (including

crop residue and animal dung are commonly used for this purpose).

Seed selection and treatment

Put the seeds in 20% saline solution and remove the floating seeds to extract 25 kg/ha of strong and healthy rice seeds. Therefore, for seed treatment, prepare a mixture of 10 liters of warm water (60°C), 2 kg of well-decomposed compost or worm castings, 3 liters of cow urine and 2 kg of jaggery in a clay pot.

After everything is mixed, 5 kg of seeds are dipped into the mixture and left for 6-8 hours. It is possible to prepare a mixture for the treatment of many seeds with the same ratio of the above ingredients. The next step is to separate the seeds from the mixture by straining and washing with clean water. Place the seeds in a cool place for 10-12 hours, during this time the seeds will germinate completely.

Sowing

The germinated seeds will be used for planting in the field using two seeds per hill for sowing needs. Depending on the humidity level, different lines of different sizes (15 cm x 15 cm or 20 cm x 20 cm) can be used. Manual or motorized seeder can be used for sowing. If the seeds have not been planted, mark an area of 15/20 cm from time to time with the help of string or rope. Sow the seeds to a depth of 2.5-3.0 cm using a seeder or nails. When planting germinated seeds, the soil should be provided with sufficient moisture. In cases where the seeds do not germinate or are damaged, fill the gaps with germinated seeds within 10 days from sowing. Most of the top germinating seeds were removed to reduce competition.

Weed management

Hoeing is an important part of SWI because it eliminates weeds that compete with crops for space, light, water and nutrients. Weeding through hoeing loosens the soil and effectively aerates the roots, allowing the soil to better absorb water and vitamins from the deep soil. The plant is placed in the soil so that it retains water and is well nourished. In SWI, plants generally mature 20-25 days after planting (DAS). Sorting is done every 10 days.

Water Management

In SWI, the soil is kept alternately wet and dry, and all wet areas in the state can be irrigated 3-5 times. The first irrigation was done at 15 DAS before root initiation (CRI). The second irrigation was done after 40 DAS when fine cracks appeared in the soil. Water early in the growing season of the crop before weeding. A third water was applied at 75 DAS. The fourth irrigation is done during the flowering period, and the fifth irrigation is done during the grain filling period.

Advantage of SWI

SWI practices reduce capital, fertilizer, labor and water inputs while increasing efficiency. In addition, the technology increases the richness, diversity and activity of soil biota within and throughout the rhizosphere zone. These improvements improve aeration and soil organic matter supply, reducing the amount of material and increasing yields.

Live SWI is more effective than changing SWI. Reports also show that maintaining SWI is more effective than changing SWI for the following reasons.

i) Two leaf rice seeds are fragile and are not suitable for planting as their stems are weak.
ii) Planting seedlings slows down crop development compared to direct sowing.
iii) Plants with live seeds grow faster and stronger.
iv) Negative outcomes, e.g. number of tillers/plants, panicle plant, percentage of fertile tillers, panicle length and number of grains/panicles, reduce SWI in crossovers compared to direct genes SWI.
v) Crop growth and subsequent panicle maturation in transplanted SWI is not as good as in direct seed treatment.

Conclusion

In summary, it can be said that SWI shows the best performance compared to traditional methods in all parameters such as growth, yield characteristics and product yield. Farmers around the world are convinced of the benefits of SWI because the technology is equally effective in positive and negative outcomes (safety stress). SWI technology has proven itself in many benefits, such as the fact that production can produce a unit of land, water and different materials and achieve more economic benefits. However, there is a need to further examine various agronomic and other biophysical variables in plants based on the SWI approach. Finally, additional skills training is needed to increase the confidence of SWI farmers.

*****