



## How to Use the DD50

The Rice DD50 program can be used by individual producers who manage their own crops, by consultants with multiple clients, or by county agents for producers within their county. To participate in the DD50 rice management program, two options are available to producers or consultants. The first option is for producers or consultants to log onto the Cooperative Extension Service website and enter their fields directly at <http://DD50.uada.edu/>. The second option is for producers to submit their cultivar, acreage, and emergence date information of each rice field to the local county Extension office to enter into the program and send the report to the producer. It is preferred that producers and consultants set up an account and enter their own fields so that they make check the program for updates as the season progresses and the information progresses throughout the season. An online DD50 User's Guide is available to individuals who access the program through the internet.

Emergence is defined as the time 8 or more plants per square foot for varieties or 4 or more plants per square foot for hybrids (seedlings less than 1 inch tall) have emerged from the soil for dry-seeded rice. In dry-seeded rice, DD50 accumulation begins the day plants first emerge from the soil. The coleoptile (shoot) has a white tip upon emergence before photosynthesis begins to produce chlorophyll (green color). In water-seeded rice, emergence is defined as the time when plants have shoot lengths of ½ to ¾ inch.

Establishing an emergence date can be difficult in the case of uneven emergence. In this situation, record the date at which a sufficient number of plants have emerged to ensure that replanting is not required. If rice emerged at two distinct times in separate areas within a field, rather than average the two dates, submit dates for each emergence time. It may be necessary to manage the two areas of the field separately if emergence dates differ greatly.

At the beginning of the season, the DD50 operates using 30-year temperature averages. The DD50 is continually updated with the current year's weather data to improve accuracy. Average daily temperatures and resulting cumulative heat units vary considerably across years. Those with enrolled fields will be notified when current year temperature data significantly differs from the predictions based on 30-year average temperature data. In general, the events predicted by the DD50 should be accurate within plus or minus two days for dry-seeded rice. The accuracy of the DD50 is influenced by management practices and variations of weather within each zone. For example, delaying the flood or pre-flood N, overfertilization, herbicide injury, and/or nutritional deficiencies may slow rice development, resulting in the DD50 predicted dates occurring later than actual plant development. Water-seeded rice often develops at a faster rate than dry-seeded rice because the floodwater buffers the effect of air temperature extremes. The accuracy of the DD50 is also dependent on use of the correct emergence date, cultivar name, and uniformity of stand. The DD50 program is not intended as a substitute for scouting fields, but rather a set of guidelines to assist growers with management decisions. Therefore, growers are encouraged to manually check the plant growth stage before making management decisions where growth stage is extremely important.

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## Uses of the DD50

Arguably the most useful components of the program are the nitrogen (N) application timings. The early and final recommended times to apply N are key to maximizing grain yield potential. Numerous studies over the years have shown the benefits of N applied during this window and the yield penalty associated with later applications after the final recommended date. Remember that the goal is have N incorporated by the final date, though there are a few days built in to allow for flood-up time.

Many herbicides have cutoff timings around beginning internode elongation (BIE / green ring) or 1/2-inch internode elongation (1/2" IE). The most commonly used of these herbicides are all included in the DD50 printout allowing you to plan for applications prior to cutoff to minimize the chance for crop injury issues. For midseason N applications for varieties we want to be sure we're at least past green ring AND at least 4 weeks after preflood N was incorporated.

Approximate heading dates are key to knowing when fungicide applications should go out (if needed). This also sets us up to begin scouting for rice stink bug and making any needed insecticide applications.

The approximate time of 20% grain moisture (maturity) is the most fluid date in the printout, because 50% heading is the last date that can be predicted based on DD50 units. So the date of maturity can be influenced by not just temperature but also light and moisture (rainfall and dew). However, knowing these dates gives us an idea of how to prioritize fields and cultivars for harvest.

Every cultivar is different in terms of how it reaches key growth stage timings including green ring, 1/2" IE, and 50% heading. Individual reports for different cultivars at different planting dates will help us to more easily manage each cultivar at each planting date to its maximum potential. Each year the answer to why many fields underperform often relates back to management activities occurring too late to maximize their benefit.

Today the DD50 program assists growers with 26 management decisions based on growth stage, including herbicide application, critical times to scout and spray for insects and diseases, and N application. The DD50 program is a very important tool for farmers growing new cultivars. Farmers are encouraged to use the DD50 to help plan rice seeding and harvest dates of different cultivars. The DD50 program is also a useful tool in predicting peak harvest periods for grain elevator operators and farmers. Farmers can use the DD50 to coordinate planting and harvest schedules based on cultivar and expected emergence dates. In addition, state and county information concerning cultivar acreage and percentage of rice at critical development stages are summarized by the DD50 program, providing invaluable information on Arkansas rice production.

If you have any questions or need further assistance, feel free to give me a call at 870-857-6875

Sincerely,



Stewart Runsick, County Extension Agent-Staff Chair

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