

Crawfish News



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Stocking Ponds

Now that we are on the downside of the production season for the state's farm-raised crawfish crop, we are receiving inquiries from producers on stocking crawfish. With the exception of new ponds, one reason we have received many inquiries for information on stocking is because a number of crawfish producers did not have a good production year and there is a need to know whether or not adding additional broodstock can correct this problem.

Stocking *is usually* required only in new ponds, ponds that have been out of production (fallow) for a year or longer, and when there has been a catastrophic loss of the crawfish population. Adding broodstock to ponds that have a residual population of crawfish, even if your yield was low and not sufficiently high enough to make money, is usually not advisable because crawfish have an ability, to a large extent, to self-regulate their population numbers. Only five pounds of female crawfish per acre (75 to 125 females, depending on size) that successfully burrow and produce young can potentially supply enough juveniles to produce a harvest of 800 to 1,000 pounds per acre. Stocking more crawfish will not necessarily result in a higher population of crawfish. Some producers mistakenly think that supplemental addition of larger broodstock will improve the genetics (gene pool) of the population, resulting in the production of larger crawfish. This is a fallacy. Genetics and selective breeding research with red swamp crawfish by LSU AgCenter scientists has shown that there is virtually no potential to increase crawfish size through genetics and breeding. Rather, harvest size is almost exclusively controlled by population density, food supply and water quality.

If stocking is warranted, then how much broodstock should you add? There are number of things that should be considered, including how much crawfish are already present in the pond, the projected survival rate of both those crawfish present in the pond and the additional stock we added, the success rate of reproduction and, of course, the expected survival rate of the young after hatching. Clearly, it is impossible to predict all these factors at the time of stocking.

Based on many years of research on crawfish reproduction and stocking, as well as years of experience and observations from commercial crawfish farming operations, below are current recommendations on stocking crawfish:

Stocking Recommendations for the 2011-2012 Production Season

- For new ponds or ponds that have been fallow for a year, stock one sack (35 to 45 pounds) or two sacks (70 to 90 pounds) per surface acre. Use one sack if you think you may have some residual crawfish and you are stocking into ponds with vegetative cover. Use two sacks if no crawfish are present and vegetative cover is sparse.
- Stock only red swamp crawfish and avoid, if at all possible, stocking of white river crawfish.
- Crawfish obtained from rice field ponds, permanent ponds or wild crawfish from the Atchafalaya Basin are all equally good sources of stock. What is most important is not the source of the stock, but rather ensuring that they are *healthy and in good condition* at the time of stocking.
- Stocker crawfish should be lively and contain adequate body reserves (as indicated by full, yellow/orange hepatopancreas or "fat") (see photo 1). Survival and successful reproduction in the burrow depends on the female having good body condition.



Photo 1. Healthy, well-conditioned crawfish (left) and crawfish in poor condition (right).

(Continued on next page)

- At least half the stockers should be females and a majority of the females should be mature. The presence of yellow, tan or brown eggs in the head of the female indicates maturity. Check 20 or so females from each source of stockers for egg development.
- Size of the broodstock is not important. Large stockers will not mean their offspring will attain a large size. Although smaller broodstock will produce fewer offspring per female, this is offset by more females per pound stocked. Additionally, it has been our observation that smaller crawfish seem to survive stocking better than larger crawfish.
- Do not buy crawfish for stocking that have been kept overnight in a cooler/chiller (less than 44 degrees F). It is beneficial to keep broodstock cool (55-75 degrees F) and moist during transport because this minimizes stress.
- Avoid purchasing stock that you suspect are severely stressed. Crawfish can often be stressed because they were overcrowded in the traps when caught, they were exposed to low oxygen concentrations in the ponds from which they were harvested or they may have been poorly handled after harvest (exposed to sun, heat and wind for a long period) and before stocking. Mortality of stressed crawfish can be exceedingly high one or two weeks post-stocking and in most cases you will never know if you had high mortality or not.
- Stock crawfish as soon as possible after they have been harvested – preferably during the cooler part of the day. Handling and stocking on cloudy or rainy days or during early morning hours may improve survival.
- Stock the crawfish throughout the pond and add them to the water. Do not place them on dry ground and let them walk into the pond.
- Preferred months of stocking are April, May and June. Water temperature on the day of stocking is important and should be less than 90 degrees F, or crawfish may die from heat stress. In some instances we have seen crawfish leave (walk out of the pond) after stocking because the environmental conditions in the pond were so poor at the time of stocking (hot water, low oxygen).

If large acreages of ponds/fields are to be stocked, we recommend obtaining broodstock from several sources, stocking the crawfish over two to four weeks and stocking a good mixture of mature and immature sub-adults. Obtaining brood crawfish from several different ponds or suppliers reduces the risk of getting crawfish from a “stressed” source.

Individual farming operations might necessitate slightly higher or lower stocking rates. For example, if survival of the broodstock is anticipated to be low (such

as from handling stress, predators, short flood duration, etc.) the recommended stocking rate can be increased by 1 1/2 times. For example, stock 60 pounds per acre rather than 40 pounds per acre. In contrast, if there is evidence of a healthy, but relatively low, resident population of crawfish in the pond, stocking rate may be adjusted downward by half. For example, stock 20 pounds per acre rather than 40 pounds per acre.

Encouraging Optimum Burrowing Conditions for Single-Crop (Permanent) Crawfish Ponds after Stocking

In rice-crawfish rotation systems, the most prominent production system in southwest Louisiana, crawfish are usually stocked in flooded rice fields after the permanent flood has been applied to the rice crop. Water is maintained at several inches until the field is drained for rice harvest. The stocked crawfish in rice-crawfish field rotations will construct burrows in levees at the water-levee interface when they are ready to burrow and free water is almost always available to help the crawfish in constructing the burrow. This is the optimal condition for successful burrowing.

However, in single-crop or “permanent” crawfish ponds, in which the same pond is used for crawfish production year after year, some additional recommendations should be followed.

- **Do not** drain the pond immediately after stocking. Water should be retained in the pond for several weeks after stocking to allow crawfish to recover from the stress of stocking, to allow those stockers that are immature to mature and mate and allow sufficient time for the crawfish to initiate burrowing on their own, just as they do in rice-crawfish field rotation systems.
- Drain the water off in stages (“hold and drain”) and not drain continuously. For example, drain three or four inches of water, then hold the water at that depth for several days and repeat until the pond is dry. Because burrow construction occurs at the water-levee interface and free water is necessary for burrow construction, holding water a constant depth for several days helps the females to excavate the burrow. In contrast, if the water is drained continuously during burrow excavation, then free water may not be available to aid in burrow construction and the females might be stranded above the water line, resulting in death.
- Adequate cover at the water’s edge is important to protect crawfish from predators as they construct their burrow. Natural cover (weeds, tall grass, etc.) is ideal. If levees are newly constructed and devoid of natural cover, artificial cover (cardboard, plywood, clumps of hay or corrugated roofing material) can be

placed along levees at the water's edge. The crawfish will burrow underneath these materials, which offers some protection from predators.

Forage Planting for 2011-2012 Crawfish Crop Year - Considerations and Tips

With the 2010-2011 crawfish season nearing an end, many producers are planning for their forage crops for the 2011-2012 crawfish season. Producers who farm crawfish behind a rice crop have fewer decisions to make, because their forage needs will be met by the established rice grain crop. Farmers who produce crawfish in ponds dedicated only to crawfish must first decide whether to plant a forage crop or rely on volunteer native stands of weeds and grasses. When it is anticipated that crawfish population density will be moderate to high, it is almost always advisable to establish a crop of planted forages such as rice or sorghum-sudangrass. Stands of volunteer vegetation are often unpredictable in the amount and type of vegetation that will be produced and most volunteer stands are less desirable than planted stands, especially when crawfish populations are high. To achieve adequate stands of a planted crop, care should be given to the best timing and method of planting, as well as the type of forage to be planted.

The table on page 4 will provide some guidelines for which type of forage crop may best be suited to your specific situation in a permanent crawfish (crawfish-only) pond. Rice is often the preferred crop to use in a crawfish pond (assuming irrigation is available and an adequate seedbed can be prepared) even when there is no intention of harvesting the grain. Sorghum-sudangrass hybrid can be an acceptable substitute for rice, such as when irrigation water is difficult to obtain during the summer and/or when the optimum window for rice planting has passed, but sorghum-sudangrass may be a poor choice if not properly managed. Rice is more forgiving, but it can sometimes be difficult to get a good stand of rice in the heat of summer. Whether planting rice or sorghum-sudangrass, time of planting is critical. In south Louisiana, the best time to plant rice is within the first two weeks of August, and for sorghum-sudangrass, within the last two weeks of August. Planting earlier will usually result in grain formation, an undesirable condition (unless waterfowl management is important). A later planting may result in reduced tonnage of forage produced.

Grain sorghum or millet should be considered only when waterfowl management is a primary focus and maximum crawfish production is not the principal goal. Preferred planting dates for these are similar to sorghum-sudangrass, unless grain production for the early

teal season is needed. All grain-type forages are best planted in a tilled seedbed. Under some circumstances, such as where tillage or irrigation is not possible, and/or where crawfish densities are expected to be low, it may not be worthwhile to invest in seeds and seeding. For low intensity management, voluntary vegetation may be best the best option.

Although the level of management typically has more influence on the quality of the forage crop, the medium grain rice varieties, in general, may have a slight edge over long grain types in a crawfish pond, but this may only be advantageous at the highest density of crawfish and under the best management levels. Planting a mixture of rice varieties may even be better than planting a single variety.

With rice, as with the other grains, stand establishment is the key to any good forage crop. Having good seed contact with the soil is important to achieving a good rice stand and that usually requires a prepared seedbed. Because it may be difficult to achieve a good stand in the heat of summer, especially when the pond bottom is not level and contains pockets or "pot holes" that do not drain well, it is best to avoid water seeding unless one is experienced at planting this way. Broadcasting dry seed on a tilled seedbed and mulching or covering the seed slightly is often the best approach, especially when rainfall is adequate and occurs frequently enough to avoid flushing (irrigating) the field. Drill planting is another option. As with water seeding, when large areas of the pond retain puddles of water from irrigation during August, the water may be sufficiently hot to prevent or destroy stands of rice. Irrigation may be needed if timely rains do not occur after planting. As with any crop, fertilizer needs must be met and damaging insects, such as army worms, must be controlled, but rice fields used in crawfish production do not have to be as weed free as is required for grain production. Some aquatic weeds are acceptable and may even be desirable as long as they do not get out of control.

Harvested rice fields will often benefit from some nitrogen fertilizer and irrigation after the rice harvest to stimulate rice regrowth from the stubble (ratoon rice). Establish a very shallow flood on the stubble rice and replenish the water when total evaporation occurs. This provides moisture for rice regrowth and accelerates the breakdown of straw before pond flood-up in October, which improves water quality after flood-up. Ponds planted with one of the terrestrial grain crops *should not* receive a persistent flood until the permanent flood for crawfish is established (usually in October). However, a shallow persistent flood is advisable for late planted rice once the rice is tall enough to tolerate a persistent flood – assuming grass is not present in quantities that would deplete oxygen.

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Additional information on crawfish aquaculture is available on the LSU AgCenter Web site at

www.lsuagcenter.com/en/crops_livestock/aquaculture/crawfish

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Forage	Recommended when:	Not Recommended when:
Rice	High crawfish densities are expected Irrigation is available and dependable Water can be put on or taken off field as needed Pond bottom is mostly flat or leveled Saturated soils exist or summer flooding can occur Waterfowl use is desired	Irrigation is not available during the summer Prepared seedbed is not available either by tilling or flooding Deep permanent flood is desired
Sorghum-sudangrass	Irrigation is not available during the summer Moderate or high crawfish densities are expected Pond bottom is not flat or leveled but seedbed can be prepared Soils are well drained Deep permanent flood is desired	Saturated soils exist or summer flooding can occur Waterfowl use is desired
Grain Sorghum	Irrigation is not available during the summer Moderate crawfish densities are expected Pond bottom is not flat or leveled but seedbed can be prepared Soils are well drained Waterfowl use is desired	Saturated soils exist or summer flooding can occur Deep permanent flood is desired High crawfish densities are expected
Pearl Millet	Waterfowl use is desired Irrigation is not available during the summer Low crawfish densities are expected Pond bottom is not flat or leveled but seedbed can be prepared Soils are well drained	Saturated soils exist or summer flooding can occur Deep permanent flood is desired High crawfish densities are expected
Natural (Voluntary) Vegetation	Irrigation is not available during the summer Prepared seedbed is not available Pond bottom is not flat or leveled Low crawfish densities are expected Saturated soils exist or summer flooding can occur Deep permanent flood is desired	High crawfish densities are expected

For more detail on crawfish forage management and planting recommendations, see the Louisiana Crawfish Production Manual.