

more points in its favour than cowpea. The most suitable proportion for mixing a pulse with *cholam*, when one is needed, is three of *cholam* and one of pulse in the case of irrigated red soils, and one of *cholam* to three of pulse or both in equal proportions in the case of rain-fed soils." The above results are with regard to Coimbatore soils.

Rotation experiments at the Agricultural Research Station, Nandyal (Kurnool Dt.), have shown that a three year rotation: Sorghum—cotton—pulse (groundnut or Bengal gram), is more profitable than a two year rotation of sorghum—cotton (without a pulse) both with regard to yield of sorghum as well as nett produce for three years. Similar experiments at a few other stations have not led to any conclusive results.

Conclusion. It is obvious that more work is to be done in different parts of the presidency to decide the suitable mixtures and rotations for different soils and different seasons. This important question of mixtures and rotation requires a thorough *agro-economic* examination. The question of cereal—pulse mixture in dry lands thus presents a comprehensive set of problems in farming practices, economics, soil physics and nutrition, and demands more systematic attention than it has commanded so far. It is hoped that before long this subject will receive the attention it deserves.

Stone Dragging Competition for Cattle in Kurnool District.

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Introduction. The Ceded District ryot is noted for his skill in the use of his cattle for a variety of agricultural operations. The soils of the tract are generally poor, the rainfall low and ill-distributed and the holdings extensive. The climate is also adverse and the ryot is naturally averse to much of human labour. While ploughing, carting, and mhoting where there are deep wells, are all the operations that cattle are set to do in other districts, the work cattle of the Ceded Districts are put to a much wider use. The work cattle draw heavy ploughs in teams of four to six pairs, while the ryots of the Tamil or Circars country think that such work can only be done by elephants. In this tract crushing big clods raised by the use of these ploughs is done by cattle power while in other districts to break much smaller clods raised by the wooden ploughs, manual labour is engaged. Where the stubbles of cotton and sorghum are dug out by manual labour elsewhere, the Ceded District ryot removes them over wide areas by a pleasure drive standing over a blade harrow worked by his cattle.

He drill-sows his seeds economically using lower seed rates and obtains a meticulous uniformity in stand and an admirable straightness of rows which are sometimes several furlongs long. This is achieved with the

aid of his cattle. He weeds his fields and cultivates the soil between rows of crops with the help of cattle. It is an interesting sight to see crops like chillies and tobacco being carefully intercultivated by cattle power, without even a leaf being broken by the careless trampling of the cattle. Though groundnut is a crop of recent introduction in the Ceded Districts the ryot has learnt to harvest the entire crop by the use of his work cattle at less than a fourth of the labour cost expended by the ryots of the Central Districts who still find some excuse or other for the lifting of their groundnuts by human labour. Threshing of produce like Italian millet and sorghum is all done by rollers drawn by cattle. Even in the matter of carting it is a sight to see clumsy looking carts loaded several feet wide and high with miniature hay stacks, causing no little inconvenience to motorists, as these straw laden carts practically occupy the full breadth of the road. His cattle thus do almost all agricultural operations and it is possible to manage 20 to 50 acres of land with a pair of cattle while the ryots of other districts cannot manage more than six acres with a pair.

Ongole breed of work cattle. The work cattle used in the Ceded Districts are mostly of the Ongole type. These are huge animals generally bred in the Ongole tract, but reared from a young age in the Ceded Districts. Soon after weaning, young male stock are brought by dealers in hundreds to the Ceded Districts and sold to ryots on the instalment payment system. They are carefully reared in their new homes, where they are given names to which they respond on calling, and become so tame that they do not generally require nose ropes. The Ceded District ryot takes a great pride in the proper maintenance of his work cattle and even the most aristocratic of the cultivators tether their cattle at nights in a shed which is usually the enclosed front portion of their residences.

Stone dragging competition. Some of the best Ongole cattle which are noted for their size, steadiness and docility are found in the black cotton soil tracts of Kurnool District. In this area there exists an ancient pastime at which the strength of the work cattle is tested by means of a stone dragging competition. The competing pairs have to drag a huge stone over a firm earthen road. The pair that comes out best has a reputation for strength and is known as the *Rallu gunju eddulu* (the pair that pulled the stone). Such competitions are generally held in many villages during the local temple festivals which attract crowds. Ryots usually spend several months in training animals for these competitions. Such training of young animals is comparable to breaking the animals to the yoke. The biggest stone is kept at the Mahanandi temple where vast crowds are attracted for the Sivarathri festival. The temple trustee gives annually a gold sovereign as a prize for the bulls that come first in the competition. There is a similar competition at Ahobilam where the stone is less than $\frac{2}{3}$ of the size of the Mahanandi stone. The stone at Mahanandi is 11'-3" long 2'-3" \times 1'-10" in section and is calculated to weigh about $4\frac{1}{4}$ tons. There is usually a hole provided on the top at one end for attaching a

chain and it is to be drawn over a firm earthen road for a period of 30 minutes. The pair that pulls the longest distance is declared winner. No regular records have been maintained, but it is reported that a distance of 90 feet is the record within recent memory. Animals for competition come from far and wide after getting selected at local preliminary heats. Ryots used to get some very magnificent animals for the competition. Though the honour of winning at these competitions is its own reward, animals that won at the competitions are reported to have been sold for Rs. 1500 to Rs. 1600 a pair—a premium of about Rs. 300 to 400. The Ceded Districts have no good roads to boast of except the trunk and District Board roads and one accustomed to travel into the interior during the rainy season can easily imagine why the ryots have been so particular to test the dragging power of their cattle. It is only these cattle that can take the villager or a stray visitor out of the village to the nearest metalled road after a rain. Two such District competitions in addition to the usual cattle shows were held, one at Mahanandi and the other at Ahobilam in March 1940. The Agricultural and Veterinary Officers and some ryots acted as judges. Cruelty of any sort like beating, goading etc. was prevented. The Sub-Collector of Nandyal presided over both the functions and medals were awarded to the winners. The entries for the cattle show and the stone dragging competitions are declining. It is a great pity that a useful function like this should show signs of decline. It is necessary to investigate the cause and organise the competitions in such a manner as to attract enough entries.

Causes for decline of cattle. One reason for the decline in the competitions is that the splitting of holdings which is silently going on has reduced the demands on big animals with the result that smaller sized cattle are getting to be more in demand.

Conclusion. It would be interesting and useful if such competitions are organised in important cattle fair centres. It may be mentioned that a pair that can drag a $4\frac{1}{2}$ ton stone on a bare ground, can easily drag a stone road roller. When 4 to 6 such pairs are not uncommon sights in team ploughing in the black cotton soil tracts, road rolling of even the heaviest type is an affair with these cattle and the competitions such as these can be turned to more practical advantage.