Introduction
Accidents are undesired events which result from unplanned deviations in system operations. As farming sector is an unorganized sector, there is an absence of nationwide repository on farm related accidents and injuries, which could be useful to quantify the safety and health, and economic consequences. Their adverse consequences may include injury, loss of life, severe environmental damage and loss of the system itself. Assessment of agricultural accidents is essential to provide necessary engineering interventions for minimization. Considering the above, an agricultural accident survey was conducted in selected villages of eastern region of India (West Bengal). The State occupies only 2.7% of the India's land area, though it supports over 7.8% of Indian population, and is the most densely populated state in India. While West Bengal has seen resurgence in its economy after decades of stagnation, the state is still faced with poverty, social tensions and bureaucratic corruption. West Bengal is on the eastern bottleneck of India, stretching from the Himalayas in the north to the Bay of Bengal in the south. The survey was conducted for a period of one year on recall basis.

There are 19 districts in West Bengal, each of which is subdivided into Sub-Divisions and again into Blocks. Blocks consist of panchayats (village councils) and town municipalities. Agriculture is the leading occupation in West Bengal. Rice is the state's principal food crop. Other food crops are maize, pulses, oil seeds, wheat, barley, potatoes and vegetables. Jute is the main cash crop of the region. Tea is also produced commercially; the region is well known for Darjeeling and other high quality teas. Tobacco and sugarcane are also grown. However, there has been a significant spurt in food production since the 1980s, and the state now has a surplus of grains.

Materials and Methods
The outcome of the past study conducted on the cropping systems and agricultural practices for the identification of mechanization gaps and suitable implements in the entire state of West Bengal has revealed that the climate and agricultural practices of 4 districts viz., Jalpaiguri, Malda, Hooghly and 24-N Parganas together adequately represent all the agricultural practices of the West Bengal region of India. The All India Coordinated Research Project (AICRP) on Ergonomics and Safety in Agriculture (ESA), Bhopal, India has thus recommended these districts for collection of agricultural accident data. Therefore, the survey in West Bengal state was conducted with due consideration to different agricultural zones of the State. The entire State was divided to four zones viz., Eastern, Western, Northern and Southern zones. Nearly 40-50 villages were selected from each zone to make the sample size to 160 villages, giving due weightage to all present ethnic groups of the State.

For the collection of information on the agricultural accidents, the structured form developed under the AICRP on ESA, Bhopal, India was used. The village level information viz., cropped area, farming population, cropping pattern and status of mechanization were obtained from the Agricultural Development Officers or village representatives. Data were collected on a recall basis. Though under-reporting due to recall bias may not be neglected, attempts were made to collect a large number of information with a view to identify and locate all factors relevant to the accident sequence, examine and determine their impact and to give a good basis for safety improvements at workplaces.

Results and Discussion
As the mechanization status of West-Bengal is very poor with respect to their population and agriculture profession, the number of accident found was very less. In agriculture, under-reporting of tractor accidents and injuries is common. However, the reporting of serious, e.g. fatal, injuries may be more reliable. The total account of agricultural accidents includes accidents of agricultural machinery like implements, thresher, sprayer, hand tools and some other like snake bites, thunder storm etc. Out of all accidents, farm machinery accidents were found 14.83%, hand tools 54.83% and snake bites and other was 30.33%. Higher value of hand tools is due to
consideration of minor injury. Higher number of agricultural accidents reported in Jalpaiguri district (30.78) followed by Malda (23.59), Paraganas (23.59) and Hooghly (22.02).

In the largest category of accidents the tractor driver had taken his machine beyond its safe operating limits and in the second category, he made an error of judgment while the tractor was within its safe limits. While many ergonomics and design guidelines already exist for heavy machinery, these are still not being implemented in India. Epidemiological approach has convinced that problem areas cannot be identified just by using anecdotal information and hospital statistics in countries like India.

The accidents occurred during the operation of tractor (27.7%), thresher (14.6%), sprayer/duster (12.2%), sugarcane crusher (8.1%) and chaff cutter (7.8%). The total number of accidents for the one year was 445 that included more than 50% of minor accidents of sickle and spades. There was 5.16% of accident of fatal nature and 94.84% non-fatal nature in total agricultural accidents. Tractor and power tiller accident was found to be 3% and 4% respectively followed by agricultural machinery (8%) due to over speed and ignorance in operation. Out of total number of accidents, 23 workers were killed due to tractor overturn, heat stress, wrapping and snakebite etc. The accidental incident rate of agricultural machinery in West Bengal was found to be 128/1 00 000 workers/year.

Key Words: Agricultural Accidents, Survey, Tractor, Farm Machinery

References:


