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Research and application of terrestrial agricultural remote sensing platform in energy crop biomass monitoring

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Abstract: based on the impact of the energy crisis , countries to actively promote renewable energy research , in this case , agriculture is back into people's view corner .i century quarter late end , Our country starts developing energy crops . Ground Agricultural remote Sensing platform is a computer technology , database technology ,Network Technology , reason information technology - , new system for Global Positioning System , effective soil survey for crops , Vegetation survey and Identification ,crop yield , disease , Pest Attack investigation , Agricultural eco-environmental monitoring activities , widely used in agriculture . This article combines the features of terrestrial agricultural remote sensing platforms , probing Application of terrestrial agricultural remote sensing platform in energy crop biological monitoring , To promote the monitoring of energy crops in China , Increase the output of energy crops .

Keyword: Agriculture ; Remote Sensing platform ; Energy Crop ; monitoring

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Agricultural remote sensing platforms including space platforms , Aviation Platform , Ground platform three species , ground platform with tripod , Remote Sensing Tower , Remote sensor vehicles , mainly used for near distance measuring ground object Pope , get feature detail image . Remote sensing technology is not a perfect, subject to technical level , weather , geography , Terrain etc system approximately , There are problems with geometrical position and radiation energy .

1. Remote sensing technology and energy crops

Remote Sensing technology has been widely used in precision agriculture , to agriculture administration The brings revolutionary changes . Energy crops as a renewable source , Less pollution The features of,, and so on are increasingly being the concern of the international community . stitch Remote Sensing technology for energy crops is also evolving. [1] .

1.1 Status of agricultural remote sensing technology

Current contents of agricultural management include fertilization , Bug-removing , Output , weeding , quality , crop growth status monitoring , can be done through remote sensing technology monitoring . Remote sensing technology based on spectral information collection , Find eye view not see information , example worm infection ,Nutrition Missing , Pesticide Residues . with the development of satellite technology , Remote sensing technology is widely used in soil survey , crop yield check , areas such as water survey . Of course remote sensing technology itself There are some flaws , If spectral range is restricted , turnaround time is too long , cannot be observed in real time , Low spatial resolution .

1.2 Energy Crop application status

bioenergy refers to the sources of thermal energy produced by any non-fossil biomaterials , can come from ocean and land including methane extracted from residue ,from corn or The ethanol and firewood extracted from sugarcane . Energy crops have three main categories : sugar and starch crops , oil crops and wood fiber crops . carbohydrate and starch crops square face, wheat and corn are mainly used in our country to produce ethanol , ethanol production cost low , Strong competition ; oil crop aspects , rapeseed , Castor-Bean , Sunflower and soy are the main oil crops . Oil plants are divided into herbs and woody plants two kinds , The development of biodiesel in China is very late , but development Faster . Current herbaceous plants mainly grow soybeans and rapeseed , Woody planting Leprosy in plants , Green Yushu , Light skin tree, Mountain Maple ; Wood Fiber dimension crop aspects , Most woody cellulose crops are in development and screening order paragraph , Large-scale planting techniques and transport problems also need to be addressed by . miscanthus due to less nutrient requirements , do not attack the environment , Low water requirement , is for our country's most potential sources of renewable energy [2] .

2. Terrestrial Agricultural Remote sensing platform for energy crop biomass monitoring

Research and application of

2.1 ground-based Remote sensing technology for monitoring energy crop applications

As with other crop monitoring methods , Energy Crop Remote sensing monitoring methods include satellite , small plane , Terrestrial remote sensing devices three ,

has advantages and disadvantages . a large range of satellite shots but low resolution , long turnaround time ; Small aircraft working environment , Time Flexible , But there are geographical limitations .

2.2 The Study of terrestrial agricultural remote sensing platform in energy crop biomass monitoring with apply

ground platforms include tripod , Remote Sensing Tower , Remote Sensing vehicle , Remote sensing ship , Building Top appliances , for close-up object detail image and ground object -pop. The current remote sensing Tower for ground-based remote sensing platforms is built with hyperspectral resolution sensor , Place on on m High on the platform , can be horizontal 360° Vertical 90° rotation , steel towers are generally set in the middle of energy crops , to facilitate a full range of observations . less than other remote sensing methods , A tower independent remote sensing system with high spatial resolution , time turnover quick , High spectral resolution features .

But the ground remote sensing platform also has image geometry distortion , Remote Sensing image spoke A flaw such as distortion . the main causes of image geometric distortion by are the following : Remote sensing platform running status ; Effect of the Earth itself on remote sensing images ; Pass sensor Internal distortion ;Platform Height change , track offset and posture change . causes image radiation distortion because of the : Sensor Sensitivity features distortion , Distortion caused by Sun heights and terrain , air factor (%) really wait , to eliminate radiation errors by correcting the radiation brightness .

to enhance the accuracy of remote sensing images , must eliminate these errors . There are two ways to eliminate geometric errors : Create a geometric distortion data model , using mathematical model to eliminate geometric distortion ; collects real-world coordinates for ground objects value , Determining relationship between true value and distorted image , to correct distortion error Bad . in actual operation , usually connect the two together with . First establish A mathematical model of geometric distortion , To set up a distorted image and a standard image relationships , implementing image meta position transformations in different image spaces ; then benefit Use this correspondence to transform the image elements in the distorted image into standard space , There are two main methods of direct conversion and resampling .

3. Epilogue

Research based on monitoring of terrestrial remote sensing platforms in energy crops nonporous , This article describes the status of remote sensing technology , status of energy crops in China , problems with remote sensing

technology , building of ground-based remote sensing platforms , How to eliminate Remote Sensing image error and distortion problems . for energy crops nonporous US must be valued . Remote sensing technology for the refinement of our energy crop admin tools , allows us to do a lot of field experiments , is We contributed more to the production of energy crops. .

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